UNIVERSITY OF JYVÄSKYLÄ

EDUCATIONAL CHANGE: A CASE STUDY OF THE IMPLEMENTATION OF THE NATIONAL INFORMATION STRATEGY

A Pro Gradu Thesis

by

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contribution to the development of collaborative work cultures. Fifth, teacher-leaders, that is, those interested in playing a larger leadership role have an important role to play. They must act as coaches and mentors for their colleagues, still not to be overly enthusiastic. This must be done in a way which does not prohibit collaborative decision making. Commitment is needed, but it must be balanced with the knowledge that people may be at different starting points, with different priorities, and that the change process may very well result in transformations or variations in the change. *Sixth*, teacher unions and professional associations should take a more active role in helping to establish conditions for improvement and in following up to support implementation and to assess results.

Teachers have experienced many potential change movements, most of which have failed. It is only natural that they are very skeptic of yet another change at first. What makes information technologies even more difficult a case is the fact that most teachers have tried it in the infancy of the computer and rejected it as infeasible. Today's technology and especially computers are very much different. Computers are much easier to use, they require no programming skills, they have vast potential, and information technologies have generally been accepted in our society. As Hoffman (1996:25) concludes, introducing IT to teachers who were trained at a time when computers were read about but rarely seen in operation is not an easy challenge. According to him, it is still a challenge we must meet if we are to successfully teach foreign languages to the generation for whom computers are as familiar as earth and sky. After all, all schools will have computers, whether we like it or not (Hagg 1985).

It is important to realize that the constructivist use of IT suggested by the information strategy is based on very different assumptions than the one that teachers have tried before. It requires a totally new perspective on learning and teaching (see section 2.1.3) and in many cases rigorous on

the job training. Indeed, as Eraut (1991a:279) argues, special emphasis must be placed on the training of teachers who are to carry out the practical side of the strategy, and on the support of these teachers need.

This sounds very good on paper but from the teachers point of view it can cause anxiety. The difficulty of learning new skills and behavior and unlearning old ones is vastly underestimated (Fullan 1991:129). Especially FL teachers with their arts degree often feel that IT is forbidding. It is also questionable whether teachers know how to facilitate learning or even want to be facilitators (Carey 1993). Sometimes innovations and change strategies are sold on solid and sound theoretical basis, but they turn out not to be translatable into classroom practices with the resources available for the teachers.

According to Fullan (1991), change in practice includes three levels:
1. The possible use of new materials
2. The possible use of new teaching approaches
3. The possible alteration of beliefs

The teacher may implement none, one, two, or all of them. But all three aspects are necessary for successful implementation of the information strategy. This is difficult because we are dealing with deep changes, concerning occupational identity, self-concept, and competence. Many studies (Ashton and Webb 1986, Hopkins 1990, Rosenholtz 1989) have indicated that teachers' sense of efficacy, self-actualization, control, motivation, and desire for change vary dramatically among teachers. Hodas (1993) acknowledges that teachers are after all witnesses to human development in a richer and more complex way than educational technologists ever will be. They see the potential damage the old "instructional delivery machine" may do to children.

Another issue is some teachers' fear of being replaced by a computer. Current research has time and time again emphasized the importance of teachers' role. Teachers will not be replaced by computers, but it is quite

possible that teachers who use computers may replace teachers who do not. The computer is not used to replace, but to complement what teachers do. It is just another tool in the "bag". Hoffman (1996) stresses that educational technology is no more than a medium of teaching that can free teachers to focus on helping students develop skills for which live, "unprogrammed" feedback and interaction of the language teacher are necessary.

Fullan (1991) considers it important that we realize that teachers often work in isolation. Fullan (1991) and Rosenholtz (1989) emphasize the importance of principal-teacher, and teacher-teacher interaction and collegial involvement. Kohonen and Leppilampi (1992) note that isolation of teachers exists in the Finnish school system and culture, too. Each teacher has been responsible for his or her class and collaboration between teachers has been modest. Teachers' work has been relatively independent and the responsibility for students, methods chosen, and the nurturing of human relationships in the school have also been left for the individual teacher. The traditional school culture leaves the teacher alone with difficult problems and provides no peer support or possibility for discussion. Therefore there have been few incentives for a collaborative work culture. Yet, collaboration and breaking the boundaries of different subjects are necessary in order to implement the information strategy and to establish an open learning environment. For example, good cooperation could result from combining English and geography lessons into, say, project work, in which the content would be geography, the language English, and computers and networks would be used to acquire, process, and analyze information and to communication between participants themselves and with various expert sources or other participating schools on the Internet

It should also be remembered that the personal responsibility of the individual teacher to make schools better should not be underestimated. Individual and collegial action are not mutually exclusive. Barth (1990)

argues that teachers' should commit themselves to an educational ideal and have enough courage to step outside of the small circle of traditional teacher tasks. They should declare through their actions that they care about and take responsibility for more than the minimum.

There are yet many reasons for teachers not to get involved in the change, and Fullan (1991:141) identifies some of these: Norms or expectations to collaborate are not well developed, organizational structures inhibit involvement, the type, design, and scale of particular innovations create far more costs than benefits from the teacher's point of view.

Fullan (1991) also claims that the emergence of highly energized, collaborative schools and open learning environments depend not only on individual efforts, but also on how we manage to motivate good teachers throughout their careers. Changes in the culture of teaching and the culture of schools are required in order to implement the information strategy. Cultural change requires strong, persistent efforts, because much of current practices are embedded in structures and routines and internalized by individuals, including teachers. Fullan (1991) and Eraut (1991b) emphasize that teachers need pragmatic every-day information of the innovation which can be utilized in classrooms. Deep changes are acts of faith, teachers must believe in them and trust that they are worthwhile, even without immediate rewards.

2.3 The field of study

There are two issues to consider here: First, how has the implementation of policies such as the national information strategy been studied and with what results. Second, what have the studies that have concentrated on IT use in education and in teaching EFL come up with. Although the use of IT is only one aspect of the information strategy and just one part

of open learning environments, this is relevant because the information strategy promotes a different use of IT than we have been accustomed to. Therefore previous studies concerning IT use in schools and barriers to it are discussed also. The use of IT and attitudes toward IT are so closely connected with the information strategy that they have to be considered, too. However, the emphasis is on the organizational barriers to policy implementation and the difficulties of educational change.

Although almost everything that has been discussed in the previous sections have been about previous studies, the specific goal of the following studies is to provide background for the choice of methodology. They also show how similar problems have been studied previously.

2.3.1 Studies concerning policy implementation

Nikki (1992) has studied the implementation of the Finnish national plan for foreign language teaching (1984). The plan was mainly about how much and what languages should be studied. Therefore quantitative analysis was appropriate. The data were collected from state level educational administration authorities, municipalities, and from students and parents by means of a questionnaire on foreign language programs. Data processing involved frequency and percentage distributions. Interviews with administrators and principals in the comprehensive and upper secondary school were also conducted. Syllabuses and study books were also examined. The sample consisted of 465 comprehensive school students, 481 upper secondary school students, 312 parents, and 138 administrators. Nikki had several research questions according to which data collection was determined. In this way Nikki covered the overall implementation of the plan. Nikki found that macro-implementation (municipal, district, and province levels) had been quite successful, yet micro-implementation (comprehensive school and upper secondary school levels) had been moderate at best. Especially in

the upper secondary school the plan had failed, mainly because participants involved did not consider the plan relevant.

Niinistö (1980) provides also an example of a quantitative analysis. He studied the conditions for and implementation of an educational innovation in the case of a school council reform, which was introduced in 1973. The aim was to study the process of innovation in an organization. The study extended over six years including two separate investigations of the same populations, first in 1970 and then in 1976. The populations consisted of Finnish-speaking upper secondary school teachers and pupils in the second form of the upper secondary school. The data were obtained by means of a questionnaire. In Niinistö's study the emphasis was on the school level and direct effects of the reform, the organizational effects were considered only in the theoretical section of the study. Niinistö (1980:171) found only general conclusions, such as "all systems interact with each other...simple laws do not exist." The general result was that the reform had positively influenced the attitudinal changes which the reform promoted among teachers and students, and that authoritative impositions merely change formal behavior in an organization. The results were rather general because of a quantitative analysis.

An interesting study in a methodological sense is provided by Kurtakko (1990). He studied the implementation and realization of IT in four case schools in a "TUKU-project" *(Tietotekniikka - uusi kasvun ulottuvuus - projekti)* during two and a half years. The study was a project which entailed firstly, observation (journal and video) during the lessons and student productions; secondly, interviews with students and teachers; and thirdly, group discussions with school administrators and teachers. The changes in teaching and learning practices, professional readiness, and in the school organization were studied. Kurtakko found that in general computer software was considered poor and expensive but also that IT can and did brought along variety and widened the content,

especially in arts and music. IT was considered useful in project work but school practices should be changed so that it conformed this kind of teaching and learning. Cooperation between teachers and teachers' and administrators' readiness for IT varied among the schools. The design in Kurtakko's study was quite comprehensive and it was conducted by a team of researchers and during a lengthy period of time.

Gross (1971) used a single case study design when he studied the implementation of organizational innovations. A single school was selected because it had a prior history of innovation and could not be claimed to suffer from any barriers to innovation. In the prevailing theories he used, barriers to innovation had been cited as the major reason why innovations and policies failed. Gross (1971) showed that, in this school, an innovative policy failed but that the failure could not be attributed to any barriers. Implementation processes, rather than the barriers, appeared to account for the outcomes.

Bird (1992) reports on her study concerning the process of implementation of a London-wide policy in the Open College of South London. The new policy was designed to promote opportunities for adults to return to education, especially for those who had benefited least from the educational system. The purpose of her research was to determine what factors made for the successful implementation of an educational policy. The means by which this was to be ascertained was a case study. The college was chosen because it represented an interesting case regarding the aims of the policy. Bird did also early quantitative surveying of the population of the college. However, concerning the actual process of implementation she opted for a design which would trace the original objectives of the policy and the means by which the change was effected within the organization: face-to-face interviews with representatives of the various levels of the school organization. Bird emphasizes the importance of in-depth interviews and analytical-inductive model in this kind of study. According to her,

questionnaires would have been too constraining.

Bird (1992) used a working hypothesis that successful implementation of the policy would require commitment from those involved, sufficient capacity (financial and other), and good communication between the parties. Her research strategy enabled her to simultaneously test and develop the hypothesis further. The results of Bird's study has been presented in section 2.2. What makes her study interesting is the fact that the present study has quite a similar design.

2.3.2 Studies concerning the use of information technology in schools

The attitudes toward IT and computers are bound to affect the implementation of the information strategy because at first the strategy may seem to be all about computers and gizmos. Although this is not the case, the implementation of the information strategy may just seem like implementing computers in education in the eyes of individual school communities. The following studies do not directly link with the present study but since the information strategy incorporates the implementation of IT, these studies provide valuable background understanding for the problems of implementation concerning the strategy.

If educators decide to implement information technologies in their teaching it is usually managed by repurposing them to fit the present practices and view of teaching (Ganszauge and Hult 1993, Konttinen 1985, 1987, Sinisalmi and Heikkinen 1996, Sinko 1995, Taalas 1995, TOP 1989). This is generally done by using software which supports the present behavioristic view of teaching, computer exercises which drill, and some might say, "kill" students. In this way new technology is integrated with the old paradigm of teaching (Newman 1992, Perkins 1991, Sheingold 1991, Stoddart and Niederhauser 1993, Taalas 1995, TOP 1989.) The other option is to ignore the proposed change. The

implementation of IT in foreign language teaching (FLT) has been especially poor and it has even been claimed that FL teachers have more negative attitudes toward computers than other teachers (Konttinen 1987:84-89.)

Previous studies, both domestic and foreign (e.g. Ganszauge and Hult 1993, Stoddart and Niederhauser 1993, Taalas 1995, Tella 1994b), have come up with several barriers to change, in this case, for the implementation of IT in schools and in teaching EFL. These are only summarized here because they are still only background issues:

- teachers tend to teach as they were taught (behavioral competency)
- lack of effective teacher training and inadequate staff development programs, both preservice and in-service
- teachers need more time to learn about computers
- lack of clear goals and policies concerning IT
- teachers' lack of computer knowhow
- lack of hardware resources (computers per student and per classroom)
- inadequate and poor quality software
- restricting structures and legislation: the traditional 45 minute lessons, the need to prepare students for national examinations, integrating teaching EFL with other subjects is not presently allowed, e.g. two teachers cannot be paid for teaching the same class simultaneously
- lack of communication between different levels of educational system and between teachers of different subjects

The present study approaches the issue of educational change and the implementation of the information strategy from another perspective. First, in the implementation of the information strategy we should bear in mind the barriers to IT use mentioned above because the information strategy has IT use strongly built in it. Second, in order to arrive at deeper understanding of the problems of implementation we ought to go to the field and survey the change agents' understanding and opinions of the issue. In this way we can arrive at more thorough understanding of the implementation of the information strategy.

The approach and methods of this study are quite similar to that of Bird's (1992) which has been discussed above. Also in this study, questionnaires would have been too constraining. Changes in human behavior are too deep to fit into numbers or statistical analysis. Kurtakko's (1990) study was comprehensive but it was also conducted by a team of researchers and during a lengthy period of time. Nikki (1992) studied implementation issues also quantitatively, but the object of her study was to determine to what extent various languages were studied because of a national plan. Numbers are appropriate if the object is to answer to the question "how much?"

Educational change and the implementation of change policies have not been widely studied in Finland. Now, as the Finnish society is moving toward an information society, a study of the realization of the information strategy serves its purpose. Next, the design and methods of the present study are discussed.

3 RESEARCH DESIGN

In this section the research questions and the reasons for selecting a qualitative case study methodology are given. The setting of the study, the sampling techniques, the collection of data, and the methods for data analysis and interpretation are also discussed.

3.1 The setting of the study

The hierarchy and the structure of the school system which is being studied and the underlying background is illustrated in figure 1.
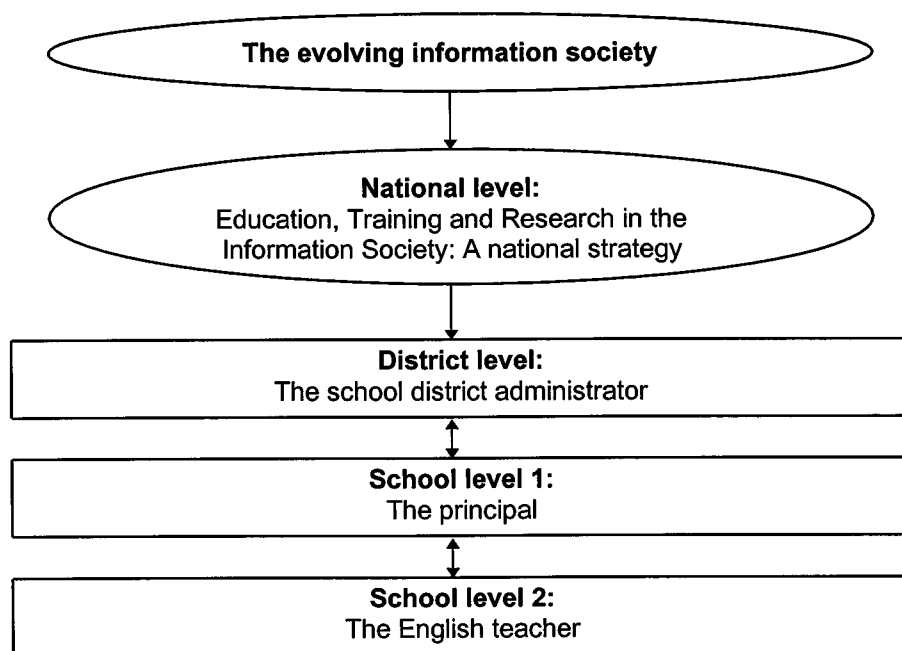

Figure 1. The setting of the study.

As the two-way arrows indicate, the interaction between the levels is of central importance in this study. The change in society at large is the driving force of the information strategy. How has this national plan or policy been passed on to the field? Has the message disappeared coming down the hierarchical ladders of the school system (the district

administration, the principal, and the English teacher)? The research questions of this study are:

- what are the present educational effects, implications and realization of the national information strategy, especially in teaching EFL in the case school system?

- what makes educational change and new open learning environments possible in general, i.e. what kind of building blocks are required for a successful educational change?

The data were obtained by personally interviewing the school organization: the district administrator, the principal, and the teacher.

3.2 Selection of methodology

The present study investigated research problems that were too complex for a survey or experimental research designs, therefore opting for a qualitative real-life context-based case study. The objective was to develop an understanding of educational change, to understand what factors may contribute to changes and what may not. Due to the qualitative design, hypotheses and propositions about the implementation of the information strategy were built, but not tested. Therefore, results are generalizable to theoretical propositions and not to populations and universes as it is the case with statistical and quantitative studies.

One of the reasons for opting for a qualitative research method was also the fact that IT implementation had already been studied with quantitative methods widely. Previous studies (p.47) had assured us that IT has been poorly implemented in language teaching. There was no need for more "number-crunching" statistical analyses, it had already

been done. Moreover, as argued before, a study of the implementation of a comprehensive plan such as the information strategy could have not been fit into numbers. The national information strategy also gave a clear starting point for a qualitative analysis. How else could we study its realization in real-life situations? How to *measure* educational change and how to determine the effect of the information strategy? How to *measure* teachers' views on learning and computing? The number of computers and network facilities in schools could have been measured and teachers' could have been asked about their views through a questionnaire, of course, but in order to truly understand the situation in a real-life context, qualitative methods and a case study approach needed to be employed.

There are many differences in quantitative and qualitative research. Traditionally quantitative research has assumed that there is a single, objective reality which can be observed, measured and tested. These results can be generalized to universes and probabilities. Outcomes and reliability are emphasized. In contrast, qualitative research assumes that there are multiple realities, the world is not an objective thing but a function of personal subjective interaction and perception (Merriam 1988:17). Interpretation is emphasized over measuring, inductive exploring is promoted. The change agents' different realities were subjected to interpretation in this study.

Yin (1984:39) demonstrates that the analogy to samples and universes is incorrect when dealing with case studies. Quantitative studies rely on statistical generalization, whereas case studies rely on analytical generalization. In analytical generalization the investigator is striving to generalize a particular set of results to a broader theory. In this study the results of one case were considered in the light of theoretical background avoiding generalizations of any kind.

The case study approach is used to explore the in-depth processes and dynamics of practice. Educational change is too complicated an issue to fit into charts and numbers and universal explanations. There was a need to probe and explore the issues, as and when they arose, in the course of the interview. In this way an interview provided the opportunity to follow the unforeseen directions toward which, it was hoped, the respondents' new insights and knowledge might lead. The teacher was interviewed first and her understandings were reported to the next interviewee, which was the principal, and finally during the district administrator's interview the teacher's and principal's understandings were reported to him.

Merriam (1988) and Yin (1984) claim that with a qualitative approach the objective is to understand the meaning of an issue and to understand how all parts work together to form a whole. This is very similar to what systems thinking suggests. The implementation of the information strategy depends on individual change agents roles' and how they form a working whole. Therefore, qualitative approach seemed to be best suited for a study on educational change which concerned various levels of an education system, such as this.

In the course of research, research questions were elaborated, focused on, and changed. It was only after the interviews had been conducted that the research questions were focused on. After the interviews it became clear that we were dealing with a rather positive and auspicious case concerning the implementation of the information strategy and educational change. In this way the research design became what it was: a case study of educational change in a receptive environment. Goetz and LeCompte (1984:8) promote this kind of reasoning: in case studies data-gathering often necessarily precedes final hypothesis formulation and researchers must avoid assuming strict *a priori* constructs or relationships. Of course there were some *a priori* understandings of the issues, but the interviews were conducted with an

open mind and without prejudices. The interviewees gave their opinion of the situation and the opinions of the interviewer were minimized.

3.3 Selection of the case school and participants

The sampling technique used in this study could be called purposeful sampling (Miles and Huberman 1994, Patton 1980). This kind of sampling is based on the assumption that one wants to discover, understand, and gain insight, therefore one needs to select a sample one can learn the most from. Following this logic, a positive case where the ground was receptive for educational change and for the implementation of the information strategy was sought after. But as discussed above, this was ascertained only after the interviews.

The upper level of the comprehensive school was opted because in this way teachers or principals could not hide behind the national matriculation exams. Teachers are succumbed to strong pressure from their administrations for students to perform well on these tests and have to restructure their practices accordingly. It is easy to argue that these exams demand that teachers just push forward during lessons, making sure that nothing is missed or skipped. In this way their students are best prepared for the tests. But do we learn for tests or for life? Anyway, in this way this excuse was dismissed.

The district became selected because to an outsider it appeared to represent a positive case regarding technological attitudes and development efforts. The case district had just decided upon connecting all its schools with optic cable (ATM-network), therefore creating a fast intranet (a network within the district's schools), which will also provide fast and reliable connections to the Internet. The district also aimed at retraining all its teachers. These kinds of decisions gave a positive picture of its technological attitudes. The district looked like a case where

the possibilities of new technology had been realized and which provided a fertile ground for the information strategy.

The participants were selected as follows: The teacher was represented by an English teacher, after all, this was a study made for the English department and from the EFL point of view. After the district had been chosen the English teacher became selected because of her interesting situation regarding retraining and because her school represented a typical upper level school with typical or above-average technological resources. The case school was a part of a rather large district. There was no upper secondary school in this part of the town. In this way a typical, but an interesting case was found. After this, the district administrator and the principal became automatically selected. In order to keep the case anonymous, only necessary information about the case and the participants is given. Therefore, the names of the district, town, and individuals were deleted from the citations presented in this study.

3.4 Data gathering techniques

The interviews were conducted in the participants' work places. They were persuaded to take part in the study on the phone. They were sent a summary of the information strategy in advance in order to prepare them for the interview (appendix 1). After all, it could not have been ascertained that they had prior knowledge about the strategy. A sketch framework of the interview questions was used to help remembering the issues which ought to be discussed (appendix 2). The issues were basically the same in all three interviews but the view of learning was more thoroughly discussed with the teacher and the financial aspects more thoroughly discussed with the district administrator. The principal was interviewed on both these issues equally. Interviews were recorded on tape and then transcribed. The English quotes presented in the results section are as close to verbatim translations as possible. But it

must be remembered that they are still just very basic translations, it is impossible to capture all the nuances of speech, especially in translations. An example of one original Finnish interview is presented in appendix 3. Each interview took about one to one and a half hours.

The interviews were structured and divided into various themes relating to the information strategy. These themes were the same themes which ran through the background section of the study: What were the backgrounds the interviewees? How had the change in learning and computing been realized? How had the change in society affected the interviewees? What was their understanding of educational change? How did they describe the work culture? How the information strategy could be successfully implemented? Had they been made aware of the strategy in the first place and what did they think of it? In this way the connection with the theoretical background framework and the empirical section was established.

The questions covered general background issues and specific contextual topics. The main points of the information strategy were discussed. Questions like *how* and *why* were the backbone of the interview. Questions were designed to make the interviewee talk and not the interviewer. The ordering of the themes and questions were not rigidly followed, because the interviewee was given latitude in this respect.

3.5 Data processing and analysis

On the way toward building a hypothesis and developing an understanding of the research problems, an analytic-inductive method was being used. Interacting with data, focusing on different levels, and when possible, feeding back to the participants other participants' understanding and testing it against their own a renewed and refined

view of the issues was established. It should be clear by now that universal cures and explanations were not pursued.

The interviews were written down verbatim and translated into English so that they could be reported in the text. They were not completely documented in this study in order to avoid massive, unreadable text and documentation. For example, the interviewer's questions were deleted and irrelevant issues, which always creep into an interviewee's speech, were omitted. Although the interviewer's questions were deleted, the transcripted speech was documented in a way that it had a context.

Although the interviews had certain themes which were in order, the transcripts were still divided again to these themes afterwards. This was necessary because the order of the themes changed during the interviews and some themes were discussed in various contexts because the interviewees were given latitude. The interviewees were given the chance to talk about issues when they wanted to and the interviewer reconstructed the interview as it took place. Although the issues were discussed in a somewhat different order than it was originally planned, it was ascertained that all the relevant issues had indeed been discussed. The interview schedule helped to accomplish this. Therefore data processing and analysis and also the documentation needed to include some reordering of the transcripted speech in order to present a coherent view.

4 RESULTS FROM THE INTERVIEWS

In this section the results from the interviews are presented and documented. They are divided into the following themes: the information strategy specifically, the view of learning and the information technology, educational change, the work culture, and the role and position of the interviewee. These were the main themes in the interview schedule. The research questions depend upon each other and so do the themes of the interviews. The relation of the research questions and the themes can be described in the following way:

Research question 1:   What are the present educational effects, implications and realization of the national information strategy, especially in teaching EFL in the case school system? The relating themes: the information strategy specifically, the view of learning and the information technology, educational change, the work culture, and the role and position of the interviewee.

Research question 2: What makes educational change and new open learning environments possible in general? The relating themes: educational change, the work culture, and the role and position of the interviewee.

As pointed out before, the quotations from the interviews presented in this section are as close to verbatim translations as possible. However, they are still just very basic translations and therefore, they are presented with normal text-like punctuation and appearance.

4.1 The district administrator's interview

The district administrator was a 50-year-old man who had a master's degree in political science, but interestingly, he was also a teacher. Or

as he put it, he was first of all a teacher then a political scientist. He had been working in the lower level of the comprehensive school for three years, then in the provincial government, then as a school district administrator, and finally as an administrative director. He had been a school district administrator for four years, actually deputizing the office. He actually held the office of the administrative director but he had also been a school district administrator before, and therefore he had a deep understanding of school district and communal administration. He was very much satisfied with the district in which he worked, but was pleased to hear that he would soon return to his official post as an administrative director after four years of school district administration.

4.1.1 About the information strategy

Although all the issues discussed in the sections 4.1, 4.2, and 4.3 directly influence the realization of the information strategy, the specific opinions concerning the information strategy are always presented first because this was the way it was done in the background section, too. The district administrator had received information about the information strategy, although not specifically, but through subsequent documents based on the information strategy, such as "Suomi tietoyhteiskunnaksi - ohjelma." He had successfully deducted that it was a part of the information strategy. He pointed out that their district had been a part of it from the beginning and that they had received funds accordingly.

The district administrator emphasized the importance and inevitability of the change the information strategy has brought along. He agreed that their schools and teachers were not yet ready for the information revolution, but also pointed out their present efforts to change this: the ATM[4]-intranet and extensive teacher retraining campaign. In order to

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[4] Asynchronous Transfer Mode

secure this development, specific project managers were being appointed.

According to the district administrator, the information strategy had indeed had definite and specific influence on the district. The intranet project was the most visible result of it. But the information strategy had not been the only thing that had led to this. The district had requested an investigation of the district's state which had been done by outside consultants in 1995. In the investigation they had pointed out that the district had been dynamic and good in many respects, but its technological resources and know-how had been listed as major minuses. So the district administrator argued that this investigation and the information strategy together had been the two major catalysts for the district's present developments. It was suggested in the background section that at least five-year plans were needed (p.34), interestingly the district administrator talked precisely about similar time-span. The district administrator described the intranet development in the following way, and luckily, he did not forget the importance of retraining:

> The ATM-network will be ready by the end of May. But it is not enough in itself, it is just a tool which provides the opportunities. After this, we have to have at each of our 1300 workstations a person, a teacher who knows how to make use of it. Therefore, we have now, in February, started a retraining program which aims at retraining one hundred teachers each year to use these new equipment... The first hundred has already started their training in the Career Training Center. And next year, the next hundred. In this way, we retrain 500 teachers in the next five years. ...We will also organize more extensive training for some teachers and their jobs will include training and guiding of the other teachers in their school.

He pointed out that the retraining cost yearly about 400 000 marks and the intranet would cost about 1,3 million marks. The workstations would probably be rented, in this way they could be updated at a low cost. He had no definite opinion of the allocation of resources between the retraining and equipment purchases, but he argued that "training must be so extensive and good quality that all new equipment are in efficient and use."

He also pointed out that the Ministry of Education actually supported and had supported their efforts actively. He said that "the Ministry itself completely pays for the retraining of 64 teachers out of the total 100." He also said that the Ministry had financed almost 50 per cent of the intranet and more money was on its way for the purchase of equipment. Apparently, the information strategy's promise of support had not been just idle words, not at least in this case. But he also argued that this was not necessarily the case everywhere, not every district and school got or would get money. Indeed, he claimed that

> This is always the problem with these kind of strategies... There might be 400 districts applying for the money and if it is told that 700 million will be put in to this strategy, like in this case, it might result in frustration when you might receive only tenth of the money you thought you would.

As for the realization of the information strategy, the district administrator was quite optimistic: "I believe it will be successful, but it takes a few decades. But it will happen. Educational change always takes time."

4.1.2 About learning and information technology

Because of his teacher's background, his views of learning were also discussed. He emphasized that "of course every goal-directed activity, which includes teaching, must be based on theoretical knowledge." However, he claimed that methods change in the course of time. He personally had experienced many methodological movements during his time and claimed that the present cognitive movement might be rejected in the future also. But what was important was that teaching "is based on something and that we have some sort of idea what are the available methods...the variety of methods is good." His comments reminded me of Eero Laine's ideas about the relation of theoretical and practical knowledge (p.23).

The district administrator's attitudes toward IT were positive and optimistic. But the idea of generation gap arose from his comments:

> I personally think that there is a clear generation gap [regarding IT]... I mean that in today's world... Those who are in the school now, and I can say this without any bitterness whatsoever, are much more wiser, skilful, and have more knowledge about information technology than their teachers, or me. It is quite clear. I can see it in my family too... Today's school kids, their relationship with information technology is much more natural.

He personally used computers daily as a tool for making presentations and motions with word processing and spreadsheet software. He used the Internet to get information for these presentations. He also had learned to make use of e-mail. In fact, they had made a decision that "nothing in our school district will be passed on paper if it can be sent via e-mail." He was clearly a spokesman for e-mail:

> However, this [use of e-mail] is not the practice in the town administration in general. I have talked about it for years now but it all comes down to individuals. Not everybody wants it. Obviously, they don't know what is best for them. ...It requires everybody's own active effort and retraining.

He had acknowledged the change in the schools' technological resources in the district during the past few years. He pointed out that "five years ago only few of our schools had technological resources," but that soon "all the district's school will be connected to an intranet." He argued that "this is a very significant change."

4.1.3 About educational change

The district administrator had strong and enlightening views concerning educational change, after all, he was in a very good position to analyze the development of the school. He emphasized the change in society and the need for the school to follow this change:

> Can somebody honestly argue that the Finnish contemporary society wasn't an information society. I think that it is and that it is an inevitable change and that schools cannot stay behind the development and the new requirements it entails. It is for the young and the kids... School is for life,

as the old cliché says. The necessary skills are obtained from school...

He did not believe in the pioneering force of the school as an institution:

> School has changed and it should still change... Although some claim that the school can be a pioneer institution but I don't agree. At least I have not seen it happen anywhere. The school has not been the institution which has brought about change in any Nordic country, quite the contrary...

In his opinion "the school is at its best when it can as soon as possible adapt to the changes in society." He also agreed that schools must adapt to changes in order to stay alive. He claimed that there were two issues that were essential in education; upbringing in general and the information technology:

> I think that now we have not been able to completely respond to the general anxiety and need that exist in today's society. The economical recession being one factor and what it has brought along to the upper level where the young are in the most delicate age in the first place, in their puberty. ...We should stress upbringing in general. This involves all subjects.

> We can clearly see that this [the information revolution] is what the school is trying to respond to. Not least to the information strategy... We are strongly a part of it.

The district administrator claimed that especially teaching English as a second language was currently living in a critical period. According to the district administrator, it had the most to gain from IT:

> English teaching, and language teaching in general is clearly in a period of transition. Real, concrete, and direct international contacts between students and between teachers are created. The European Union has clearly brought along a new dimension. Now it becomes reality. And when technological resources can be more and more made use of, it makes distant learning, telematic teaching possible. It makes real-time communication to foreign countries and communication in foreign language possible. And then there is the Internet. This is where the change is leading to. It does not mean that personal communication becomes less important, but that international contacts become easier and real-time.

He accepted the fact that "not all teachers will take an interest in this information strategy." But quite similar to what was also argued in the background section (p.25), he also wished that there would be a critical mass of interested people:

> ...In every work community there should be enough people who do take interest, so that the school is not left behind. The other teachers can do something else, let them teach choir singing or physical education if the others take charge in bringing about the bigger changes.

These ideas might seem rather radical but according to him, they were the reality. He claimed that although not every teacher needed to get involved in the change, it was an absolute must that the head of the school, the principal was involved and took an interest in it. If the principal did not support the change, in this case the information strategy, the strategy had poor chances of success: "principals...they cannot afford to be indifferent, the head of the house cannot be indifferent to it." He emphasized the principals' role in the flow of information. While the district administrator passed on the information of the strategy, it was the principal's role to take it to the school level. The district administrator pointed out that the flow of information might meet with obstacles since principals and district administrators selected and picked out the things they themselves wanted to promote:

> The forwarding of information to the schools is without a doubt the principals' job. It has always been more or less of a problem as long as I have been dealing with these things. ...People do make choices about what they forward... Moreover, I make choices what things I forward to our principals. And principals' choose what they promote and with what intensity. You might be interested in something else than technology and information strategy, maybe you are interested in the ecological way of life for example and you might just casually mention this information strategy in a subordinate clause. And the result is that the staff's possibilities of getting that information are therefore decreased substantially. ...It is true that if we compare two neighbor schools, the teachers in them might not get the same information. It does not matter if the principals had indeed received the same information because they are selective.

4.1.4 About the work culture

The district administrator argued that in their district they aimed at open decision-making and open work culture. He pointed out that he belonged to the town management group but he also belonged to the school district management group, which constituted four principals and the chairman of the local teachers' trade union. Then there was the

principals' general meeting and numerous other meetings with the heads of the lower levels, upper levels, upper secondary schools, and special education schools. Indeed, as he pointed out "the principals are the level on which I operate. It would be impossible for me to discuss with [every] teacher."

He was after "more confident and more operational relationships between the district's organizations." He claimed that "these management groups do not yet function in the best way, but that they function better than three years ago." According to him, the change had been for the better, although these groups had not yet functioned long enough.

In the background section (p.33) it was suggested that the district should apply interactive pressure in order to change things. The district administrator gave a good example of this when he described the e-mail decision mentioned before:

> ...in the end of -95, everybody thought that this [the adoptation of e-mail and the rejection of paper as a means of communication] could not be done and that the principals would revolt against it. We just told the principals that we will organize training concerning it during the months of October, November, and December and that you should take part in them and the dead-line is the first of January 1996. Then some principals started to be more and more left uninformed of things. They had to start checking their e-mail. It was a sort of a gentle enforcement. Now everybody knows how to use it [e-mail] and everybody uses it. No one leaves their e-mail unchecked when they arrive at work anymore. It just requires getting used to.

However, the district administrator claimed that decisions were usually made in the open. He also drew the line between policy decisions and operative management. This was somewhat in contradiction with the principal's view (see section 4.2.5) of their own operative autonomy:

> It depends whether we mean policy decisions or operative management. We have tried to stick with the policy that the town's school board is in charge of policy decisions and large lines. Operative management is then left to me and to the district management group. We try to listen to everybody...and be open.

He also recognized that the change could get initiated at the school level also. If this happened, it was the district's role to support it if the change seemed to be important. Therefore he claimed to take genuine interest in the actual situation in the schools. If something was so important that teachers notified the district administration, it had to be necessary. However, he argued that each level of the school system was essential. The Ministry decided the policy and the district then saw to it that it would get implemented:

> Yes, all levels are needed. ...The national policy and larger issues belong to the government, in this case, to the Ministry of Education. The Ministry is the leader of education, it decides about the future of education, where we are and where we should be going. And then, regarding the local level, it is the job for the district administrator to chart how far their schools are from national standards and goals and then push them toward these goals.

He described himself as a very change-oriented individual and open to suggestions:

> I consider these kind of changes [the information strategy] to be very positive. And I'm generally a very adapted to changes. My guiding principle in life has always been that I never reject a new thing before it has first been thoroughly examined and considered... If somebody comes forward with a new idea, we must first value its need and whether it is a sensible thing to promote and only after that we take a stand.

4.1.5 The role and position of the district administrator

According to the district administrator, his role in the town administration was similar to that of an ambassador or minister for foreign affairs. As pointed out before, he belonged to the town's management group which constituted nine members. His role was most of all a managerial one, an administrative chief (see p.32). As he put it, he was a intermediating link in between various levels of administration:

> I have direct channels of communication to the mayor and to my colleagues. ...I think it is my role to pass the information from level to another.

He claimed that he had no role for example in curriculum planning, and that schools had relative freedom of decision. But he emphasized the supporting role of the administration:

> ...We can, of course always give support in general, but we can also give financial support to these new development efforts and innovations. And we do give support. For example, we support various developments for over two and a half million marks during this year.

He described his chances to influence education and educational change efforts very good. The role of the district administrator was to pass the message down to the principals and the school leaders and persuade them if necessary:

> Well, they [the chances to influence] are quite good. They do say that the leader of the firm...gets things started. It is more difficult for others to reject them because you have the proper connections. So, I must say that they are good. It is important what the head of the house thinks.

> ...I mean, it is my specific job to, if necessary, get the principals involved in the venture. And make them convinced that this is necessary.

The district administrator described the financial situation of the district as surprisingly good. The economical recession had left its marks, but the situation was being normalized now. Information technology especially seemed to get all the support it needed, as it was evident because of the intranet-project, and the town had a very positive attitude toward it:

> ...from -92 to -95 our cut kept decreasing significantly in the budget. ...-96 we had a zero-budget. It meant that we had as much money as during -95. This year we have increased our cut in the budget in relation to -96 for the first time. The increase was a few per cents. That is the overall picture. Technology is clearly under the town's and also mayor's special protection. He has special interest in the subject and is therefore a spokesperson for it. One can conclude that now is the right time to put these things in order. We have for example commitment from the town that if we receive money from the Ministry the town gives a respective amount also... We have already arranged the financing for the intranet. Now the [financial] situation is quite good, surprisingly good.

4.2 The principal's interview

The principal in the study was a 46-year-old man. His education consisted of many subjects, including history, logopedia, economics, social sciences, and special education. Indeed, he described himself as a "master of mixed sciences." But first and foremost he was a special education teacher. He had been a special education teacher in a vocational school and in the present school before he had become its principal. He had been urged to try the job for a year at first, but at the time he had already held that office for seven years.

4.2.1 About the information strategy

Like the district administrator, the principal had received the information about the information strategy via the "Suomi tietoyhteiskunnaksi" - program. He claimed that the changes in the case school were not so much a result of the information strategy itself but more or less of the fierce competition between schools: "it is the competition, I think, which has set the wheels turning." Indeed, according to the principal:

> The whole intranet project in the case school district had not started without one brave and courageous lower level principal who is not even a computer freak, but who had apparently understood the importance of this information strategy... And no more than a year has passed and here we are, this far. No one thought it could be done. Not the district administrator, whose role must have included these kind of things. Attention, here is the role for you... I mean, the idea didn't come from there.

This demonstrated the importance of one single individual in the educational system. But surely this lower level principal had had to receive support from the district administration and other principals in order to get his idea accepted. Whether the Ministry of Education had been the primary initiative force is left unanswered, but it had surely not acted as a hindrance, anyway. The principal remembered to emphasize the great situation and attitude toward the change the information

strategy promoted in the case district, the upcoming intranet and Internet facilities, no matter what had been the initiative force. He portrayed the IT resources in the case school and their relation to the information strategy as follows:

> We have always been just in the front line of development. For example, we got the money for the ISDN-connection a year ago and 4 to 5000 extra for the purchase of new computers. We had already applied for money even before the [intranet] decision. We now have a bit over 100 000 for the purchase of new computers next summer. It is not that much, but for a school of [*the number of students*] students it is a lot.

> So it [the information strategy] has in fact been a part of our strategy also, although we had not been able to put in fancy words. For example, we already have a friendship school in Hungary which was arranged through e-mail. ...All the communication is conducted through computer networks. ...And then our natural science teaching is taking part in this world-wide Globe-project, which has now become a project in the Pedanet-network, which has been put up by the university and the Career Training Center. So, we have almost unnoticeably been in the van of development.

In the course of the interview, the difficulty of changing things became apparent. The pay regulations were rigid and changes usually added the already heavy workload of teachers but all in all, the principal considered the change the information strategy promoted inevitable and necessary. Highly trained teachers and the competition also facilitated the change:

> Of course we need it [the change the strategy promotes]. There's no escaping the fact. It is a requirement of modern society and future and we, both students and teachers, must adapt to it.

> The time span... It must take... I think that the generation which is now at the lower level will... Now we have individuals who are completely hooked on these things. But through trial and error we will learn... I believe in it. At least in the [*the name of the district*] district it will be successful because of the highly educated teachers. And in the whole Finland too. And because of the competition. Although I criticized it too, competition is also good for schools... It is so tough that one cannot afford to stay behind.

4.2.2 About learning and information technology

In describing his view of learning and teaching, the principal emphasized the importance of students' own active participation. But he also pointed out that students needed to work hard and that not all students were

responsible individuals:

> I represent the line of thought that one learns best by doing... But this learning by doing does not mean just some fancy tricks. Moreover, I am also quite conservative in the sense that hard work creates the base for learning. The tricks and fancy methods are just means for achieving it. ...The only obstacle for it [realizing one's own view of learning] is oneself. One's own limitations and how much one puts effort in it.

> We must also remember that not every student is responsible. For example, one assistant principal had to close their school's open computer lab, because the students only played computer games there. ... youth will have its fling, there's no escaping the fact.

In describing his own attitudes toward information technology and computers, the principal gave quite a positive picture of their potential but was careful not to over-emphasize them. According to him, computers were just tools, means to an end. It was great to notice that computers were not thought as instructional delivery machines in the case school by the teacher, or the principal. He had just started to familiarize himself with IT and modestly reported of his IT skills. Yet, he had already successfully made use of the new technology and was quite optimistic:

> I have just taken the first steps with the computer as a tool in teaching. But it has been a positive experience... I was just yesterday... for once I had had the time to plan the lesson properly and the computer lab was empty. First, we studied the basics together and then, I had searched the Internet beforehand, I guided the students to do the same... I mean, they were so truly motivated that one cannot but use them [computers]. No matter whether a good or a poor student, everybody was involved.

> ...But how much these machines should be used... I think that here in Finland we often get so strongly involved in anything new. I mean that the computer in various school subjects, it is just one way of searching information. It is not the only one. At least I still feel like that.

> Well, it [IT knowhow] is what is expected from a man of my age who is not that enthusiastic... For me it [the computer] is just a tool. I use word processing, I now how to get to the Internet, but I'm not a computer freak... I have noticed that it is a tool for today's world and for the young it has already become a natural tool. For me it has replaced the pen, the typewriter, but it is still an area which needs reinforcing.

He had received some training for curricular, administrative, and book-keeping software but not specifically for educational purposes. He reported that the district had started a wide retraining program for all the

teachers in the district. This retraining was connected to the district-wide decision to connect all its school with optic cable in order to form an intranet. He also supported teacher retraining in general but pointed out that it is a question of teachers' own efforts:

> ...now in [*the name of the district*] we have a large ongoing project regarding this optic cable network. In principle, all teachers will be trained for it. First, teachers who know something of IT will be trained and then a group of 16 teachers will be formed who then teach the other teachers. In our school, every teacher who holds an office or is a long-term employee, and who so desires, can take part in retraining and it will be paid for. And people do want to train themselves. ...It depends on one's own active effort.

The principal was ascertained that IT had wide possibilities in education, but emphasized the importance of teachers' retraining:

> Of course information technology has wide possibilities but whether teachers find the necessary information and databases... Retraining plays a key role in this...
>
> Yes, it is a relevant issue... Teachers' skills [vary greatly]...it is true. But I think that is a question of training. Our staff is smart and conscientious, they will and can learn...

According to the principal, technological resources in the case school were a bit out of step at the present, but the situation would be corrected when the intranet would arrive. However, the case school had already an ISDN-connection[5] to the Internet at the present, hardly outdated technology from the point of view of an average school:

> We are left a bit behind at the moment, we have one computer lab with 20 computers and then in different classes, in biology, languages, history, natural science, in the staff room, in the music class... Well, it is average with regards to the schools here in [*the name of the district*] in general. This year we will purchase 15-20 new modern machines and then we will be back at the front again. And when the optic cable arrives, the situation will be pretty much the same in every school in [*the name of the district*]. ...It [the intranet] will arrive at the end of April. We already have ISDN-connection for example to the Internet.

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[5] ISDN-modems are capable of 128 Kbps (kilobytes per second) transfer rates when an average modem is only capable of 14.4 or 28.8 Kbps and the fastest ones 56 Kbps.

He pointed out that information technology would remain a compulsory subject for all new students in the case school. According to him this was necessary because "the students have very different skill levels" considering IT. But he also argued that IT had become a part of almost every subject, especially in languages, so the integration aspect of the information strategy was becoming realized:

> ...We have agreed that it [IT] will be continued to be taught in connection with student counseling in the new curriculum also. So all the students receive the same familiarizing... And it [IT] has recently become more or less a part of every subject. One only has to look at the reservations for the computer lab... If one does not make the reservation in one week advance one does not stand a chance of getting there. ...Language teachers have clearly been the most enthusiastic ones in utilizing computers in their teaching.

4.2.3 About educational change

The principal acknowledged the emergence of information technology in society and in schools, but he also claimed that "sure it has changed, but for a great many people, including me, it is still a blurry cobweb which we plunge into without really knowing where it actually leads to." Another downside of educational change was the very speed it moves on. However, it had also resulted in quality teaching:

> ...We used to be the ones who set the values and how should I put it, we were bartenders who mixed just the right cocktails for each student and parent. The constant competition and huge change which the school must participate create pressures for the staff and also for the principal, I mean, we are always supposed to lead the way. If not, we are on our own... But it has also increased the quality of teaching. These kind of change efforts are OK, but the speed, it leads to exhausted staff. I mean, it is hard to keep up with the change.

Another visible change had been the reduction of financial resources. He claimed that it is the job of the Ministry of Education to see to it that all schools would be taken into consideration:

> Lately the government's financial support to districts has decreased. ...It has resulted in diminished financial support to schools and in increased student group sizes and therefore in increased workload of teachers.

> ...the Ministry of Finance looks to be the ministry which sets the frames. The Ministries of Education, Environment, and Social Services put out beautiful statements, but the practice is a completely different issue.

> The Ministry of Education... must ensure equal development throughout the nation. It can be seen here in [*name of the district*] too: if we are not constantly fighting tooth and nail, we are left behind. And it is the same thing all over: if the school is not one that strives forwards it is easily left behind. This is where the Ministry of Education must step in...

The principal emphasized the role of the whole school community in changing education. To the question "who or what can change education and what is your role," he replied:

> Well, it is the whole community. My role is... In my opinion, there is only so much I can do on my own... My job is to support the teachers in our school who are capable of such change. ...It must come from inside the house. And we do have teachers who can... We must not forget that a teacher's job is hard and I deeply respect our staff who are strong enough to carry on.

The case school had made use of the opportunity to design their own curriculum. According to the principal, teaching had become more theme-based and free. He claimed that languages had become one of the most popular subjects and that language teachers in the case school were rather young, therefore more receptive to change efforts such as the information strategy. But he also pointed out that more work and effort were required of teachers to carry out these changes:

> It [teaching] has changed toward more theme-like. ...Especially the fact that there are no strict limits, just wide themes [in the new curriculum]. ...It gives freedom of movement within the curriculum. But it is very important that teaching remains to be of good quality even with the freedom.

> It [teaching of English] has changed especially during my time as a principal. In the older days it was just learning words by heart. Now that is only part of it. Nowadays expressing yourself is emphasized, computers... We used to have somewhat old teachers, teachers of older generation who had their habits... Our staff of language teachers has now totally changed. What comes to students and optional courses, I have noticed that languages have become one of the most popular subjects.

> More and more individual curricula are designed for individual subjects and students. ...It requires huge effort and work from teachers' part. At the same time student group sizes have been increasing. We, for example, had an average of 16.9 students in a group a couple of years ago, next year it will be over 20. And for example in German... when a beginning optional language has a group size of 27, the teacher won't have the time to mix too many personal cocktails...

This showed that the principal had similar concerns as the English teacher (see section 4.3.5). An educational change meant more work for already over-loaded staff. Luckily, this had been realized by the principal in the case school, so teachers were not alone.

When commenting on the information strategy and specifically the change in teachers' pay regulations, the principal pointed out the difficulty of labor politics. The younger teachers might be ready for this but there might be a generation gap over the issue:

> It might be... but in practice group sizes increase, teachers' work load increases, and the pay is relatively small, so especially the older teachers feel like they are trapped. The young teachers are very much different. The old teachers in our school worked at home, but the young ones now work more and more at school. They stay at work until four or five everyday.
>
> I think we are moving toward a general wage system. ...But it is a cold hard fact that one should discuss these pay regulations with the proper civil servants and elected officials, so it is a question of cold labor politics.

According to the principal, the gap which might emerge through educational change was not only about generations, but about students and teachers, also. He claimed that in the future the talented students and enthusiastic teachers would stand out more. This view of his could be interpreted more or less as an Social Darwinian view:

> I think that in the future many courses will have levels built within them so that the better students are considered more. That is to say, the differences between the students at the school will grow. Maybe it's a good thing. Students get as far as their abilities allow. And it will mean that those teachers, for example those language teachers who are more enthusiastic, will manage different courses than those who are not. Therefore, teacher differentiation will result also although it is not often thought of.

4.2.4 About the work culture

The principal described the work culture and atmosphere of the case school as encouraging, open, and cooperative. The principal did not see a need for any fundamental changes but wished for the continuation of the present development which meant more cooperation. He

emphasized the cooperative spirit of the school and his own role as a supporting element:

> I stand for open and free work culture and I consider one of the strengths of our school to be the good spirit and the fact that everyone has a relatively free hand. And school is like any work community, if someone has difficulties we all try to help that individual together.
>
> I ask around and observe. An then once a year we have official discussions. I for example try to be at the staff room during every break and I visit classes during lessons, but I don't think that I sort of prowl and snoop around.

As he had said before, cooperation between subjects was encouraged and cooperation was more and more reality in the case school. According to the principal there was lots of cooperation in the case school. The principal argued that the younger generation of teachers seemed to be especially adapted to this:

> We for example have an optional course in media and communication which is called "media game," in which they [the students] produce the news of our school... It is a cooperative course between the art teacher and the Finnish teacher. And we also have an optional course which is cooperatively managed by the music teacher and the art teacher.
>
> Language teachers have worked together with the art teacher a lot, for example concerning a course about the American Indians. During the art lessons they [the students] have searched for information about Indians and drawn and painted and then during the English lessons, they have produced English texts and also made use of information technology. I mean, there is indeed a lot [cooperation]. And especially the new generation is more adapted to it.

The information strategy is all about this kind of cooperation between subjects, search for information, and use of IT. By now it had become evident that in a good case a change toward new open learning environment was indeed possible. The cooperation extended also to other principals in the district and to the lower level of the part of town:

> We have created solid relations between upper level principals in our district. ...that is the positive side of [the name of the district]. We six principals meet regularly. We met just a couple of weeks ago... And then we have good relations with the lower level and the upper level here in [the name of the part of town]. Now we are designing a curriculum together which extends from the kindergarten to the ninth grade.

The principal described the decision-making process, in this example concerning the new curriculum, as project work:

> It is a sort of project work in which we first decide where we are going to. Then we form project groups and each group has its leader. And if the issue at hand concerns our school, the group presents it in a traditional staff meeting which we have about once a month. Then we organize training concerning it and meetings... Teachers pretty much decide upon their own teaching but when it comes to allocation of resources... Well, resources tend to be directed toward teachers who are active themselves...

According to the principal, the relationship with the upper levels of the school system was not as cooperative. He said that the cooperation with the district administrator was "very minimal." But fortunately, he had been in the school district management group a couple of years ago and therefore knew the people and felt comfortable contacting them if needed. But as he said: "it is not very common." According to him, the role of the Ministry of Education was to initiate and the district to administrate, but educational change truly took place at the school level. But the school needed support in the change:

> You ask of their [the Ministry's and the district's] roles and I say that their roles are to support. ...The Ministry of Education should of course be a sort of initiative force. But the role of the district is very much an administrative one. ...They can be sort of innovators, but in the end it [change] starts from the school level nowadays, from the teacher level. And when there are enthusiastic teachers, it is the role of the principal to support them, and on the other hand, the district's role is to support the school. ...I don't see the Ministry or the Board of Education as so superior that I couldn't contact them if needed.

As for himself, he argued that

> Obviously, I am not that visible a principal in the sense that I like to operate here on the local level and work for my school. I have not worked with the upper levels of the system.

4.2.5 The role and position of the principal

At first he had enjoyed the work a lot, but now he felt that the work was quite stressful and hard. As it was pointed out before, he blamed the

speed of change and competition the school faced:

> At first when the school was small, I could say that I really enjoyed it [the work]. It felt like no work at all. It was really pleasant and cozy, we had small student group sizes... Nowadays, this work is very stressful, very hard. It is because of combination of things: The school size has grown a bit. The staff is overloaded with work and resources, well this year is quite reasonable, but I'm afraid of the next year... And then again, the speed of which we go forward. It has completely changed the nature of this work....

He pointed out that the school had become a financially responsible unit. He also argued that principals were quite autonomous nowadays:

> Many things have changed in my work. Our school is responsible for its results, financially speaking. It is a totally new issue. Wages and such... Principals are nowadays, if compared to the old days... It feels rather wild because we do work quite autonomously. I mean, it has not lead to recklessness in any school, on the contrary. It's better that one does not always need to ask somebody...

Although not without criticism or concerns, all in all the principal did not seem to impose any threat to the realization of the information strategy and to educational change, quite the opposite in fact.

4.3 The English teacher's interview

The English teacher in the study was a 41-year-old woman. What made her an interesting case was the fact that she had just been through extensive training which included a course in information technology. The training was made possible by the so called study leave[6] during which she had received many new ideas. This demonstrated the possibilities of retraining. She was also a teacher of Swedish and French, but at the time she taught only English and Swedish. She had been a teacher since 1982 and had held an office in the upper level of the comprehensive school since 1990. Her teaching experience included teaching in the upper secondary school, also. She said that she was presently quite satisfied with her job and the state of the school and

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[6] Vuorotteluvapaa

teaching EFL.

4.3.1 About the information strategy

If we are about to change education with a policy such as the information strategy, we should make sure that the information of it passes through the system. In this case, the teacher had not heard about the strategy before the interview. Although she had no knowledge about the strategy, the issues which it dealt with were familiar to her. Fortunately, her ideas of learning, teaching and IT use were in accordance with the strategy anyway. But this cannot be expected of all teachers. She called for a channel through which individual teachers could pass their opinions to the upper levels of the school system. At least she felt this way. She feared that "these kind of papers and newspaper articles are lost in the information flow." She was after a more efficient way to communicate with other levels. She also pointed out that the principal might have in fact brought the strategy into the teachers' knowledge, but it might have been that she had not really noticed it.

The teacher had specific opinions concerning the information strategy after she had read the summary of it. She had doubts about equal development in schools:

> The text [the strategy] has pretty high hopes. We must understand that there are so many different kinds of schools. What kind of technological resources do schools in the backwoods have? Not all schools have the money to purchase the equipment...

She, similarly as the principal, pointed out that the regulations and contracts concerning teachers' wages and working hours had not yet adjusted to the job descriptions and the amount of work required for cooperative teaching and distance teaching. She felt that these new innovations added up to the teacher's workload and that the pay was

quite small in the first place:

> Well, regulations concerning teachers' pay have not been changed for a long time. The work in the class is just a small portion of the total amount of work. How will it [the cooperation with other teachers and teaching together] be taken into consideration? And of course the pay is quite small in the first place if one thinks of the training needed and other things in general. ...If one thinks of clubs and study circles we have had, and if two teachers teach one club together, the fact is that only one gets paid for it. So regarding the salary, cooperative teaching strikes to me as rather a funny idea right now.

However, she was ultimately quite optimistic regarding the overall idea of the information strategy, its principles, and its realization:

> Yes, it [the view of learning and teaching in the strategy] is quite sensible. One must keep up with the times. Yes, we do need this [the strategy]. If one thinks of how much society has changed, the school must follow the developments. It's not going to work otherwise. The school must prepare the students for society.

> It [the realization of the strategy] takes time for sure. But it will eventually succeed. It only requires one or two interested individuals per school who see the potential of it, nothing else. Yes, I think it will succeed, regardless of the opposition it might encounter...

4.3.2 About learning and information technology

She had a very modern view of learning and teaching, very similar to constructivism. This created a great starting point for educational change and for the successful implementation of the information strategy. Students' own active involvement and varied teaching were her priorities, but she also emphasized the importance of the textbook:

> ...of course it [teaching method] is a combination of things. Some students learn with or without the teacher. Spontaneous production is very important. And of course one must study words, there is no option for that. It makes sense that everything travels through their [students'] minds and arises from their needs and concerns their interests... One must be careful not to teach in an unvaried way... It [teaching] pretty much revolves around the book, although not too strictly. An effort is made so that the student has a chance to talk and produce as much as possible. I try not to talk constantly.

The teacher had quite a positive attitude toward computers and information technology. Her school was connected to the Internet and

had an average number of computers. According to her, there was not much resistance in the case school when it came to IT. She also reported that her personal knowhow and interest had recently risen resulting from the purchase of a PC with Internet facilities to her family. Her personal use of computers involved making handouts and tests, for instance. She also emphasized the importance of her husband as a counselor and tutor in IT. Still, she felt that she was in need for more training and information and according to her this was also the case with most teachers. It seemed that she needed encouragement and information:

> Information technology is OK. But I have little information of it and so do lots of other teachers but I have an interest in it. This [IT and the information strategy] requires a totally new type of method than others. On the other hand, I wonder whether I have the courage to experiment, and then again, what are the actual possibilities.

She emphasized the importance of retraining and personal active involvement. She had not received training much until the present but when the opportunity had arisen she had been very eager to get involved. This also seemed to be the popular opinion in her school:

> I had my first contact with computers in '83 or '84. Then there was a long break until the next time, in '87. But training has been rather minimal. Training is very important. We had a paper posted on the notice-board at school asking who wanted training and it was filled up quickly. Schools have not too much resources for retraining their teachers, but frankly, it is up to one's own active effort. ...The government should retrain a certain number of teachers at a time, in this way the information would spread. ...When I embarked on this present training I made up my mind to chart what new ideas there were. Now that I have had a little distance to my work, I'm sure that it will change. I've gained new ideas and experiments.

The teacher claimed that in the case school information technology was a compulsory subject in the seventh grade but integration to other subjects had not yet been that usual. The reason for this she claimed to be the fact that there were not enough computers at school and the fact that teachers' lacked knowhow. She confirmed the use of computers as drill-and-practice machines in the old days. She considered drill-and-practice use quite dull and mechanic, yet she reported that students had

usually liked it anyway. When she had been in the upper secondary school and in her first IT training, the use of computers had meant using drill-and-practice software in additional courses for revision. As she said: "I didn't know what else to do with computers." This had now changed resulting from her training and since her school now had good, and would have even better technological resources, as we are about to discover when the principal describes the situation in her school now, the use of IT that the information strategy promotes is more likely to take place:

> It [the integration of IT into other subjects] really interests me. I need to talk with the IT people at our school and discuss what could be done. It is one of the first things that I will do when I return to work. I will also ask the principal what is his opinion and to what degree I can make use of IT. It really interests me a lot.

> Now this whole Internet business helps things. The fact is that almost everything there is in English which is an important issue. ...A totally different natural reality is born with the Internet, there can be a person receiving your communication. I mean, before I couldn't imagine how computers could help to communicate. One could think of machines as things that prohibit communication. Now many schools are still lacking behind but things have changed, there are more possibilities. For example if one wants to study a less common language, for example French or Russian, it is not possible without distant learning in many schools.

In the course of the interview another interesting issue arose: the question of a separate computer lab. She claimed that language teachers might have inadequate access to the lab:

> It all depends if there is room in the computer lab or not. I have had relatively good access, I mean that with some groups I could have been there once a week if I had wanted to. But in practice, the lab is very much occupied by IT people and groups. For example, in my previous school language teachers had no chance to get to the computer lab. But in this school I can go there when ever it is not occupied. We also have a computer in one language class but I have not used it. There always seemed to be somebody else in that class.

One could think that each class should have computers of their own, but this is a question of resources. Maybe the information strategy's promise of *enough computers* relates to this. However, the reality seemed to be, like in the case school, that computers were concentrated into one class, the lab. Anyway, the situation in the case school system would change

dramatically in the future as the interviews of the principal and the district administrator demonstrated.

4.3.3 About educational change

As it was with her view of learning and teaching, she also had noticed the change in education in general and curriculum development. She also considered the possibility for schools to design their own curriculum a positive development and had opinions what the change should lead to:

> The school has changed but it is evident that it changes more slowly [than the society at large], but there should be something permanent also. It [the change] should be such that students feel at home at school and see their job meaningful.

> When I was at school we just translated and stuff. The present teaching is far from it. The curriculum is constantly changing. It has changed so that one can stress one's own ideas of teaching and use one's own strengths. It has enabled teachers to make use of their individual skills. It [the liberation of curriculum planning] makes work more meaningful.

She recognized the growing importance of IT and change in society at large and its effect on education, but she also feared that her personal IT knowhow might not be enough for the young:

> It [the importance of technology] has increased of course. Students have computers at home and they really know and can use computers. Sometimes I feel that I'm from another planet when it comes to technological development.

It was clear that she was ready to adapt to the change but needed information and support.

4.3.4 About the work culture

One of the most important issues in changing education is the work culture in the school, its general atmosphere, and attitude toward new innovations. Similarly as the principal did, also the teacher gave a very positive picture of the case school in this sense:

> In our school the atmosphere is quite open, there are lots of opportunities to make a difference. I mean, if you feel like something is important, you can find interested colleagues and support. I can't say that there are any hindrances [for educational change and for one's own ideas]. At least in our school the culture is such that all new ideas are welcome, one can experiment and receive support. Especially for these kind of new innovations which are away from the old practices...

The open work culture of the school had resulted in increased cooperation among teachers. Lessons were often planned together, projects were pursued together with other subjects, and teachers often discussed education in general. The teacher saw this kind of development increasing in the future. She also pointed out that this kind of cooperation required more planning:

> I think now the time is right for cooperation. I think that nowadays the overall spirit is for it. Students have more optional courses and this has also promoted cooperation and these options have increased the possibilities for it. One could offer courses in other languages, like math in English or French cooking or other combinations. This is possible now but it requires huge planning.

> We have had projects with other subjects, such as work on American Indians with the geography and biology teachers. I should try to work together with the math and computer studies teachers in the future. ...Now in [the name of the town part] we are expanding cooperation into the lower level too...

> In our school we, the language teachers, have lots of times stayed after school and planned future lessons together. We do handouts together, consult each other, discuss ideas. I feel that this is a natural development in the future, too.

The teacher described the principal as cooperative, encouraging, open, and unbiased. She gave an impression of an exemplary principal. But this is where the cooperation ended regarding the upper levels of the case school system. From the teacher's perspective the district

administrator was invisible:

> The district administrator is not that visible. Of course he deals more with the principal. But from the teacher's perspective the district administrator's work is not straightforwardly present. Sometimes one can only read from the newspaper what the district administrator has said. I think that it is the bigger questions that the district administrator deals with...

> The principal is much more closer, he really is present in my of work. He gets very closely involved, he is frequently in the staff room listening, discussing, and asking. He discusses with each teacher at the end of the school year, asking what went well and what went wrong and what should be improved and I think that this is a really good thing to do. And he has an impartial stand to all teachers. He tries to take everybody into consideration in purchases and stuff.

Resulting from what has been reported above, it should not be a surprise that in the case school decision-making was an open process and that teachers had a large role to play:

> It [curriculum planning] in our school has been organized so that one language teacher is in a work group and other language teachers give her information and ideas. The curriculum planning project is still unfinished, and of course it will never be truly finished. It sort of changes constantly. ...In staff meetings we decide many things. Financial matters are ultimately decided by the principal, but then again, he takes us into consideration. He puts a suggestion on the notice-board about what has been planned to be purchased and then these issues are discussed together. And when things are purchased the decision will also be posted on the notice-board. So everything is out in the open and accounted for.

The teacher defined the roles of the individuals in the school system and, again, was after better communication across the system:

> Each individual has their own field of responsibility. Broad policies are created in the Ministry of course and the schools carry them out in practice. Somehow teachers should be aware of what do they really think in the Ministry of Education and in the school district administration and what is in fact the larger policy. I mean that there should be discussion with the upper levels also. Although, the principal is some sort of link between the levels. I just think that there should be [communication with the upper level of the school system] but I don't really know if there is enough of it.

In principle, she was against imposed decisions from above, making a point that decision-makers might not understand every-day school practices at all, yet controversially, she trusted their wisdom:

> If everything is just dictated from above, by people who have never taught anything and only have their experiences of their own school years, I must point out that they don't necessarily understand what really goes on at

schools. ...I just think that other people make the decisions and I have always trusted that they are wise enough.

4.3.5 The role and position of the English teacher

Several issues came up regarding the role and position of the English teacher. First of all the teacher saw the information strategy as an interesting program and looked forward to its realization. She agreed with the fact that teachers were in the driving seat for the success of the information strategy: "...it is the teachers who actually carry out the change." However she made a point about time consumption by stating that

> Of course each individual teacher has her own characteristics, families and such. Therefore, finding the time for planning and so on restrict things. Especially if nothing extra is paid for it... Of course there will be resistance since these kind of things mean more meetings and such. Once my fellow teacher said that "there is no time for actual teaching, most of the time is spent on trifle things." So we should decide what is important and what is not.

Although she had recognized the change in her teaching and in her role as a teacher, she had also experienced conflicting expectations from the school and from parents:

> The role of the teacher has indeed changed. The students often say that "you just make us work and wait and don't teach..." They [students and parents] have not really understood the new way of teaching. That is, students may say that "my mom says that this must be done like this...," like it was done when he or she was at school. Expectations were rather different then than they are now. But this present development is far more better...

She also stated that, like herself, many teachers might have been forced to change schools rather frequently, and therefore might not have had the time to really adjust to the new environment in the first place, let alone to changing the school. As it had been with the principal, also the teacher pointed out the difficulty of adopting new things:

> It is all too easy to stick with the old way of doing things and then again, one can never be sure about the outcome of the change. And there is not enough knowledge of these things. One is sort of grown into one's work.

> One needs lots of energy to retrain oneself and to seek information about new innovations and methods.

According to the teacher, the work was often so hectic and time-consuming that these kind of strategy documents might often get ignored or not given enough attention:

> Now that I have been studying, this strategy seems to be OK. But if I had received this paper while I was at work, I might have just treated it as just another paper among others. Time is needed in order to take in these ideas.

Also the teacher pointed out that one of the downsides of teaching today was the growing number of students in class. The positive side of teaching English was the fact that most students had a positive attitude toward English and that students learnt English very much via television and other sources. In her opinion the situation with Swedish for example was very much different.

To sum up the teacher's interview one can conclude that almost everything what was reported of the principal and the case school, of the work culture and school atmosphere and attitudes toward IT, was confirmed by the teacher. Cooperation existed and the work culture was open: the case school provided a fertile ground for educational change. But the teachers must be informed of things like the information strategy, they should not be left in the dark.

Although the principal described educational resources to be better than the teacher, the difference could be a result of the teacher's absence. While the teacher had been in retraining the technological resources had increased in the case school. As it has been pointed out, another major controversy was the flow of information. The principal had received the information of the principles of the strategy but the teacher had not. The knowledge of the strategy should have been in the school when the teacher had still been there when she had not yet left for her training. However, one must conclude that the realization of the information

strategy and the success of educational change it promotes would not encounter too much resistance from this teacher if only she received support and was given adequate hardware.

Her view of learning and teaching was more or less in accordance with the information strategy and constructivistic principles. What made this interesting was the fact that she had not been familiar with the strategy in the first place. Although not very flattering a result but it still demonstrated that the view of learning and teaching the strategy promotes can in fact be the prevailing view in a school if the school and the teacher have kept up with the times. The retraining the teacher had just gone through might had contributed to this. This of course increased the strategy's chances of success because the deep perceptions of learning and teaching do not have to be changed that much.

The teacher was interested in and saw the new potential of information technology and the atmosphere in her school was receptive for new ideas. Cooperation is needed in order to change the school and she, her fellow teachers, at least some of them, and the principal seemed to be all for it.

5 DISCUSSION AND CONCLUSION

What was attempted? The objective was to build an understanding of educational change and understand the implications of the information strategy. This was done by investigating what kind of building blocks were needed for a successful educational change, both in theory and in practice. These blocks are more easily defined in theory but to actually find a case where these blocks can be found in a proper order, is much more harder. Therefore, a case where the ground was receptive for educational change and for the information strategy was sought after. After the interviews and their analysis I must conclude that such a case was more or less found. Most of the necessary pieces required for such a change were there, with some reservations. The case district in this study proved to be quite a positive case considering educational change and the implementation of the information strategy. The most interesting issues that came up are discussed here.

The following issues ran through the background section and the actual interviews: the information strategy, the view of learning, the use of IT in education, the meaning of educational change, the work culture of the schools, and the role of the change agents. These issues are of crucial importance in implementing the information strategy. It was also suggested in the background section that these issues together form the framework for this complex change.

About the information strategy. Questions concerning the realization of the information strategy brought up a couple of interesting issues. The major controversy concerned the flow of information. The principal and the district administrator had received the information of the principles of the strategy but the teacher had not. This problem was present in all three interviews: How to promote the flow of information? The district administrator and the principal pointed a finger of scorn at each other. It was suggested by Fullan (p.3) that one of the main reasons why

educational reforms fail was the fact that the reform does not reach its audience. Therefore, the fluent flow of information should be one of the primary concerns in implementing the information strategy. It goes without saying that all change agents should receive the information of these kind of national plans. Luckily the teacher had corresponding views with the strategy when she read about it before the interview. But this was still a poor result.

Another controversy concerned the initiator of the changes in the district. What was in fact the strategy's initiative force? The district had already set the wheels turning by itself, or at least the district administrator said so. However, it was made clear that the strategy had actually resulted in concrete support to the district. The initiator of the intranet-project was also a bit vague. The teacher did not connect it with the information strategy at all. The principal suggested that it had been the idea of a single lower level principal. The district administrator said that the intranet project was more or less a direct result of the information strategy. So, the case school system has still some work to do in order to improve the flow of information and cooperation through the system.

An interesting question arose from all this: what in fact had been the specific role of the information strategy in the change that the case school district had been going through and which of these changes would have taken place even without it? It could be that changes in society result in changes in receptive and up-to-date schools. The change can occur regardless of the information strategy if there are people who are interested in such a change. One thing is for sure, these kind of strategy documents do not hinder the change in the schools, moreover, I think that they are necessary in order to at least inform the not so up-to-date schools of the changes needed.

All interviewees pointed out that the Ministry should pay special attention to rural schools and their evolution. Obviously, not all schools and school

districts have as equally good a situation as the case school district. Money seemed not to be a problem in the case school administration. This was because of the information strategy.

Especially the teacher and the principal had doubts about the changes in wage regulations. Wages were considered quite inflexible, therefore not facilitating cooperative teaching promoted by the strategy. The rigidity of wages is a general phenomenon in Finnish society. If two teachers cannot work together in a single classroom and get paid for it, how can we expect cooperative teaching to take place. In this way cooperation remains limited to the work outside classrooms, which is good, but not as good as it could be.

Still, there was also a consensus that the information strategy will eventually succeed but that it takes time and effort. Similarly to what was claimed in the background section, the interviewees pointed out that a critical mass of interested and enthusiastic people is needed. Then others will follow.

About the view of learning. In the theoretical background section it was suggested that in order to implement the information strategy and constructivist use of computers, we must have a constructivist view of learning. In this case all the interviewees, including the district administrator, seemed to promote this kind of view of learning. Students' own active involvement and change in the teacher's role were emphasized. The teacher and the principal also emphasized the responsibility of the learner and the importance of hard work. In the background section it was suggested that it is only natural that most teachers still have a very behavioristic view of learning, therefore decreasing the chances of success of the information strategy. This was not true here, quite the opposite. This must have been one of the main factors why the case school was so well on its way toward an open learning environment. However, we must bear in mind that to say

something does not necessarily make it so. It is good to have idealistic thoughts and ideas but to transfer them into the classroom might be difficult.

About information technology. A crucial step toward the realization of the information strategy was taken because of the district's and the school's progressive attitude toward IT. At each level the potential and the importance of IT was acknowledged, even the mayor of the town was strongly promoting it. Therefore, proper attention was given to the information strategy. The computer was seen as a tool which can help the learning process and not as a drilling instrument or as a teaching machine. The days of the instructional delivery machine were over in the case school, but this is only logical since the educators' view of learning was not behavioristic. Interestingly, all interviewees reported a generation gap regarding IT. In their opinion, today's young are much more skillful and have better knowledge of IT than they do. This demonstrated the importance of retraining educators.

About educational change. In the background section many researchers strongly emphasized the need for the school to follow the changes in society at large. All the participants of the study agreed with this. All interviewees completely agreed with the issues of the information strategy. Schools must follow the changes in society. However, the district administrator especially, rejected the idea of the school as a pioneering institution.

About the culture of the school. Most researchers claimed that educational change needed alteration in the culture of schools and that cultural change required strong, persistent efforts, open work culture and true cooperation. In this respect the case school system gave a very positive picture, especially at the school level. The teacher and the principal both reported of a very open, cooperative, and supportive work culture. The atmosphere was receptive for change. The district

administrator claimed that these were the district's goals also. This was confirmed by the other participants excluding the cooperation aspect: Cooperation and communication seemed to stop at the school level. However, the teacher and the principal did not see this as a major problem, the independence of the school was mainly a good thing as long as the district supported the school when necessary.

About the role of the change agents. The importance of individual change agents were strongly stressed in the background section. The case was very much about individuals as parts of a bigger system. The district administrator supported the efforts by the school to change and provided the necessary resources for the school. The principal supported the change promoted by the district and the information strategy and encouraged the teachers to make use of these new machines that had been brought to the school. After having read about the strategy, the teacher saw this development necessary and was very receptive to it also. Her retraining must have contributed to this, if only she had received information of the strategy in the first place.

Cooperation was promoted but all interviewees had a segmented view of the school system. Each level was given a role to play. The roles that the interviewees gave to the different levels were more or less in accordance with the roles that were discussed in the background section by various researchers: The government decides on the policy (see 2.2.3.1). The district makes sure that its schools carry out this policy and supports and applies pressure when needed (see 2.2.3.2). The principal must facilitate the change and collaborate with the teachers (see 2.2.3.3). The teacher actually brings the change into effect (see 2.2.3.4). All in all, these roles were more or less fulfilled by the individuals in the case school system, at least this is what they said. Segmentation did not seem to be a hindrance but how can we expect the teacher to bring about change that she had not even heard of? In this case, the decisions made by the district administration forced the teacher to take IT into consideration. IT

and retraining of the teacher were so strongly promoted by the district that teachers had to notice it. In this way the message of the information strategy was transferred to teachers. However, it would have been nice if the teachers had been made aware of the background of these decisions, too.

The district administration's role was not as big as what was suggested in the background section (2.2.3.2). The district administration certainly supported the change and had a very positive attitude toward the information strategy, but the independence of the individual school was eminent. This variation between the background studies and the case could be explained by differences in the school systems: Most of the research presented in the background was American (e.g. Cuban 1988, Fullan 1991) since not much research on educational change had been done in Finland. The Finnish and the American district school administrations are not alike. Still, it must be remembered that not much change would probably have taken place in the district if the district administration had not been supporting IT and educational change, both mentally and financially.

Concerning the teacher's role, the teacher also pointed out that all teachers should have access to computer facilities. A separate computer lab was not the ideal solution in her opinion. If all classes had enough computers for easy and instant access, it would be more likely that computers would be used as effective tools. The question of what is enough rises again, but this is a subject for another study.

Another issue concerns the effect of retraining. Although the importance of retraining has been strongly emphasized in the background section and previous studies (e.g. Fullan 1991, Stoddart and Niederhauser 1993, Taalas 1995, Tella 1994b), the effect of the teacher's present retraining in this study could not be isolated. She claimed that the present training had given her lots of new ideas, including the use of IT

in her teaching, but this issue requires more research. All in all it was made clear that the teacher wanted more specific information about the actual possibilities the information revolution brought along.

So what? It became clear that educational change was difficult and required huge amounts of work. Changes happen rapidly in society but slowly at schools. Despite this, the case school district was well on its way into the realization of new open learning environments and the information strategy. The information revolution was truly taking place in the case district, not without effort or work, but through open-minded, cooperative, and up-to-date professionals who wanted the best for their students no matter what it took. Still, on the negative side, one of the main results was the inefficient flow of information in the case school system.

The positive results of the present study included the fact that enthusiastic and up-to-date individuals, retraining, collaboration, cooperation, and open and supportive working environment were beneficiary for educational change and for the implementation of the information strategy. The positive results outweighed the negative ones. However, it would be ungrounded to suggest that these elements necessarily result in successful change or that they are absolutely crucial for it. It would also be unfounded to suggest that what has been argued here applies to all school systems, or even to most school systems. The present study did not strive for statistical generalizations. Each case is unique and the present case just sheds some light in order to understand what might make educational change possible. Therefore, the results of this study add up to the theories of educational change. These theories could be tested by more statistical means in the future, or more research could be done on other districts.

This study did not consider the role or the position of the provincial government (lääninhallitus) in educational change. Although its role must

be quite similar to that of the school district administration, it could be more thoroughly studied. In addition, the provincial government was not studied since the provincial government in Finland is presently undergoing a major change and its future role is still vague.

The results would have been more reliable if lessons in the case school had been observed. In this way, the reality of classroom practices would have been investigated. But to do this properly would have required a lengthy period of time which put it out of reach for this study. Moreover, this was a study of educational change from the organizational point of view and the teacher and the classroom represented just one level of the school organization.

Ideas for further study:
- teacher training: its present state regarding IT;
- the technological resources in Finnish schools: equality for all or just for few;
- the generation gap regarding IT in society and in schools: will the young generation walk over the older generation;
- Finnish teachers' view of learning: constructivism or behaviorism;
- A teaching package concerning the use of computers as tools in teaching English as a second language.

Due to the fact that this has been a qualitative case study, no specific conclusions have been presented here. I will conclude this study by discussing my personal opinions of the issues discussed in this study.

Changes are up to individuals to some extent. Changes within an educational system affect individual teachers', principals', and district administrators' abilities to cope with their job. If educators are expected to cope with too many changes too quickly this undermines the educational system. In-service training needs to be more effective and more accessible. In addition, it must relate to current issues and actual

classroom practices. Having just gone through teacher education I have a pretty good picture of the teaching of IT skills there. It is almost non-existing. If it will not change, we must start retraining graduating students as well. Much is left on teachers themselves. It is evident that most of the older teachers will never use IT in their teaching because this new technology could seem too complicated and threatening to them. Moreover, if they have survived without IT so far, why bother? This is why all teachers must at least educate themselves about the possibilities the new technology offers. Only after this may teachers reject IT. But let us not reject them offhand. Let us not grow into our work too deeply. Nothing will ever change if educators just worry about their monthly pay-checks and loose interest in teaching. Enthusiastic individuals and true professionals are essential and they should receive all the support they need from the school system.

The information strategy includes the use of IT. Integrating IT into foreign language teaching is far from simple if integration is to be effective and appropriate. Taking on computer technology as an extension of one's professional development and classroom practices requires a lengthy process of personal evolution. We must start small and experience with new ways of teaching and see what suits our teaching and school. Educators across the system must be made aware of the new possibilities these new technological tools bring with them. If the objective is to create meaningful communication in a FLT classroom and since meaningful communication is the best way toward active and constructive learning, why should we not use the best equipment available to facilitate this? It is true that old methods and views work too, there are generations of proof of it, but this does not mean that education should not move with the times. Information technologies could result in better learning if educators and students just knew how to make use of them.

We, language teachers, who understand best what it means to teach and learn a language will have to make the information revolution work for us and for our students. If we see the changes built in the information strategy necessary we must take the initiative and be active. We can start to build up the critical mass of people needed to get things going. However, we should not allow our ignorance or timidity of technology to cause us to sell out our professional principles and our beliefs. Technology is just a tool, not an almighty and absolute solution to our problems. But it is a tool that the rest of society is using more and more and it is this society that our students must enter.

Although individuals are important, one of the most important things in educational change is the work culture and atmosphere of the school community. Coercion without enablement does not work. Changes must be negotiated together. Education system needs to have an organizational structure which helps educators to work effectively to accommodate the changes that have to be made. According to the principles of systems thinking, one system does not exist in isolation from other systems. An educational system is more than a sum of its parts and its parts are inter-connected. Nothing can be truly accomplished if some levels and parts of this system are left disregarded. People who work together must have a greater potential for creativity than those who work apart. To be able to cope with change we must learn to work on curriculum development together. In this way the changes built in the information strategy have better chances of success.

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A synopsis of the information strategy

KOULUTUKSEN JA TUTKIMUKSEN TIETOSTRATEGIA -TIIVISTELMÄ ASIOISTA, JOTKA KOSKEVAT ERITYISESTI KOULUTUSTA

Opetusministeriö 1995

Yhteiskunta on kehittymässä tietoyhteiskunnaksi, jossa tieto ja siihen perustuva osaaminen ovat yhä ratkaisevampia tuotannon tekijöitä. Keskeinen suuntaus on tietotekniikan ja tiedonvälityksen, erityisesti televiestinnän sovelluksiin perustuva verkottuminen.

Koulutus ja tutkimus ovat keskeisiä tekijöitä kehitettäessä Suomea tietoyhteiskuntana. Tietoyhteiskunnan kansalaisilta vaaditaan hyvää yleissivistystä, monipuolisia taitoja toimia ja ratkaista ongelmia sekä jatkuvasti muuttuvan ja verkottuvan työelämän vaatimaa ammattitaitoa. Laadukas koulutus ja sekä perustutkimuksen että soveltavan tutkimuksen tasapainoinen kehittäminen ovat innovaatioiden syntymisen edellytyksiä. Viime vuosina koululaitos ei ole kokonaisuudessaan pysynyt muun yhteiskunnan tietoteknistymisen vauhdissa.

Tietoyhteiskunnassa tieto on tärkeä voimavara. Tiedon tuottamisen ja välittämisen mahdollistavan tekniikan kehitys vaikuttaa olennaisesti koulutuksen ja tutkimuksen rakenteisiin, sisältöihin ja työtapoihin.

Opetusministeriö asetti 13.9.1994 asiantuntijaryhmän valmistelemaan koulutuksen ja tutkimuksen tietostrategiaa. Tämä strategia-asiakirja sisältää asiantuntijaryhmän näkemyksen ja ehdotukset siitä, miten koulutuksen ja tutkimuksen tasoa voidaan parantaa hyödyntämällä tietotekniikkaa sekä edistää kansalaisten mahdollisuuksia saada ja käyttää tietoa. Strategiaan liittyy yksityiskohtainen toimenpideohjelma.

Kertakoulutuksesta jatkuvaan oppimiseen

Verkottuvat toimintatavat ja muuttuvat osaamisvaatimukset vaativat koulutusjärjestelmältä joustavuutta ja muuntautumiskykyä. Opetushallinnon ja koulutusorganisaatioiden toimin on edistettävä koulutusjärjestelmän verkottumista ja luotava avoimia oppimisympäristöjä tukemaan muutosta kertakoulutuksesta jatkuvaan oppimiseen. Koulutuksen kaikilla tasoilla on lisättävä mahdollisuuksia yksilölliseen opiskeluun ja kehitettävä siihen soveltuvia opiskelumuotoja sekä oppimateriaali- ja tietopalveluja.

Nykyinen oppimiskäsitys korostaa oppijan vastuuta omasta oppimisestaan ja hänen aktiivista rooliaan tiedonhankkijana. Opettaja muuttuu kirjatiedon jakajasta opiskelijaa ohjaavaksi tutoriksi. Kouluyhteisö kehittyy toiminta- ja oppimiskeskukseksi. Jotta uudet oppimismenetelmät ja tietotekniikka saataisiin tehokkaasti käyttöön, niitä on kehitettävä ja sovellettava osana korkeakoulujen ja oppilaitosten normaalia toimintaa.

Koulutyössä tulee perehtyä eri medioiden ominaispiirteisiin ja mahdollisuuksiin sekä harjoitella viestintää erilaisissa vuorovaikutus tilanteissa. Erityistä huomiota tulee kiinnittää äidinkielen ja vieraiden kielten taitoihin. Kieliaineiden ja muiden aineiden yhteistyötä ja yhteisopetusta lisäämällä monipuolistetaan oppilaiden mahdollisuuksia oppia kansainvälistä vuorovaikutusta ja viestintää.

Tietoyhteiskunnan perustaidot kaikille

Yleissivistävän koulun tehtävä on antaa jokaiselle tytölle ja pojalle tietoyhteiskunnan edellyttämät ja jatko-opinnoissa tarvittavat monipuoliset tiedonhankinnan, tiedonhallinnan ja viestinnän perustaidot. Koulutuksen kaikilla tasoilla on huolehdittava siitä, että nämä taidot pysyvät ajan tasalla.

Aikuisilla tulee olla mahdollisuus omaksua tiedonhankinnan, tiedonhallinnan, viestinnän ja tietotekniikan perustaidot sekä jatkuvasti syventää niitä.

Tietoyhteiskunnan ammatilliset taidot

Ammatillisen koulutuksen tulee antaa sellaiset tietoyhteiskuntataidot, että ne vastaavat verkottuvan ja jatkuvasti muuttuvan ja kansainvälistyvän työelämän vaatimuksia. Opetushallinnon ja koulutusorganisaatioiden tulee yhdessä huolehtia tietoteollisuuden kehittymistä tukevan perus- ja täydennyskoulutuksen riittävyydestä, tasosta ja laadusta. Kansallisena tavoitteena on, että tieto- ja viestintätekniikan sekä tietoaineistoja ja palveluja tuottavilla toimialoilla ammatillinen osaaminen on Suomessa kansainvälistä huippua.

Eri tietoammattilaisten osaamista kehitetään vastaamaan muuttuvien ammattikuvien edellyttämää monialaisuutta. Erityisesti kirjasto- ja tietopalvelualan perus- ja täydennyskoulutuksessa otetaan huomioon alan tehtävien ja palvelujen muuttuminen tietotekniikan käyttöönoton myötä.

Opettajat keskeisessä asemassa

Jatkuvan koulutuksen periaatteen toteuttamisessa opettajien ammattitaidon merkitystä ei voi liiaksi korostaa. Opettajilta vaaditaan oman alansa tiedon ja sen välitysmuotojen hallintaa sekä kykyä ohjata oppijaa itsenäisesti hankkimaan ja käyttämään tietoa. Monimuoto-opetuksessa opettajien tulee kyetä hyödyntämään tarvittavia medioita ja muokkaamaan ja kehittämään niihin soveltuvia oppimateriaaleja. Tietotekniikan tuleminen työvälineeksi ja sen alakohtaisten sovellusten hallinta edellyttävät kaikilta opettajilta uudenlaisia taitoja. Kaikkien aineiden opettajien tulee osata hyödyntää tietotekniikkaa ja ottaa tietoyhteiskunnan vaatimukset huomioon omassa opetuksessaan. Opettajien perus- ja täydennyskoulutuksen edellytyksiä ja sisältöä kehitetään vastaamaan näitä vaatimuksia.

Koulutuksen ja tutkimuksen tietoverkot

Kansallinen tieto- ja viestintätekniikan infrastruktuuri, suomalainen tiedon valtaväylä kootaan moniportaiseksi mutta saumattomaksi järjestelmäksi. Koulutuksen ja tutkimuksen tietoverkon rakentamisessa osaksi maailmanlaajuista avointa tietoverkkoa pidetään lähtökohtana nykyistä Internetiä ja kehittyvien laajakaistaverkkojen ja palvelujen standardeja.

Koulut ja oppilaitokset nähdään kiinteänä osana lähiympäristöään. Koulujen yhteyksiä muihin oppilaitoksiin sekä kuntaan ja elinkeinoelämään lisätään. Tietoverkkoratkaisut tehdään siten, että ne tukevat tätä kehitystä. Tekninen toteutus perustuu parhaiten alueelliseen verkottumiseen ja yhteistyöhön.

Koko koulutusjärjestelmä ja kirjastolaitos tulee kiireesti saattaa tietoverkkojen palvelujen piiriin. Kaikille oppilaitoksille turvataan tietty palvelujen taso. Huolehditaan siitä, että sekä tieteellisissä että yleisissä kirjastoissa on riittävät laitteet ja tietoliikenneyhteydet sekä niiden tehokkaan käytön edellyttämä asiantuntemus. Erityistä huomiota kiinnitetään yleisten kirjastojen tietoverkkopalvelujen kehittämiseen ja kirjastojen kehittämiseen avoimen tietoverkon solmukohtina.

Päätäntävaltaa yleissivistävän ja ammatillisen peruskoulutuksen järjestämisestä ja sisällöstä on siirretty koulujen ylläpitäjille, kunnille ja kuntayhtymille. Kuntien tulee huolehtia siitä, että koululla on uusien taitojen opettamiseen tarvittavat laitteet ja verkkoyhteydet.

Interview schedule

Haastattelurunko
Rehtori

Teema 1: TAUSTA
-Nimi, ikä, koulutus, opetettavat aineet, opetuskokemus, aikaisemmat työpaikat
Miten luonnehtisitte itseänne johtajana?
-Työtyytyväisyys
Miten olet viihtynyt nykyisessä toimessasi?
Mitä mieltä olet kouluopetuksesta nykyään?
        Yläasteella? Englanninopetus?

Teema 2: OPPIMISKÄSITYS
-Oppimiskäsitys
Miten mielestäsi oppilas oppii?
Perustatko opetuksesi/opetuskäsityksesi jollekin tietylle teorialle tai metodille?
Pystytkö toteuttamaan opetuksellisia ja hallinnollisia ihanteitasi nykytoimessasi?
Miten pyrit ohjaamaan opettajia? Annatteko heidän itse päättää metodeistaan vai
        pyrittekö edistämään omia ihanteitanne?
Nykyisinhän kouluilla on melko vapaat kädet järjestää ja suunnitella omat
        opetussuunnitelmansa,   miten   teidän   koulunne   on   mukauttanut
        opetussuunnitelmaansa? Onko se tarpeellistakaan?

Teema 3: TIETOKONEAVUSTEINEN KIELENOPETUS
-Asenteet tietotekniikkaan ja henkilökohtainen käyttö
Miten mieltä olet tietotekniikasta ja informaatioteknologiasta?
Miten arvioisit omaa tietoteknistä osaamistasi?
Oletko saanut tietoteknistä koulutusta? Milloin? Haluisitko lisää?
Onko tietotekniikan ja tietoverkkojen merkitys muuttunut viime vuosina?
Vaikuttaako se koulutukseen?
Minkälaiset tietotekniset resurssit teillä on koulussa?
Miten ja kuinka paljon hyödynnät tietokonetta itse opetuksessa?
Minkälainen on sellainen tuntisi, jonka aikana hyödynnät tietotekniikkaa?
Miten ja kuinka paljon hyödynnät tietokonetta muussa työssäsi, valmistelussa ym.?
Miten ja kuinka paljon hyödynnät tietokonetta työn ulkopuolella?
Miten paljon teidän koululla hyödynnetään tietotekniikkaa?
Voisiko tietotekniikkaa hyödyntää opetuksessa eri tavalla, kuin esim nyt hyödynnetään?
        Esteet?
Onko kielten ja englannin opetuksella erityisasema tietotekniikkaa ajatellen? Miksi
        kieltenopettajat yleensä hallitsevat ja hyödyntävät tietotekniikkaa vähemmän kuin
        muut opettajat keskimäärin? Pitäisikö heidän hallita enemmän?
Mikä tilanne on teidän koulussa kieltenopettajilla: pääsevätkö he esim. ATK-luokkaan
        jos he haluavat?

Teema 4: KOULUTUKSEN MUUTOS
Onko koulu muuttunut viime aikoina?
Tarvitaanko koulutuksen muutosta? Miksi? Millaista?
Mitkä ovat omat vaikutusmahdollisuutenne?
Miten/kuka koulutusta voidaan muuttaa (jos sitä halutaan)?
Minkälaisia muutosehdotelmia olet kokenut; ts. strategioita tai määräyksiä urasi
        varrella? Miten ne ovat onnistuneet? Miksi?

Minkälainen työkulttuuri on kouluyhteisössä? Keskusteletko opettajien kanssa
        opetuksesta? Entä muiden rehtoreiden kanssa? Miten koulutoimenjohto ja
        opetustoimenjohtaja näkyvät teidän koulussanne tai omassa työssäsi? Saatko

tarvittaessa heiltä tukea?
Miten teet päätöksiä? Miten luonnehtisit omaa päätösvaltaasi?
Haluaisitko muuttaa jotakin työyhteisössäsi?

Teema 5: TIETOSTRATEGIA
Olitko kuullut OPM:n tietostrategiasta ennen haastattelua? ("Koulutuksen ja tutkimuksen
   tietostrategia") Minkä kautta? Tiesitkö mikä on sen pääsisältö?
-Kerro haastateltavalle tietostrategian pääsisältö ja viittaa EU:n ja muiden maiden
   strategioihin, kerro kommentointi ja -keskeyttämis-mahdollisuudesta! Muista
   tauot!

Yhteiskunta on kehittymässä tietoyhteiskunnaksi, jossa tieto ja siihen perustuva osaaminen ovat yhä ratkaisevampia tuotannon tekijöitä. Keskeinen suuntaus on tietotekniikan ja tiedonvälityksen, erityisesti televiestinnän sovelluksiin perustuva verkottuminen. Tietotekniikka on tehnyt mahdolliseksi uudenlaiset tuotteiden ja palveluiden tuotanto- ja jakelutekniikat sekä uudenlaiset viestintä- ja toimintatavat.

Tietotekniikan vaikutuksia voidaan liioittelematta kuvata kumouksellisiksi koko yhteiskunnan kannalta. Ne ulottuvat lähes kaikille inhimillisen toiminnan alueille, ja ne tuntuvat voimakkaina ja nopeasti niin taloudessa ja elinkeinoelämässä kuin koulutuksessa ja tutkimuksessakin.

Viime vuosina koululaitos ei ole kokonaisuudessaan pysynyt muun yhteiskunnan tietoteknistymisen vauhdissa. Tällä hetkellä koulujen laitteistovarustus on vaihteleva ja osin vanhentunut. Hyvätkin laitteet ovat osittain vajaakäytössä. Opettajien taidot käyttää tietotekniikkaa vaihtelevat.

Nykyinen oppimiskäsitys korostaa oppijan vastuuta omasta oppimisestaan ja hänen aktiivista rooliaan tiedonhankkijana. Opettaja muuttuu kirjatiedon jakajasta opiskelijaa ohjaavaksi tutoriksi. Kouluyhteisö kehittyy toiminta- ja oppimiskeskukseksi. Kirjastoissa ja tietopalveluissa sähköinen tiedonvälitys ja digitaaliset tietotuotteet tulevat yhä useammin perinteisten palvelujen rinnalle yhdenvertaisiksi tiedon lähteiksi.

Koulutuksen kaikilla tasoilla pitää lisätä mahdollisuuksia yksilölliseen opiskeluun. Oppimateriaali- ja tietopalveluja kehitetään ja etä- ja monimuoto-opetusta lisätään. ...luodaan avoimia oppimisympäristöjä tukemaan muutosta kertakoulutuksesta jatkuvaan oppimiseen. Koko koulutusjärjestelmä saatetaan kiireesti tietoverkkojen palvelujen piiriin ja turvataan oppilaitosten mahdollisuudet näiden palvelujen käyttöön. Yleissivistävän koulun tulee antaa jokaiselle tietoyhteiskunnan edellyttämät ja jatko-opinnoissa tarvittavat monipuoliset tiedonhankinnan ja -hallinnon perustaidot

Opettajien palkkaus- ja työaikajärjestelyjä koskevia sopimuksia ja säännöksiä muutetaan. Etä- ja monimuoto-opetuksen suunnittelun, toteutuksen ja ohjauksen korvausperusteet selkeytetään ja suhteutetaan etä- ja monimuoto-opetuksen työnkuvaan ja työmäärään.

Koulutyössä tulee perehtyä eri medioiden ominaispiirteisiin ja mahdollisuuksiin sekä harjoitella viestintää erilaisissa vuorovaikutus tilanteissa. Erityistä huomiota tulee kiinnittää äidinkielen ja vieraiden kielten taitoihin. Kieliaineiden ja muiden aineiden yhteistyötä ja yhteisopetusta lisäämällä monipuolistetaan oppilaiden mahdollisuuksia oppia kansainvälistä vuorovaikutusta ja viestintää.

Minkälaisia ajatuksia tietostrategian päämäärät ja sisältö herättävät?
Miten tämä on huomioitu teidän koulussanne ja erityisesti omassa opetuksessanne?

Pitäisikö huomioida eri tavalla?
Miksi ei? Jos pitäisi huomioida enemmän, niin mitkä ovat esteenä?

OPM tukee tätä kehitystä
Kuntien tulee huolehtia siitä, että koululla on näiden taitojen opettamiseen tarvittavat laitteet ja verkkoyhteydet. Täydennyskoulutuksella varmistetaan, että opettajilla on riittävät taidot ja että kunnissa on tarvittava tukihenkilöstö.

Opettajat ovat keskeisessä asemassa

Tietotekniikan tuleminen työvälineeksi ja sen alakohtaisten sovellusten hallinta edellyttävät kaikilta opettajilta uudenlaisia taitoja. Kaikkien aineiden opettajien tulee osata hyödyntää tietotekniikkaa ja ottaa tietoyhteiskunnan vaatimukset huomioon omassa opetuksessaan.

Opettajien perus- ja täydennyskoulutuksen edellytyksiä ja sisältöä kehitetään vastaamaan tietoyhteiskunnan vaatimuksia. Opettajia pitää kouluttaa monimuoto-opetuksessa tarvittavien välineiden käyttöön ja niihin soveltuvien oppimateriaalien muokkaamiseen ja kehittämiseen. Opettajilla tulee olla valmius oman alansa tiedon ja sen välitysmuotojen hallintaan.

Miten tämä on havaittavissa? Oletko selvittänyt mitä tämä tarkoittaa käytännössä, eg. rahoitus, kurssitus? Mikä tilanne koulussanne on yleensäkin rahojen suhteen? Mitä mahdollisuuksia sinulla on vaikuttaa rahoitusasioihin?
Miten olet huolehtinut opettajien täydennyskoulutuksesta? Omalla vastuulla/omasta halusta kiinni, vai pyritkö "patistamaan" heitä uudelleenkoulutukseen? Jos on ollut, niin minkälaista koulutusta?

Peruskoulun opetussuunnitelman perusteissa edellytetään, että oppilas oppii peruskoulun aikana käyttämään tietotekniikan sovelluksia. Opiskelun tavoitteena on, että oppilas aikaisemmasta kokemuksesta riippumatta osaa käyttää tietokoneita ja keskeisimpiä työvälineohjelmia sekä saa realistisen kuvan tietotekniikan hyödyntämismahdollisuuksista eri aineissa.

Tietotekniikka on peruskoulun opetussuunnitelmien perusteissa aihekokonaisuus, jonka opetustuntimäärää ei ole määritetty tuntijakosuunnitelmassa. Aihekokonaisuuksille on määritetty tavoitteet, mutta opetus toteutetaan joko muiden aineiden yhteydessä tai peruskoulun yläasteella valinnaisaineena sen mukaan kuin paikallisessa opetus suunnitelmassa esitetään.

Miten tietotekniikan opetus on järjestetty koulussanne?
Miten tietotekniikan opetus mielestäsi tulisi järjestää koulussa? Integrointi?
Oletko yrittäneet eri aineiden ja opettajien yhteistyötä, projekteja ym.?
Miten vieraiden kielten ja etenkin englannin opetuksessa tietotekniikan hyödyntäminen on hoidettu ja pitäisikö sitä yleensäkään hyödyntää? Oletko pyrkinyt vaikuttamaan tähän?

-Miten suhtautuu ehdotetun kaltaiseen muutokseen? Tarvitaanko tällaista muutosta? Jotkut tutkijat väittävät että, ellei koululaitos muutu vastaamaan uuden tietoyhteiskunnan tarpeisiin, se saattaa hukkua omaan mahdottomuuteensa.
-Tunnetko ehdotetun muutoksen omaksesi? Rehtorin asema? Koulutoimenjohto? Opettajan asema?
-Miten tämä ketju ylhäältä alas toimii? (OPM-koulutoimenjohto-rehtori-opettaja)?
-Miksiköhäni esim. tieto tietostrategiasta ei ole tullut sinulle asti? (jos ei tietoa)
Luuletko, että tietostrategialla on mahdollisuuksia onnistua? Millä aikavälillä? Miksi? Miksi ei? Mitä tekisit toisin?

Muuta kommentoitavaa? Kiitos!

Example of an interview transcription

The following symbols were used in transcribing the interviews:

-      Pause
- -   Longer pause
[ ]   Inaudible
[...]   Deleted
...   Unfinished thought or skipped utterance(s)

Rehtorin haastattelu 7.3.1997

Q: Aloitetaan taustasta - Kerro nimesi - ikäsi ja koulutuksesi - Opetettavat aineet tällä hetkellä - aikaisempi työkokemus

A: No joo - Mä oon [...] ja 46 vuotias ja yhtkandi ja erityisopettaja - Sellainen sekatieteiden kandi - että historiasta logopediaan ja siltä väliltä - erityispedagogiikkaa ja kansantaloustiedettä - Kaikkee mahdollista - Jotka on tässä rehtorin työssä osoittaunut tosi tarpeellisiksi - - Olen kiinnostunut erityisopetuksesta - Ite opetan nyt tuota - kaikista eniten mistä tykkään - niin on yhteiskuntaoppia - Työkokemus mulla on sellainen - backgroundi - että - -76 valmistui erityisopettajaksi - olin vajaat kaksi vuotta alkuun Viitaniemessä - entinen [...] ammattikoulu - olin siellä kuraattorina ja sitten [...] erityisopettajana - Sitten mun piti siirtyä tuohon [...] virkaan - - - Mutta sitten täältä lähti rehtori eläkkeelle -90 - jotkut yllytti - että kokeileppas - että miltä se tuntuu - kun se oli vuoden väliaikainen - Mutta nyt tätä on sitten seitsemättä vuotta tahkottu tätä -

Q: No mitä sä olet tykännyt olla rehtorina

A: Aluksi varsinkin tää oli kun oli pieni koulu- oikeen semmoinen - - voi sanoa - että töissä oli oikeen mukavaakin - Tuntui ettei edes työssä käykkään - Oli tosi mukavaa ja leppoisaa - oli pienet ryhmät... Nykyään tää on tosi stressaavaa - tosi raskasta - - Siihen liittyy monia asioita - - Koulun koko on vähän suurentunut - Henkilökunta on niin kamalan kuormitettu - resurssit - no meillä on vielä tämä vuosi kohtuullinen - mutta kun on seuraavaa vuotta suunniteltu...[ ] - Ja sitten tuo vauhti - millä nyt mennään eteenpäin - Se on muuttanut tuon työn luonteen kokonaan - Me jotka ennen asetettiin oikeastaan nuo arvot - - ollaan niinku - - miten sen nyt sanos - - baarimikkoja - jotka sekoittaa juuri oikeat cocktailit jokaiselle oppilaalle ja vanhemmille - - - Ennen kaikkea tää jatkuva kilpailu ja hirvittävä muutos - jossa koulun on koko ajan oltava mukana - Se aiheuttaa semmoisen kuormituksen koko henkilökunnassa ja sitä kautta tietysti myös rehtorissa - että pitäisi niinku pystyä olla kärkiaurana - Jossei sitä ole - niin - tuntuu - että jää niinku omiin hoteihinsa - tosin siihen on justiin tää [...] liittyminen - tosin mää luulen - että toisaalta jos kattoo niinku niinpäin - että on se palvellut sitä - että koulun laatu on noussut - - Että ei voi enää vetää näitä vanhoja parrunpätkiä eteenpäin -

Q: Hmm - Mitä mieltä sä olet kouluopetuksesta yleensäkin nykyään - erikseen yläasteella ja sitten vielä erityisesti englanninopetuksesta

A: No tota - Sekin on muuttunut sinä aikana justiin sinä aikana kun mää oon ollut rehtorina - Meillä oli koko opettajakaarti kielissä - vanhoja - vanhan kaartin ihmisiä - joilla oli tapansa... Meillä on muuttunut aivan täydellisesti - - Mitä nyt oppilaita seuraa -

ja mitä valinnaisena otetaan kieliä - niin kielistä on tullut yksi suosituimpia aineita - Tietysti kieltenopetus on muuttunut - että se on enempi aikaan sidottu - se ole sillä lailla niinku - vielä takavuosina se oli paljon sanojen pänttäämistä - ulkolukua - Nyt se on vaan pieni osa sitä - Siellä on sitä itsensä ilmaisua ja - siellä käytetään - kielet on esimerkiksi olleet tietokoneiden käyttäjinä - oheiskäyttäjinä - Ihan selkeesti oppiaineista innokkaimpia -

Q: Joo - Mitenkäs sitten ihan noin oppimiskäsityksestä - Onko sulla jonkin näköinen tietty metodi tai teoria jota sä käytät - miten sun mielestä oppilas oppii

A: No - kyllä mun mielestä - mä edustan sitä - että kyllä se parhaiten oppii kun se ite tekee - Sen tekemisen kautta -

Q: No pystytkö sää sitten toteuttamaan tällaista sun omaa oppimiskäsitystä tässä koulussa - että onko sille jotain esteitä

A: Heh-heh - Kyllä kai siinä on eniten esteenä ite - - Että omat rajoituksensa - Kuinka paljon jaksaa satsata - - - Mutta - mun miestä se ite tekeminen - niin ei ole pelkästään mitään hienoja temppuja - vaan kyllä mä siinä oon ehkä semmoinen konservatiivikin - että - luja duuni - luja työ on se pohjaperusta - Ja sitten ne temppuilut ja hienot keinot ne on vaan sitten välineitä -

Q: Mitenkäs siten - pyritkö sää ohjaamaan opettajia tähän samantyyliseen opetukseen - vai saako ne ite päättää ihan...

A: Kyllä meillä saa ihan ite päättää - että tottakai mää sitten - - sillä lailla kaikkea projekteja ja rahaa suunnataan - niin - - huomaamatta - niin sellaiset opettajat on - sitten esillä - - jotka tekee ite ja - - kyllä mää edustan sellaista hyvin vapaata - ja mun mielestä meidän koulun vahvuus on justiin se - että meillä on aika hyvä henki ja kaikki saa tavallaan tehä... Ja kyllähän koulu on - niinku muutkin työyhteisöt - että niillä joilla on vähän vaikeampaa - niin niitä pyritään sitten auttamaan vaikka kimpassa -

Q: Keskusteletko sää opettajien kanssa paljon opetuksesta

A: No kyselen ja seuraan - Ja sitten tämmösiä - - sanotaanko - että kerran vuoteen tämmöisiä virallisia keskusteluja - Kyllä se on - että mä esimerkiksi pyrin kaikki välitunnit olemaan opettajanhuoneessa ja mä käyn luokissa - toimittelemassa asioita kesken tuntia - mutta en mää siellä niinku kyttää omasta mielestäni ainakaan -

Q: Joo - Pidätkös sää paljon yhteyttä muiden rehtoreiden kanssa

A: Se on tässä [...] justiinsa se positiivinen puoli - - Meillä on niinku tavallaan syntynyt - meillä on yläasteen rehtorit aika kiinteä porukka - Kuusi rehtoria - - Me pidetään säännöllisesti kokouksia - juuri pari viikkoa sitten - ennen hiihtolomaa oltiin yhdessä - Ja sitten meillä on tää [...] alue - meillä on sitten tämä oma välinsä - meillä on aika kiinteet ala-asteen ja yläasteen välit - Nythän me ollaan rakentamassa yhteistä OPSia - ihan päiväkodista ysiluokalle - Varsinkin viimeisen vuoden aikana - viimeksi keskiviikkona - ollaan oltu koko iltapäivä kouluttautumassa täällä -

Q: Nythän kouluilla tosin on aika vapaat kädet suunnitella se oma opetussuunnitelmansa - onko teillä opetussuunnitelma paljon muuttunut ja mihin suuntaan
A: Kyllä - - No se on muuttunut ehkä enempi semmoiseksi teemamaisemmaksi - se opetus - Ja nimenomaan se - että tarkasti ei rajata - vaan on tietyt aihekokonaisuudet - Joku kieletkin on - ilmaistu vaan yhdellä lauseella - mitä yhden vuoden aikana tehdään - elikkä se antaa silloin hyvin vapaat kädet liikkua se sisällä - - Mutta se - että se on tärkeetä - että se opetuksen laatu pysyy korkeana vaikka annetaan vapaat kädet - Siinä on hyvänä tää iso [...] - elikkä iso [...] - että kyllä se tulee heti lukioista ja ammattikouluista takautuvasti jos oppilailla menee huonosti -

Q: Joo - Kun sää puhuit näistä muutospaineista - niin minkälaista muutosta sää haluaisit - haluaisitko sää yleensäkään muuttaa koulua ja koulutusta

A: Kyllä mää haluaisin - mutta se että se on nyt niin kiivastahtista - että - se rupee nyt sitten heijastumaan työyhteisön väsymisenä - Että - siinä ei tahota kerta kaikkiaan pysyä niinku mukana - Kyllä - kyllä ilman muuta... ja justiinsa - sää kysyt - että mihin suuntaan - niin tämä näin - kun tää tietotekniikka on tulossa ja muut - valokaapeliyhteydet joka kouluun - että - - justiin tässä eilen valmistelin pitkästä aikaa rauhassa tunnin ja tietokoneluokka oli vapaana - ensin katsottiin perusasiat ja sitten mä olin katsonut Internetistä valmiiksi kaikki mitä ne etsii... Niin kyllä ne oli niin motivoituneita - että - ei niitä voi olla hyväksikäyttämättä - Että oli huono tai hyvä oppilas - niin kaikki oli innolla mukana -

Q: Mitkäs sun omat vaikutusmahdollisuudet on muuttaa koulua - vai miten tai ketkä sitä koulua pystyy muuttaa

A: No - kyllähän se on koko yhteisö - että kyllähän mun tehtävä... - mää nään - että yksistään mä en pysty tekeen... Mun tehtävä mun mielestä on tukee niitä opettajia meidän koululla - jotka kykenee siihen muutokseen - koska kannettu vesi ei mun mielestä kaivossa pysy - Se pitää lähteä sieltä talon sisältä - Ja meillä on sellaisia opettajia - jotka tuota... se pitää muistaa - että työ on raskasta ja mää kunnioitan syvästi meidän väkee - jotka jaksaa tehdä -

Q: Joo - Onko sun aikana ollut tällaisia laajakantaisia muutosyrityksiä - ohjelmia - sellaisia yläältä päin tulleita - että pitäis toteuttaa jotain kokonaisuutta

A: No onhan se silleen tullut - että esimerkiksi omaa työtä ajatellen - Meidän koulu on tulosvastuullinen yksikkö - taloudellisessa mielessä - Se on tullut ihan uutena - Kaikki palkat ja muut on... Se taas vaikuttaa siihen - että ite päätetään kaikki ryhmät ja muuta - Mutta se - justiinsa jos tarkoitetaan pelkästään oppimiseen vaikuttavaa - ei ole mitään käskytystä tullut - että on tehtävä - Kyllä se on lähtenyt - että onko se tämä terve kilpailu - mikä on pistänyt... että opetussuunnitelmastakin sen huomaa - että onko meillä nyt kolmas vai neljäs suunnitelma - kolmas menossa - neljään vuoteen -

Q: Niin - kun oli puhetta - että rehtorien kanssa on yhteistyötä - niin mitenkäs siten koulutoimenjohtajan kanssa

A: Se on hyvin minimaalista - Joskus - jos jotain on - niin soittelemalla - mutta - mulla oli sellainen onni - minkä nyt jälkikäteen huomaa - että kun liityttiin [...] - niin - mä olin kaksi vuotta johtoryhmässä - niin mä opin tuntee ne ihmiset - elikkä mä en pidä sitä silleen ongelmana - että jos mun tarttee saada sieltä tietoa - niin mä... Kun henkilökohtaisesti tuntee - voi hyvin ottaa yhteyttä - Mutta se on hyvin vähäistä - Kyllä rehtorit on nykyään - kun vertaa entisiä aikoja - niin vaikka ollaan iso kaupunki - niin tuntuu aika hurjalta - kyllä me toimitaan aika itsenäisesti - - - Ei se mun mielestä holtittomuuteen ole mennyt millään koululla - päinvastoin - - Parempi kun ei tartte aina kysellä -

Q: Niin - haluaistko sää jotain muuttaa tässä sun työyhteisössä - silleen niin kuin työkulttuurin kannalta

A: Mitäköhän mä siihen sanoisin... - - No kyllä semmoinen pieni muutos siihen suuntaan - mihin ollaan nyt menossa - että aletaan tekeen yhteistyötä enempi - - Mutta en mää mitään sellaisia perustavaa laatua olevia asioita... Ehkä tuollasissa asioissa kuin oppilaiden ryhmittelyssä olis jotain - Kyllä mä luulen - että tulevaisuudessa tulee enemmän sellaisia sisäänrakennettuja tasokursseja - Tavallaan ne hyvät oppilaat tulee huomoiduksi - Että erot siellä koulun sisällä oppilaiden välillä tulee kasvamaan - - Ehkä se on hyväkin - Mennään niinkuin sen mukaan mitä kyvyt antaa myöten - - Ja se tulee johtamaan siihen että ne opettajat - jotka on innostuneita vaikka kielissä tulee todennäköisesti vetään eri ryhmiä - Se eriyttää myöskin niitä - vaikka sitä ei kovin usein mietitä -

Q: Mitenkäs näistä opetussuunnitelmista esimerkiksi päätetään - että miten sä yleensäkin teet päätöksiä - onko teillä esimerkiksi perinteisiä opettajankokouksia

A: Se on tietynlainen projektityö - että ensiksi päätetään - että mihin suuntaan ollaan menossa - Ja sitten perustetaan tietyt projektiryhmät ja tietyllä ryhmällä on aina vetäjänsä - Ja sitten se ryhmä esittelee - jos se koskee meidän koulua - ihan perinteisessä opettajankokouksessa - joita on keskimäärin kerran kuukaudessa - sitä asiaa - pidetään koulutusta sen tiimoilta - yhteisiä palavereita - Varsinkin kun tehdään tätä - nyt työstettävää opetussuunnitelmaa -

Q: Siirrytäänpä teknologiaan ja tietokoneavusteiseen opetukseen - Ilmeisestikin suhtaidut siihen myönteisesti sen perusteella mitä olet sanonut aikaisemmin - mutta miten arvioisit omaa tietoteknistä tietotaitoasi

A: No kyllä se semmoista mitä tämän ikäisen miehen - joka ei ole ite hirveästi innostunut... Kyllä se on mulla työväline - se on mulla pöydällä - käytän tekstinkäsittelyä - lukujärjestysohjelmia - osaan Internettiin mennä ja osaan ite laittaa osoitteen - Mutta en ole sellainen tietokonefriikki - jotta... - Se on mulla tullut sen tekemisen kautta - Olen huomannut justiin sen - että se on ajan väline ja nuorille se on jo semmoinen työväline jota ne osaa jo luontevasti käyttää - Mulla se on niinku - korvannut kynän - ja sitten kirjoituskoneen - kumpaakaan en käytä - - Mutta kyllä se on alue - joka vaatii vahvistumista -

Q: Oletko sä saanut koulutusta

A: On me vähän saanut - mutta ihan näihin omiin lukujärjestyksenteko-ohjelmiin - hallinto-ohjelmiin - kirjanpito-ohjelmiin - että nythän meillä on [...] iso projekti juuri meneillään siinä - kun tää valokaapelihomma tulee - että periaatteessa kaikki opettajat koulutetaan - ensin tällaiset vähän osaavat ja sitten muodostetaan semmoinen 16 opettajan tiimi - jotka kouluttavat kaikkia [...] opettajia -

Q: Minkäslaiset tietotekniset resurssit teillä on koululla

A: Meillä on - pikkuisen ollaan tällä hetkellä jäljessä - että meillä on yksi tietokoneluokka 20 koneella ja sitten on eri pisteissä - biologiassa - kielissä - historiassa - luonnontietiessä - opettajanhuoneessa pari konetta - musiikissa... No se on [...] kouluihin nähe sieltä keskiväliltä - mutta nyt on varauduttu siihen - että tänä vuonna uusitaan semmoinen 15-20 ihan modernia konetta - että sitten me hypähdetään ihan sinne keulille - Ja sitten kun ne valokaapeliyhteydet tulee - niin - sittenhän ne on suurin piirtein samanlaiset koko [...] -

Q: Niin milloinkas ne valokaapeliyhteydet tulee

A: Huhtikuun loppuun mennessä - Ja on meillä nyt jo ISDN-yhteydet esimerkiksi Internettiin - Että kyllä meillä pääsee sieltä yhdestä luokasta verkkoon suoraan -

Q: Joo - Ennen kuin mennään tuohon strategiaan tarkasti - niin onko sun mielestä tietotekniikan ja tietoverkkojen merkitys muuttunut viime aikoina

A: Onhan se muuttunut - mutta kyllä se on suurelle osalle ihmisiä - niin kuin mullekin - sellainen hämärä hämähäkin seitti ja johon sukeltaudutaan - mutta ei tiedetä mihin se oikeen menee - - Mutta - se on - kuten ite jo sanoin olen juuri ensiaskelia ottanut tuossa tietokone oheisvälineenä opetuksessa - tähän asti se on ollut vain tekstinkäsittelyä millä oppilaat on esitelmiä tehnyt - Mutta se on ollut positiivinen kokemus -

Q: Joo - Kyllä - - Näet että sillä on mahdollisuuksia koulutuksessa pidemmältikin

A: Ilman muuta - ilman muuta - Se on vaan sitten - että löydetään ne tietokannat - Ja siinä on justiin se opettajien koulutus avainasemassa -

Q: Olitkos sää kuullut aikaisemmin tästä koulutuksen ja tutkimuksen tietostrategiasta ennen tätä haastattelua

A: No en sillä nimellä - mutta tuota - puhutaan opetus tiedon valtatiellä - ja sitten kun luin tuosta - niin huomasin - että puhutaan samasta asiasta -

Q: Niin - sehän on vuonna -95 - kun opetusministeriö julkaisi tämän tietostrategian - Samanaikaisestihan on - muitakin strategioita - esimerkiksi Suomi tietoyhteiskunnaksi ja muissa maissa - Euroopassa - EU:ssa on valkoinen paperi ja Ruotsissa ja USAssa samankaltaisia strategioita - että se on tällainen maailmanlaajuinen kampanja - - Tuota minäpä luen ihan suoria pätkiä täältä strategiasta ja keskeytä ihan vapaasti ja annan kyllä välistäkin aikaa kommentoinnille...

A: Joo -

Q: Täällähän sanotaan - että yhteiskunta on kehittymässä tietoyhteiskunnaksi - jossa tieto ja siihen perustuva osaaminen ovat yhä ratkaisevampia tuotannon tekijöitä - Keskeinen suuntaus on tietotekniikan ja tiedonvälityksen - erityisesti televiestinnän sovelluksiin perustuva verkottuminen - Ja tietotekniikan vaikutuksia voidaan liioittelematta kuvata kumouksellisiksi koko yhteiskunnan kannalta - Ja ne niinku ulottuvat lähes kaikille inhimillisen toiminnan alueille - etenkin koulutukseen ja tutkimukseenkin - - Siellä taas toisaalta sanotaan silleen - että viime vuosina koululaitos ei ole kokonaisuudessaan pysynyt muun yhteiskunnan tietoteknistymisen vauhdissa - Tällä hetkellä koulujen laitteistovarustus on vaihteleva ja osin vanhentunut - Hyvätkin laitteet ovat osittain vajaakäytössä - Opettajien taidot käyttää tietotekniikkaa vaihtelevat -

A: Joo - Se on tota yksi asia justiin - että meidän opettajien taidot... se on totta - Mutta musta se on koulutuskysymys - Meidän opettajakunta on fiksua porukkaa ja tunnollista - kyllähän ne sen oppii - mutta - se - että - kuinka paljon täytys olla koneita - että niitä pystyis tehokkaasti käyttämään eri oppiaineissa - - Ja kuinka paljon sitä konetta... siinäkin on musta - että - meillä Suomessa on aina se tapa - että minun [ ] näin vanhana konkarina - Että joka asiaan mennään niin hirveen täysillä mukaan - se tietokonehomma on eri oppiaineissa - se on vain yksi keino hankkia sitä tietoa - Ei se oo ainut - Se on ainakin minun käsitys vielä tässä vaiheessa -

Q: Täällä strategiassa puhutaan yleensäkin niinku oppimiskäsityksestä - että se on aika laaja paperi siinä mielessä - että nykyinen oppimiskäsitys korostaa oppijan vastuuta omasta oppimisestaan ja hänen aktiivista rooliaan tiedonhankkijana - Opettaja muuttuu kirjatiedon jakajasta opiskelijaa ohjaavaksi tutoriksi - Kouluyhteisö kehittyy toiminta- ja oppimiskeskukseksi - - Ja koulutuksen kaikilla tasoilla pitää lisätä mahdollisuuksia yksilölliseen opiskeluun - ...luodaan avoimia oppimisympäristöjä - muutosta kertakoulutuksesta jatkuvaan oppimiseen - Koko koulutusjärjestelmä saatetaan kiireesti tietoverkkojen palvelujen piiriin ja turvataan oppilaitosten mahdollisuudet näiden palvelujen käyttöön - Ja yleissivistävän koulun tulee antaa jokaiselle tietoyhteiskunnan edellyttämät ja jatko-opinnoissa tarvittavat monipuoliset tiedonhankinnan ja -hallinnon perustaidot -

Q: Että tässä on kyse aika isosta muutoksesta jo oppimiskäsityksessäkin

A: [...] se on nyt menossa - että me ollaan aika hienosti isona alueena menossa - että nämä valokaapeliyhteydet tulee - niin meillä on kaikilla kouluilla sitten - ala-asteella - - ala-asteelta lukioon loppuun asti - niin mahdollisuus olla näissä tietoverkoissa ja erilaisissa tietokannoissa - - Mutta tota - - se - niin tuossa minulla osu silmään - että se vastuullinen oppija - kun me esimerkiksi OPSissa ruvetaan käyttämään ei oppilas vaan oppija käsitystä - niin tuota - se vastuullisuus - se meidän on syytä muistaa - että kaikki ei oo vastuullisia vaikka ollaan kuin - että tuossa on kuusi kilometria tuohon suuntaan - länteen päin - niin hienot vehkeet kuin vaan voi olla - [...] - niin - apulaisrehtori ennen hiihtolomaa joutui laittaa kiinni - mikähän sen nimi on - sellainen avoin tietokonehalli siellä... - laittaa kiinni sen - kun siellä oppilaat ei muuta kuin pelasivat - Siinä on vielä...

Nuori on aina nuori - ei siitä mihinkään... Se tarttee nimen omaan sitä ohjausta - siinä on juuri se homma... Siinä on meillä opettajilla... Tulee ilmeisesti entistä enemmän sellaiset henkilökohtaiset opetussuunnitelmat eri aineissa - - että eti sää sitä ja mee sää - ettikää työ pareina tuota noin - se vaatii taas opettajilta hirveää panostusta ja työntekoa - että se pystyy sen tekee - Ryhmät samanaikaisesti on kasvanut - Meilläkin on esimerkkinä sanon - että meillä keskimääränen ryhmäkoko oli vielä kaksi-kolme vuotta sitten semmoinen 16 -9 - nyt meillä on ensi vuonna keskimääräinen ryhmäkoko yli 20 - - Ja kun vaikkapa valinnaisen saksan ryhmä - kun alkavana kielenä on 27 oppilasta - Niin siellä ei henkilökohtaisia keittoja ei paljon opettaja jatkuvasti jaksa tehdä -

Q: Niin täällä puhutaan myös projekteista - että olis kahtakin opettajaa... Täällähän toisaalta sitten sanotaan - että opettajien palkkaus- ja työaikajärjestelyjä koskevia sopimuksia ja säännöksiä muutetaan - Etä- ja monimuoto-opetuksen suunnittelun - toteutuksen ja ohjauksen korvausperusteet selkeytetään ja suhteutetaan siihen työmäärään - Toisaalta sanotaan taas - että erityistä huomiota tulee kiinnittää äidinkielen ja vieraiden kielten taitoihin - Kieliaineiden ja muiden aineiden yhteistyötä ja yhteisopetusta lisäämällä monipuolistetaan oppilaiden mahdollisuuksia oppia kansainvälistä vuorovaikutusta ja viestintää -

Miten tämä on nyt periaatteessa - onko tämä toteutunut - onko mahdollisuuksia

A: No siis - saattaa se olla - mutta käytännössä kun ryhmäkoot kasvaa - opettajien työmäärä kasvaa ja siis suhteessa palkka on kuitenkin pieni - Niin varsinkin vanhat opettajat kokee - että ne on pudonnut niinku loukkuun - Meillähän tulee nuoret opettajat jo ihan eri puolelta - Vanhat opettajat teki ainakin meillä paljon töitä kotona - Nuoret opettajat ei tee kotona niin paljon hommia - vaan ne jää kouluun - ne on neljään - puoli viiteen asti - joka päivä töissä - Mutta se - se on semmoinen käytäntö tämmöinen yli oppiainerajojen tapahtuva yhteistyö - Meillä on esimerkiksi valinnaisaineena tämmöiseen viestintään liittyvä aine kuin mediapeli - jossa ne tekee vaikkapa meidän uutiset - viikkouutiset - oliko ne tänään...

Q: Joo - oli lappu seinällä -

A: Joo - Se on - kuvaamataidon opettajan ja äidinkielen opettajan yhteisaine - - Ja sitten on tämmöinen musiikinopettajan ja kuviksenopettajan yhteis - valinnaisaine olemassa - Kieltenopettajat on kuviksenopettajan kanssa tehneet tavattoman paljon yhteistyötä - esimerkiksi semmoisen aiheen tiimoilta kuin intiaanit - Että ne on kuviksen tunneilla ettinyt tietoja intiaaneista ja piirtänyt ja kuvitusta ja taas englannin tunneilla vastaavasti tehneet englanninkielisiä tekstejä ja siinä on sitten vielä tietotekniikkaa käytetty hyväksi - - Että kyllä sitä on - Ja etenkin tuo uusi sukupolvi siihen tuloo -

Q: Mitenkäs se palkkaus sitten...

A: Ei ne saa mitään ylimääräistä -

Q: Niin kun täällä toisaalta sanotaan - että niitä muutetaan - että mikähän siinä on esteenä

A: No siihen varmaan on se kokonaispalkkaus homma mihin ollaan menossa - Että - elikkä kokonaispalkkaus on samanlainen kun esimerkiksi mun työaika on - Lukee jossain virkaehtosopimuksessa - että - pääsääntöisesti noudattaa virastotyöaikaa... Mutta ei niistä sitten kukaan maksa - jos vaikka niinku ensi viikko on - että kolmena-neljänä iltana on yhdeksään asti töissä ja lähden aamulla kahdeksaksi töihin - - Käyn valillä syömässä ja lähen takasin - Että - justiinsa - pitäis osata ottaakin joskus vähän vapaata -

Q: Joo - Niin sitten täällä sanotaan - että opetusministeriö tukee tätä kehitystä - ja että kuntien tulee huolehtia siitä - että koululla on näiden taitojen opettamiseen tarvittavat laitteet ja verkkoyhteydet...

A: Niin - mutta sehän on sitten kylmä tosiasia - että sun pitäis sitten luottamusmiehen kanssa jutella siitä - että se on sitten kylmää palkkapolitiikkaa - - Ollut viimeaikoina - että tuota - valtionavut on pienentynyt kunnille - Tulee yksi könttäsumma kaupungille - Ja siitä selkeästi seurauksena se - että - - kunnat on vähentänyt kanssa satsaamista koulupuoleen - se näkyy siinä ryhmäkokojen kasvamisena ja sitä kautta opettajan työmäärän suurentumisena -

Q: Joo - toisaalta siellähän painotetaan justiin että opettajat ovat keskeisessä asemassa - Täydennyskoulutuksella varmistetaan - että opettajilla on riittävät taidot ja että kunnissa on tarvittava tukihenkilöstö - Kaikkien aineiden opettajien tulee osata hyödyntää tietotekniikkaa ja ottaa tietoyhteiskunnan vaatimukset huomioon omassa opetuksessaan -

A: No kyllä ne varmaa tossa tulee - mutta siis opetusministeriön - miten sen nyt sanoisi - - Valtiovarainministeriö näyttää olevan se ministerö - joka määrää ne puitteet - - Että opetusministeriö - sosiaaliministeriö ja ympäristöministeriö sanelee kauniita - lausuntoja ja käytännöt on sitten vähän eri... Tuossa yliopistolla seuraat - niin taitaa olla ihan samalla lailla
Q: Kyllä - - Onko sulla itellä minkälaiset mahdollisuudet vaikuttaa rahoitusasioihin - koulutukseen...

A: No se - että mä - nythän meillä on vielä tänä vuonna oikeen hyvinkin koulutusrahaa - että kaikki viranhaltijat ja pitkäaikaiset tuntiopettajat - jotka vain haluaa - niin niitten koulutus maksetaan - Mutta ei tosin enää päivärahoja - että ne on matkat ja koulutusmaksut - jos on jotain pakollista - Kyllä justiinsa mun pöydällä on pari-kolme - tännän on justiin Vantaalla ollut meidän matikanopettajan tekemässä fysiikan laudaturia - vähän yli viiskymppinen nainen - - - Se kestää vuoden... Justiin toisen anomus on tässä kauppaoppilaitoksen tietokonekurssille - Että kyllä ne ihmiset hakeutuu -

Q: Että se on omasta kiinnostuksesta kiinni

A: Joo - omasta aktiivisuudesta -

Q: Mitenkäs teidän koulussa tietotekniikan opetus on järjestetty - kun täällä toisaalta sanotaan - että opetus toteutetaan joko muiden aineiden yhteydessä tai peruskoulun yläasteella valinnaisaineena sen mukaan kuin paikallisessa opetussuunnitelmassa esitetään -

A: Meillä se on silleen - että seiskaluokalla meillä oli vanhassa OPSissa - jota vielä noudatetaan - joka oli vastoin valtioneuvoston säädöksiä - - oliko se 0 -4 kurssia tietotekniikkaa - Elikkä jokainen oppis vähän tekstinkäsittelyä ja muuta... - ottaa yhteydet Internettiin ja se nyt säilyy - kun meidän opinto-ohjaaja on tietokonemiehiä ite - On sovittu - että se tuossa uudessakin OPSissa on sisällytetty opinto-ohjaukseen - Elikkä niillä on se sama perehdyttäminen - Mutta tosin tasoerot on niin hirveet - toiset on - osaa vaikka mitä - muuta toiset ei sitten taas osaa - - Sitten se valinnaisuus pitää paikkaansa - ja kyllä se on tullut melkein - joka aineeseen pikkuhiljaa - että - kun kahtoo ATK-luokan varuksia opettajanhuoneen seinällä - niin kyllä jos ei viikkoa ennen varaa - niin ei sinne taho päästä -

Q: Niin - täällä justiin painotetaan sitä - että tietotekniikkaa käytettäisiin työvälineenä -

A: Joo -

Q: - Mutta - - miltä susta tuntuu tällainen tietostrategia noin kokonaisuutena - tarvitaanko tällaista

A: Tarvitaan me ilman muuta - Ei siitä pääse mihinkään - Se on nykyaikaa ja tulevaisuutta ja meidän - oppilaitten - ja opettajien pitää muuntautua tähän nykyaikaan ja tulevaisuuteen -

Q: Niin - tuolla teoriapuolella tutkijat väittää - että ellei koululaitos muutu vastaamaan uuden tietoyhteiskunnan tarpeisiin - se hukkuu omaan mahdottomuuteensa - että sen järjestää jokuu muu sitten...

A: Joo -

Q: Mitenkäs tämmöinen - jos ajattelet tuota strategiaa - niin tuntuuko se niinku omalta - vai tuntuuko se siltä - että se vain annetaan tuolta ylhäältä alaspäin - että tehkää näin

A: No - - ei se silleen tunnu siltä - - Me ollaan aina pikkuisen justiin keretty edelle - että esimerkiksi jo vuosi sitten saatiin hankittua ne rahat niihin ISDN-yhteyksiin ja - 4-5000 hankittiin ylimääräisiä rahoja tietokoneiden hankintaan - Ja nyt taas ennen kuin tuli nämä päätökset - niin oltiin tehty jo anomus - että meillä on tuossa vähän toista sataa tuhatta rahaa ensi kesäksi tietokoneiden hankintoihin - Eihän se hirveä määrä ole - mutta pienelle koululle - 250 oppilaan koululle se on iso raha - - Niin että kyllä se kuuluu tavallaan - meillä sitä ei ole osattu noin hienosti määritellä - mutta kyllä se meidän toimintastrategiaan on ihan samalla tavalla kuulunut - - Ja meillä on esimerkiksi jo - toista kertaa nyt tulossa - tuolla Unkarissa sähköpostin avulla hankittu yhteyskoulu - - Ja sitten - me ollaan oltu jo kerran ja sieltä tulee nyt keväällä toista kertaa vieraat jo... Viestintä tapahtuu sähköisiä verkkoja avuksi käyttäen - Ensiksi se aloitettiin kirjeillä - ja sitten nyt on menty tietokoneisiin - - Ja samaten meillähän on luonnontieteet tällaisessa maailmanlaajuisessa Globe-projektissa - joka nytten lähtee yhtenä projektina tähän yliopiston ja täydennyskoulutuskeskuksen Pedanet-verkkoon - - Et kyllä - huomaamatta me olemme tässä olleet ihan kärkijoukoissa -

Q: Mitenkäs kun mun tutkimuksen aiheena on myös tämä ketju OPM-koulutoimenjohto-rehtori-opettaja - niin miten se sun mielestä tämä yhteys toimii - että mikä on kunkin rooli - esimerkiksi koulutoimenjohtajan ja opetusministeriön - ja miten tämä tietostrategia esimerkiksi - kun se ei ole sillä tavalla suoranaisena asiana tullut esille niin - - miten se viesti kulkee

A: Kyllä se varmaan on mulle tullut - mutta ei sillä termillä - Nää tiedon valtatiet ja Suomi tietoyhteiskunnaksi - niin ne oli tuttuja termejä - mutta nehän liitty siihen ihan samaan -

Q: Niin Suomi tietoyhteiskunnaksi on yksi tietostrategian osa...

A: Joo - - - Niin - sää kysyt niitten rooleja - niin mun mielestä niitten roolit on tukea - Ja - toimia niinku - opetusministeriönhän tietysti pitäisi olla kanssa tämmöinen niinku - alullepanija - Mutta kouluviraston rooli on niin pitkälle hallinnollinen - - Että - jos siellä on joku kehittämispäällikkö - niin ne voi kyllä toimia sellaisina innovaattoreina - mutta kyllä se melkein koulun tasolta nykyään kyllä lähte - ja opettajien tasolta - Ja siitä kun on innokkaita opettajia - - niin sen rehtorin tulee tukea sitä - ja sen kouluviraston pitää taas antaa sille koululle tukea ja - sitten nää viestintävaiheetkin on silleen siten että - ei sitä koe sitä opetusministeriötä tai opetushallitusta enää niin sellaisena - päällikkövaltaisena - että sinne voi ottaa yhteyttä jos on tarvis jotain apua -

Q: Ootkos sää saanut sieltä apua

A: No - en mää ole tähän mennessä saanut sieltä muuta kuin koululle tuhannen markan stipendin mutta sekin on hyvä kun se on ensimmäinen viime keväänä sain ja nytten älysin anoa toisen kerran sieltä opetushallituksesta - Että mä en oo ilmeisesti ite sellainen näkyvä rehtori - että mä oon mielellään täällä paikallistasolla toimiva ja puurtava ja sitten omassa koulussa ja oman koulun eteen tekevä - mä en ole näissä päällysrakenteissa päässyt temppuilemaan -

Q: Joo - Onko sun mielestä tällä tietostrategialla mahdollisuuksia onnistua - ja millä aikavälillä

A: Aikaväli - sehän vie varmaan - sanotaan nyt - että pikkuhiljaa siihen menee - että se

on varmaan nämä sukupolvet mitkä nyt lähtee liikkeelle - tuolta alusta ala-asteelta ja... Nyt siellä on yksittäisiä - jotka on jo ihan kiinni näissä asioissa - Mutta kaikki se - että opitaan ja mennään yrityksen ja erehdyksen kautta... - Kyllä mää siihen uskon - ainakin [...] se tulee onnistumaan kun opettajien koulutustaso on niin korkea - - Ja mä luulen koko Suomessa - Ja sitten just kun on - vaikka mää moitin sitä kilpailua - niin kilpailu on hyväksikin tässä koulujen välillä... Niin kovaa - että ei ole varaa niinku jäädä jälkeen -

Q: Joo - Tekisitkö sää jotenkin toisten - jos sää olisit nyt tällaisen ohjelman alullepanijana siellä ministeriössä

A: No tuota - nyt kun mää ajattelen - niin opetusministeriön - mää kattosin - että tuota - - mitenkä sen nyt sanoisin - että jotenkin pitäis olla näitä välineitä rahan siirtämisessä - että sitten koko maata ajatellen tapahtuisi tällaista kehittymistä tasaisesti - - Mun mielestä se on jo [...] näkyvissä - että ellei me taistella kynsin ja hampain - niin me jäädään täällä sivussa vähän jälkeen helpommin - Ja sama se on nyt muuallakin - että jos ei se koulu ite ole semmoinen hampaat irvessä eteenpäin pyrkivä ja muuta - niin se jää helposti sinne uinulaan - Ja siinä on se opetusministeriön tehtävä ohjailla niitä voimavaroja ja muuta - Eihän tää [...] verkkokaan olis lähtenyt liikkeelle ilman yhtä hullunrohkeeta rehtoria - ala-asteen rehtoria - joka ei ite edes ole mikään tietokonefriikki - mutta ilmeisesti on ymmärtänyt tämän tietostrategian niin tärkeäksi - että on... Ei siitä ole vuottakaan - niin nyt ollaan näin pitkällä menossa - Kukaan meistä ei... koulutoimenjohtaja - jonka rooliin tällaiset asiat olis varmasti kuulunut - huomio - tässä sitä roolia olis sinne... - niin tuota - ei sieltä - saatu tätä asiaa -

Q: Joo - Onko sulla jotain mitä sää haluaisit kommentoida vielä väin lopuksi

A: No mitäs... - Jos ajatellaan tätä koululaitoksen ja yliopiston roolia - niin - näissäkin asioissa haluaisin - että opiskelijat kävis kattoon ihan kentällä - eikä missään norssilla - missä mennään - että tuota - ja niitä opiskelijoita entistä enempi - kun [ ] on tällainen laaja - niin - vois käyttää hyödyksi - Justiin näissä uusissa asioissa ja kakkosopettajina esimerkiksi opetusharjoittelun aikana tai muuta -

Q: Joo - tämä oli tässä - Kiitoksia kovasti -

A: Kiitoksia -

HUMANISTINEN TIEDEKUNTA
ENGLANNIN KIELEN LAITOS

Sami Joensuu
EDUCATIONAL CHANGE: A CASE STUDY OF THE IMPLEMENTATION OF THE NATIONAL
INFORMATION STRATEGY

Pro Gradu -tutkielma
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Yhteiskuntamme on muuttumassa tietoyhteiskunnaksi. Koulutuksen tulee seurata tätä
kehitystä ja opetusministeriö onkin julkaissut vuonna 1995 Koulutuksen ja tutkimuk-
sen tietostrategian, jonka päämääränä on muuttaa koulutusta vastaamaan tietoyhteis-
kunnan tarpeita. Tutkielman tarkoituksena on selvittää tietostrategian vaikutuksia käy-
täntöön yhden kunnan koulutoimessa ja tarkemmin yläasteen englannin kielen opetuk-
sessa. Tutkielmassa vastataan kysymyksiin: 1) Mitkä ovat Koulutuksen ja tutkimuksen
tietostrategian vaikutukset ja onnistumismahdollisuudet englannin kielen opetuksessa
ja kouluorganisaation uudistamisessa? 2) Mitkä tekijät mahdollistavat koulutuksen
muutoksen yleensäkin ja mitä tarvitaan, jotta tietostrategian esittämät avoimet oppi-
misympäristöt voivat toteutua? Vastauksia etsitään tutkimalla tietostrategian toimeen-
panoa ja vaikutuksia tapauskoulutoimessa, joka edustaa melko positiivista ja muuto-
saltista tapausta tietostrategian implementoinnin suhteen. Tutkielma on kvalitatiivinen
tapaustutkimus, jonka materiaali koostuu koulutoimenjohtajan, yläasteen rehtorin ja
englannin kielen opettajan teemahaastatteluista. Tutkielma on pääosin kuvaileva, joh-
tuen tapaustutkimuksen luonteesta.

Tapauskoulutoimi osoittautui työkulttuuriltaan avoimeksi ja vastaanottavaksi muutoksil-
le. Tietotekniikan mukanaan tuomat uudet mahdollisuudet olivat huomioitu. Yhteiskun-
nan muuttuminen tietoyhteiskunnaksi ja sen mukanaan tuomat koulutuksen muutos-
paineet tiedostettiin ja niihin mukautuminen oli alkanut. Etenkin englannin kielen ope-
tukselle nähtiin avautuvan uusia mahdollisuuksia maailman tietoverkostoituessa. Tie-
tostrategian päämäärät koettiin tarpeellisena ja sen onnistumismahdollisuudet nähtiin
hyvinä, joskin tämä vaatisi aikaa ja työtä. Vaikka tapauskoulutoimi olikin kokonaisuu-
tena hyvin tietostrategiassa mukana, niin koulutoimen tiedonkulkuun tarvittaisiin kui-
tenkin panostusta, koska tieto tietostrategiasta ei ollut kulkenut englannin opettajalle
asti. Vaikka opettajan opetuskäsitykset olivatkin tietostrategian edistämien päämääri-
en kaltaisia ja hän koki strategian tarpeelliseksi luettuaan siitä haastattelun yhteydes-
sä, niin tiedon täytyy kulkea paremmin koulutoimen eri portaiden välillä, jotta strategial-
la olisi parhaat lähtökohdat onnistua.

Rehtoreilta ja opettajilta vaaditaan paljon sopeutumista uusiin opetuskäsityksiin ja
opetusvälineisiin, joita strategia edistää. Koululaitos ei saa jäädä sivusta katsomaan
muun yhteiskunnan tietoteknistyessä. Rehtorit ja opettajat tarvitsevat kaiken mahdolli-
sen tuen koulutoimenjohdolta. Yhteistyö on avainsana avoimien oppimisympäristöjen
luomisessa. Yhteistyöhön ja tiedonkulkuun kouluorganisaation eri portaiden välillä
tulee kiinnittää erityistä huomiota. Tarvitaan laitteita ja verkkoyhteyksiä, mutta tarvitaan
myös uudelleenkoulutusta ja tietoa, jotta näitä laitteita voidaan ja osataan hyödyntää.
Tietostrategia ei aja opetuksen koneellistamista, vaan tietokoneiden käyttöä työväli-
neinä ja oppimisympäristön laajentajina. Englannin opettajien tulisi huomioida tietotek-
niikan uudet mahdollisuudet aidon kommunikoinnin edistäjänä ja hyödyllisenä työväli-
neenä.

Koulutuksen muuttaminen vaatii kovaa työtä yksilöiltä ja muutosagenteilta, mutta se
vaatii myös kouluorganisaation muuntautumista avoimeksi yhteistyötä tekeväksi yhtei-
söksi. Kouluorganisaation on kyettävä tukemaan niitä yksilöitä, jotka haluavat ja kyke-
nevät muuttamaan koulutusta. Ajan myötä myös muut seuraavat.

Asiasanat: educational change. policy implementation. foreign language teaching.
computer assisted language learning.

CONTENTS

CONTENTS

1 INTRODUCTION

We have been experiencing a change from an industrial to information society. We can no longer escape from information technology (IT), or especially from the computer, because IT and computers are omnipresent in our daily lives. But as educators we can still make the choice whether or not we bring information technologies into our classroom. Indeed, as Shane (1988:202) claims, the western world can be largely considered a computerized society. It is a task of education to cope with and use constructively the new social environment that is emerging as IT approaches an era of virtually exponential growth.

There has also been a change in the paradigm of teaching and learning. Most educators and researchers agree that we need to put behavioristic principles behind us and try to implement constructivist strategies in our teaching. These changes are often considered complementary to each other and also to the restructuring of the school. The successful transformation of our school system into the 21st century has to bring together these three agendas of reform, that is, the emerging consensus about learning, the movement toward well-integrated uses of technology, and the restructuring of the school (Tella 1994a). There is an urgent need for a methodology for curriculum development in languages which includes the use of IT.

Lilavois (1997) claims that as society changes so does its expectations of schools. In the past schools have traditionally been compatible with society. In the Agrarian Age schools were one-room school houses. In the Industrial Age schools took the form of an "assembly line" in which students travel from one teacher to the next throughout the day to be filled with knowledge. But Lilavois points out that for some reason when society is changing and has changed from an Industrial Age to an Information Age, schools have not changed.

The Finnish government has acknowledged the need for school reform and has introduced a national strategy to achieve these goals. It is called *Education, training and research in the information society: a national strategy* (koulutuksen ja tutkimuksen tietostrategia). It states the objectives for modern education for the modern Information Age society. The information strategy is in accordance with various other strategy documents introduced throughout the western world.

This is a study of educational change. The object of the present study is: First, to understand the present educational effects, implications and realization of the national information strategy, especially in teaching English as a foreign language (EFL). Second, to understand what makes educational change and new open learning environments possible in general. The situation in real-life is analyzed in a school system which depicts a case for a rather auspicious situation in the light of what is suggested in the background section. The elements needed for educational change are in this way sought after both in theory and in practice.

According to Fullan (1994:76), there are two basic reasons why educational reform policies could fail: The first is the complexity of the problems and the difficulties concerning the implementation of a policy. The second one is the fact that strategies might not ever reach their audience. The present study describes the difficulties concerning the implementation of the information strategy and discusses whether the strategy has reached, or will ever reach, its audience.

Many studies and researchers indicate that computers and technology have not been successfully implemented in our schools (Ganszauge and Hult 1993, Konttinen 1985, 1987, Sinisalmi and Heikkinen 1996, Sinko 1995, Taalas 1995, TOP 1989). One of the information strategy's main objectives is the acquisition of hardware. It should also be realized that it is not enough just to provide hardware and networking facilities for

schools if the staff does not know what to do with them. The information strategy is aimed at changing the old way of utilizing IT, but first and foremost, it is aimed at changing education in a more broader sense.

The approach of the present study is qualitative and it concentrates on different levels of the school system. It is based on previous quantitative studies in the sense that it takes granted the fact that technology has been poorly utilized in schools and especially in teaching EFL. The purpose is to find out how the information strategy has changed and might change this. The implementation of the information strategy is studied by investigating the situation in a real-life context in a case school system. The case school system represents a rather positive case from which useful information can be derived. The school in question is an average representative of the upper levels of the comprehensive schools. The district is above the average in size. The case includes three units of analysis: the district administrator, the principal, and the English teacher. The empirical data were obtained through personal interviews.

The study concentrates on the implications of the national strategy. The connection to the change in society in general is established. There is a call for this kind of study since educational change has not been widely studied in Finland.

To clarify the terms used in this study it should be noted that the present study deals with the information strategy as an *innovative policy* and "innovation" and "policy" are used as substitute terms. This is justified because the policy at hand, the information strategy, entails an innovation, that is, information technology and the new view of learning and teaching. Therefore, innovation and policy are both used to describe the strategy, depending on the source cited.

The background section is divided into two entities: First, what does the strategy entail, what in fact is the open learning environment the strategy is promoting, and what are its implications to school practices and teaching EFL. Secondly, the background section discusses the problems of educational change in general and the culture of schools. Educational change is also discussed from the point of view of change agents who also represent the levels of the school system studied in the case. Then, to conclude the background section, previous studies are presented in order to describe the field of study. After the background, the research design for the present study is presented. Then results from the interviews are analyzed. Finally, the issues raised by the results are discussed.

2 BACKGROUND TO THE STUDY

Information technology (IT) and communication networks and their applications are considered in many countries to possess the greatest potential for the development of our society. Negroponte (1995) points out that the growth of IT has been exponential. For example, the population of the Internet is increasing 10 per cent per month, homes are more and more equipped with personal computers (PCs), there are 50 microprocessors in the average modern car, there are microprocessors in toasters, CD-players, and greeting cards. 32 per cent of Finnish households had a personal computer at the end of 1996 (*Keskisuomalainen*, 7 February 1997, p.14). Yet, as Negroponte (1995:220) discloses: "...84 percent of America's teachers consider only one type of information technology "essential": a photo copier with an adequate paper supply." The whole society around schools is rapidly changing and the school system is seriously lagging behind. Moreover, when the children of today enter schools which represent very different surroundings from their instant "on-line" world, which they are accustomed to because of IT, there will be incompatibilities.

The progress in the field of producing and intermediating information with the new views of learning are believed to have great impact on the contents, structures, and methods of education. Hubbard (1987) claims that no longer can schooling be expected to provide students with all the facts they will need throughout their lives. Students need to know how to identify a need for information; to locate, gather, and select relevant information; and to apply information to resolve an issue under question. These are requirements of the information society. This has been acknowledged by the Finnish government, too. In this context new open learning environments have been the focus of discussion. Open and flexible learning are schools' way to respond to the changes and needs of society. The program put forward by the Ministry of Education in 1995, *Education, training and research in the information society: a national*

strategy, emphasizes the features of new learning environments. The basic goal is to make the possibilities the information society presents and the necessary skills it demands attainable for every citizen.

Building a learning information society and transforming schools is much more complicated than just providing the hardware. Kershaw (1996:44) emphasizes that we must be careful not to become seduced by technology, not to focus on the means of change rather than the end or on technology rather than the people who use it. Manninen (1996:3) argues that many times the contents and didactic principles of teaching are only being considered after the "machinery" has been installed. As Könnölä (1995) claims, we should be careful not to think information society just in the light of new apparatus and gizmos or infrastructure. The building of the information super highway is just one aspect of the information society. Equally important is that the highway will not become academically deserted. Networks need reliable and coherent information and also people to put it there. This a job for education in the 21st century.

Salomon (1991:43) claims that computers carry with them a totally new conception of knowledge and of ways of attaining it in educational settings. Computers are unique because of their capacity as multiple tools for making, doing, and creating and because they provide access to large and remote sources of knowledge with which one can interact. Never before did we have a technology that not only exposed students to knowledge but also afforded them the opportunity to construct it in interaction with peers, knowledge repositories, and experts. Salomon characterizes educational computing with these interrelated elements: exploration, communication, collaboration, disciplinary integration, curricular variation, and teachers' and students' autonomy. Yet, none of these can be automatically realized only because of the technology's presence.

In order to implement IT in teaching in a way the information strategy advocates, we must consider the roles of the people involved. Pohjonen et. al. (1995) claim that the educational organizations and communities, administrators, teachers, students, and parents, are in the driving seat for the success of the national strategy and open learning environments. He argues that it is a question of willingness, readiness, know-how, and operational solutions. Next, we will take a look at what kind of change is built in the information strategy.

2.1 A change from above

This section will provide the core background for the study: the national information strategy which strives for school restructuring and for the establishment of new open learning environments which successfully utilize IT. The connection with various other strategy documents is established but we must also realize that these strategies have resulted from a change of society at large. These strategies call for a change in the way we see education, but often, as Gorny, Batanov, and Lewis (1992:176) claim, similar strategies have been narrowed down to and transformed chiefly into computerization of education. We must be careful not to think that the national information strategy is merely advocating the use of computers.

The national information strategy is called *Education, training and research in the information society: a national strategy* (Koulutuksen ja tutkimuksen tietostrategia (1995)). Closely related to the information strategy are simultaneously pursued strategies in almost every branch of the national administration[1]. The European commission's educational goals are the underlying principles behind the national strategy.

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[1] E.g. Suomi tietoyhteiskunnaksi -Kansalliset linjaukset (The Ministry of Finance 1995), Suomi tietoyhteiskunnaksi -Koulutus tiedon valtatielle (The National Board of Education 1996).

Heinonen (1995), the Finnish minister of education, points out that the national strategy is not sufficient for funding every project and effort, but it has been established for speeding up and leading the way forward.

The European Union (EU) has released a line of papers on education and the Information Age. The Commission of the European Communities released the *White Paper on education and training* in December 1995 which was based on the Bangeman report *Europe and the global information society: Recommendations to the European Council* from 1994.

The Bangeman report (1994) acknowledges that

> Throughout the world, information and communications technologies are generating a new industrial revolution already as significant and far-reaching as those of the past. ...convincing people that the new technologies hold out the prospect of a major step forward... By pooling resources that have traditionally been separate, and indeed distant, the information infrastructure unleashes unlimited potential for acquiring knowledge, innovation and creativity.

> A great deal of effort must be put into securing widespread public acceptance and actual use of the new technology. Preparing Europeans for the advent of the information society is a priority task. Education, training and promotion will necessarily play a central role. The White Paper's goal of giving European citizens the right to life-long education and training here finds its full justification.

The Commission, in presenting the White Paper, has also launched the European Year of Lifelong Learning 1996, with the support from the Council and the European Parliament. The White Paper takes forward the idea presented by the Bangeman report considering distance and lifelong learning, therefore promoting open learning environments.

The ideas of the White Paper are easily connected with new ways of learning and teaching: Students must learn to think: In a society in which the individual must deal with complex situations which fluctuate unpredictably, in which he will also be flooded with an immense quantity of varied information, there is a risk of a rift appearing between those who are able to interpret, those who can only use, and those who can do

neither. Building up a broad base of knowledge i.e. the wherewithal to grasp the meaning of things, to understand and to create, is the essential function of school. Therefore, schools have to be properly equipped to fully exploit this potential. Unfortunately, in Europe there are inadequate quality of the teaching products on offer, along with the low level of computer equipment available in the classroom (1 for 30 pupils in Europe compared with 1 for 10 pupils in the USA). This means that these tools are very slow to appear in our schools. (Commission of the European Communities 1995.)

With the help from the EU funding many educational projects have, and will be, launched during 1995-1999. The Ministry of Education received 120 million marks in 1996 from the EU's structural funds (Ministry of Finance 1995). The funding is aimed at improving the infrastructure, technological knowhow, and IT utilization.

Education and research are also promoted in strategy documents published in Sweden *(Wings to human ability)* and in Denmark *(Info-samfundet år 2000)* in 1994. In the United States, President Clinton's administration has presented its *National information infrastructure* (NII) initiative. In Japan, a program for the development of the information society, *Program for advanced information infrastructure* was published in 1994. Education and research, networking of schools, and development of teaching materials and the improvement of teaching skills are central issues in these programs. (The Ministry of Education 1995b).

2.1.1 Education, training and research in the information society: a national strategy

The object of the national strategy is to provide all Finns a good starting-point for the 21st century information society. The strategy includes a

vision of how education and research can be improved by utilizing IT and networks and by improving the availability of information. The following fields are included in it: national curricula and evaluation, networking of schools, teacher education, initial and continuing education for the information professions, libraries and information services, networks and applications serving the scientific community, IT in higher education and research, information resources and production, and legislation. However, the present study concentrates on the information strategy's implications on teaching EFL in the upper level of the comprehensive school. The main issues discussed in the study are the development of the information society and its effect on education, the changing content and forms of education and training, and the roles of the district and local authority in Finland (the background section) and in the case school system (the empirical section).

The strategy recognizes the backwardness of the school system when it comes to IT utilization and the need for a reform in the culture of schools:

> As the information society develops, information and the know-how based on it will become more and more decisive as factors of production... In recent years, as a whole, the school system has not kept pace with the rest of society in terms of information technology...Currently, the level of information technology equipment available differs from school to school, and some of it is obsolete. The situation is worst in primary education. Even where adequate equipment exists, it is often not fully utilized. Teachers have differing abilities in using information technology. The level of utilization of telecommunication services and information networks is still low in Finnish schools, mainly due to the slow development in equipment resources. Cooperation between educational institutions in using teaching resources has been rare. All these factors have slowed down the development of an organizational culture that utilizes information technology. (The Ministry of Education 1995a.)

The information strategy incorporates many of the constructivist principles of learning and teaching:

> Modern concepts of learning emphasize the students' responsibility for their own learning and their active role in seeking and using information... At all levels of education, possibilities for individual study should be increased.

It is the task of general education to provide every girl and boy with the versatile basic skills in acquiring, managing and communicating information which are necessary in the information society and essential for successful further study...

The information strategy focuses on teachers. The change in teachers' skill requirements, work regulations, and in their role is discussed. All teachers' skills should include IT knowhow and their work regulations must be in accordance with the new way of teaching, which means that their role changes to a tutor and a facilitator of learning:

All teachers need new knowledge, skills and competences in order to be able to use information technology as a tool in their teaching work... Teachers of all subjects need to know how to utilize information technology and take account of the requirements of the information society in their work... The conditions and content of both the initial and continuing education of teachers must be developed to correspond to the demands of the information society. Teachers need to be trained to use the equipment required for open and flexible learning, to be able to tailor existing teaching material to suit their purposes and also to be able to develop their own material. Teachers must be able to manage the information relating to their own field as well as being able to handle the media used for communicating that information.

The role of the teacher changes from being a distributor of book learning into being a tutor guiding the students.

The regulation and contracts concerning teachers' wages and working hours need to be changed. ...clarified and adjusted to the job descriptions and the amount of work required for open and distance teaching.

The strategy strongly promotes open learning environments and the constructivist use of IT:

The whole educational system must rapidly be brought within the reach of information network services.

Teaching material and information services should be developed, the quantity of open and distance teaching should be increased. Networking of the education system should be promoted and open learning environments created to support the move from "once-and-for-all" education to lifelong learning... The school environment becomes a centre for learning and activity... The use of information technology as a learning tool...should be increased as specified in the new national criteria for curricula. Information technology should not be taught as a separate subject, it should be a factor that is integrated into the teaching of other subjects.

But if an effort is made to introduce constructivist open learning environments, it is not likely to succeed as long as students are assessed according to the old, and often behavioristic, principles. The information strategy aims also to change the principles concerning the assessment of education in general but the assessment of students is mostly left disregarded. This is certainly a shortcoming.

The role of the district and local authority in putting the information strategy into effect is clearly stated:

> The municipalities need to ensure that the schools have the equipment and network facilities necessary for teaching the basic information technology skills. Continuing education should be increased to guarantee that teachers and necessary support staff possess an adequate level of competence.

> Interaction between educational establishments, the educational authorities, and business and industry needs to be increased.

> Support needs to be provided [by the Ministry] for the purchase by schools of information technology equipment. The educational authorities should monitor and evaluate the implementation of the new criteria for curricula from the point of view of how well the criteria correspond to the requirements of the information society. The authorities should also determine how well the necessary basic information society skills are taught in schools.

Finally, regarding foreign language teaching, telecommunication, and other subjects, it is argued in the strategy that

> Special attention needs to be paid to the acquisition of skills in both the pupil's mother tongue and in foreign languages. By increasing cooperation and the joint teaching of languages and other subjects, the possibilities available for learning international interaction and communication should be improved.

Auer and Pohjonen (1995:17) outline the issues and components of the national strategy. They are illustrated in figure 3.

THE CHANGING FORMS AND CONTENTS OF EDUCATION Curriculum, evaluation, new learning and teaching methods
SKILLS NEEDED IN THE INFORMATION SOCIETY FOR EVERYONE Basic skills must be learned at school, teacher training, new occupational requirements, and adult population must be considered, too
RESEARCH AND THE INFORMATION SOCIETY Research, product development, and information industry Education research Research concerning the information society
THE DEVELOPEMENT OF INFORMATION PRODUCTS AND SERVICES Databases, domestic information production
RESEARCH, INFORMATION TECHNOLOGY, AND NETWORKS Science, research, and information technology Power computation
NETWORKS Open network, academic network, digital TV and radio, schools and libraries into networks
SUPPORTIVE ACTION Standardization, legislation, taxing, pricing

Figure 3. The issues and components of the national strategy.

Auer and Pohjonen (1995:16-17) argue that the information strategy emphasizes new open learning environments and the independence and activity of the learner. Global networking, openness, obtainability, individual and continuous learning, and also distant learning are principal issues in the strategy. The changing forms and contents of education and new learning and teaching methods are also discussed. Central to this discussion is the open learning environment.

The issues mentioned above call for a change in the school structure and in the present paradigm of teaching. The information strategy calls for new learning environments which utilize IT. Nevertheless, rhetoric and idle words are not enough. Schools and teachers do not change their practices just because they are being provided with hardware and often futile on the job training. Still, as it will be shown, the funding is mainly aimed at hardware acquisitions.

The strategy prepares Finland for the Information Age with 720 million marks during the years 1995-2000. In 1996 funding was 218 million

marks and it was divided into the following main categories: hardware for schools (33 million), universities (82 million), public libraries (10 million), and for the national funding of EU's programs (64 million). Curriculum, learning material, and open learning environment development received 5,8 million marks through various projects. An effort is made so that all Finnish schools will be connected to international networks and that there will be "enough" computers in schools by the year 2000. Still, one wonders what is *enough?* The Ministry funds several projects but schools primarily receive funding (5000-20 000 marks each) in order to connect them to the Internet. Funding includes obtaining 2000-4000 computers to the lower level of the comprehensive school. Schools may apply for funds for their own projects. However, the funding by the Ministry of Education *per se* is not adequate for all schools. The strategy provides motivation and systematic planning concerning IT. Therefore, schools and districts still need to fund their own development to some extent. (Laitakari 1995:11, The Ministry of Finance 1995.)

We have a program to take us to the 21st century. However, there are many things to overcome and consider before the strategy can become reality. Next, the change the information strategy entails is discussed in greater detail.

2.1.2 Toward open learning environments

In the heart of the Finnish government's strategy lies the idea of a new open learning environment. Auer and Pohjonen (1995:14) describe the learning environment as a combination of learners, teachers, views of learning, methods, sources of information, technology, and media. When new pedagogic and educational policies are mixed with new opportunities provided by technological advances, the term "new learning environment" is used. It refers to a dynamic environment which has not yet permanently established itself and it often includes various

methods and perspectives.

Pohjonen (1994) describes the typical features of a new learning environment: openness, flexibility, access to information, global networking, new views of learning, basic skills of communication and processing information, and information technologies. Pohjonen claims that an open learning environment places greater responsibility for learning on the student, it should offer wider choices in courses, formats, and methodologies, individual differences and paces are better paid attention to, and it should free teachers from custodial type duties so that more time can be given to truly educational tasks. Tella (1991:17) describes this openness referring to the learner's possibility to work on his own and at a pace which he or she can set fairly autonomously. According to Tella, this means giving up transmission teaching and moving toward a more dynamic concept of knowledge. The student thus turns into a team member engaged in guided learning-through-exploration, communication, and collaboration that become integrated into a well-orchestrated open learning environment (Salomon 1991:43).

Lowyck (1994 as quoted by Nieminen and Pohjonen 1995:36-37) establishes a connection between views on teaching and learning, educational goals, conception of knowledge, and advances on the technological front. When these changes take place simultaneously they provide a need and an opportunity for the development of new learning environments and also the opportunity to promote the ideas of life-long, open, and flexible learning. In this context the need to study and develop new learning environments, which is one of the most important goals of educational technology, arises. These changes are illustrated in figure 2.

Learning

Passive → Active

Educational structures

Constant → Dynamic

Knowledge

Organized → Flexible

Technology

One way → Interaction
Isolated media → Multimedia, network
Bounded by → Freedom of
time and place → time and place

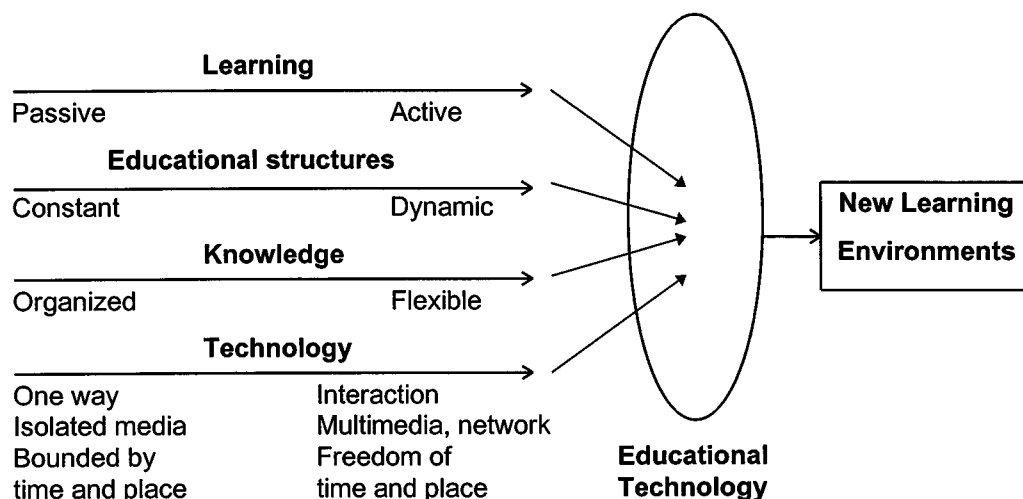**Educational Technology**

New Learning Environments

Figure 2. The evolution behind the new learning environments and the role of educational technology as the supporting and developing instrument (Nieminen and Pohjonen 1995).

There are four issues in Nieminen and Pohjoinen's model: Learning, educational structures, knowledge, and technology. Accordingly, and in order to give a clear picture of what is required for such a change, we need to shed light on each of them: We need to discuss the necessary change in view of learning and knowledge. On the other hand, we need to consider how to utilize technology so that it supports the change. These are the issues that are discussed next. Educational structures will be discussed in sections 2.2 and 2.2.2.

2.1.3 The change in learning and computing

If information technology is to be something more than a source of distraction, it must be integrated into a theory of learning. Traditionally our schools have had a behavioristic view on learning and accordingly chosen methods and practices (von Wright 1993:8). However, nowadays most educators are convinced that a shift toward more cognitive and constructivist theory is needed (Sewell 1990, Tella 1994a). Underwood (1984:19) establishes that in language teaching there has been a shift

from (1) "accuracy before fluency" to (2) "fluency before accuracy". The grammar-translation and audiolingual methods, with their emphasis on getting the form right, are clearly representatives of the first school. The latter perspective is lumped under the umbrella term "communicative language teaching" and it emphasizes communicative competence.

Hodas (1993) argues that IT in schools is unusually polyvalent: it can both support and subvert the symbolic, organizational, and normative dimensions of school practices. According to Hodas, they can weaken or strengthen the status and positions of administrators, teachers, or students. Cuban (1986) points out that when computers initially appeared in education the aim was to learn to use them. Cuban also claims that this is still one of the goals especially in the comprehensive school but the shift is nowadays notably toward learning with computers, that is, learning to use them as tools.

Moursund (1995) argues that in too many schools, most teachers and students still use computers only as electronic workbooks. The productivity side of computer use is neglected and content grossly underdeveloped. To date, the use of microcomputers in the public school has typically focused on the acquisition of basic skills using drill-and-practice software according to behavioristic principles[2] (Cole and Griffin 1987, Newman 1992, Perkins 1991, Sheingold 1991, Taalas 1995).

When behaviorism and CALL are combined we usually end up with an Integrated learning system and drill-and-practice software. Stoddart and Niederhauser (1993) describe the Integrated learning system as a system where students work through computer activities in a linear and sequential fashion, with early tasks laying the ground for later ones. The tasks are presented in a hierarchical structure with the computer

[2] See e.g. Skinner, B.F. 1974. *About behaviorism.* New York: Alfred A. Knopf.

displaying the problem for the student (stimulus) who, in turn, responds with an answer (response). The computer then provides instant feedback about the answer (reinforcement). This is called a stimulus-reaction-feedback loop. This process continues until the student has demonstrated a certain criterion level of skill after which the student moves on to the next set of activities. Considering teaching EFL, Stoddart and Niederhauser (1993) note that these kind of drill-and-practice activities often include tasks such as combining sentences, parts of speech, punctuation, spelling, and vocabulary in a matching, multiple choice, or fill-in-the-blank formats.

Newman (1992) and Stoddart and Niederhauser (1993) argue that an Integrated learning system is essentially conservative: It fits in easily with traditional approaches to instruction and will tend to perpetuate the status quo. Traditionally school work has been divided into periods devoted to discrete topics which are, at least in the upper grades, taught by different teachers. An Integrated learning system is easily accommodated by the curriculum goals, assessment techniques, and class scheduling already in place. Also Hodas (1993) points out that this behaviorist fantasy fits neatly into the organizational model of schools and into most pedagogical practices: It is formed by a long tradition, it is clear, and it conforms with commonplace thinking. From the teacher's point of view it is consistent, safe, and it enforces the teacher's authority. These systems are easy to sell. Therefore, we must be careful not to modify the content of the information strategy so that it fits into existing practices.

The new way of utilizing IT advocated by the information strategy entails a constructivist view of learning. According to Stoddart & Niederhauser (1993), without constructivist view of learning the change in the way we use IT is not likely to occur. Constructivism has its roots in cognitive psychology and it emphasizes the meaning of earlier information structures in learning. Von Wright (1993:11) points out that central to the

vision of constructivism is the notion of the organism as an active individual who engages, grasps, and seeks to make sense of things. In the behavioristic view organisms just respond to stimuli and adjust their behavior accordingly, and consequently they learn. But according to the constructivist principles, true learning involves reconstructing the learners' cognitive-emotional structures which are reflections of their earlier experiences. These structures are called schemas. Active participation is the cornerstone of this learning process (Ausubel et. al. 1980, von Wright 1993). The teacher's role changes from director and provider of information to that of a facilitator of learning and tutor (Carey 1993, Perkins 1991, Stoddart and Niederhauser 1993). This kind of view of learning is inherent in most of the current educational reforms (e.g. Bangeman et. al. 1994, Commission of the European Communities 1995, The Ministry of Education 1995b).

Sahlberg (1993), Sewell (1990), and von Wright (1993) list some of the pedagogical implications of the constructivist theory of learning which are also the cornerstones of the information strategy:

- The individual's actions have meaning
- Learning is an active process
- Previous knowledge is critical
- The connection between present knowledge and new information is important
- Learning involves structuring, focusing, and restructuring of schemas
- Knowledge is built on social interaction and function
- Teaching must be anchored to learner's every-day reality
- Discussion instead of lecturing
- Toward cooperative learning
- The best learning arises from problems which learners themselves raise and consequently solve (discovery learning)
- Learners' activity, especially the active pursuit of information, is of great importance.

There are shortcomings in the constructivist view, and therefore, in the information strategy, too: detailed curricula are virtually impossible to create in accordance with constructivist thinking, assessing learners' progress is difficult, and acquiring the very basic skills can be bothersome. It should be noted that from the teacher's point of view,

constructivism is much more demanding and requires totally new views on teaching and learning. The constructivist open learning environment is a complex pursuit and information technologies can contribute to it greatly. Enkenberg (1993:33) claims that without modern technology open learning environments are not likely to occur.

When constructivism is combined with CALL, we arrive at a tool-based system. Stoddart and Niederhauser (1993) claim that using computers as tools allow students to rediscover or re-invent concepts. With a tool-based system, students are provided with a variety of open-ended applications that they use to help them construct their understandings. The aim is not to arrive at one right answer, but to develop more complex and thorough understandings. The teacher's job is to develop activities that challenge students to learn. Students use the computer, when appropriate, to achieve these goals. The computer is just a tool for collecting, organizing, and representing the student's knowledge. Learners are thus active seekers of information who revise and update their understanding through a process of gathering new information. Students may use information from global networks, thereby "stretching" classroom walls and opening up their learning environment. Also Brierley and Kemble (1991) argue that it is in the use of tool applications that the language teacher can make the best use of information technology.

One of the most promising aspects of IT for teaching EFL is global networking; the Internet and its graphic extension the World Wide Web (WWW). Networks provide almost infinite amounts of information and they provide a rich linguistic environment. Mike (1996:4) argues that the Internet offers "a natural blend of communication and information retrieval functions incorporated within a framework that literally encompasses the world."

Connecting schools to the Internet is the main objective of the information strategy. However, as Taalas (lecture, November 1996)

points out, we should be careful when discussing information on the Internet because anyone can post it there. Information is somebody's conception of something. Teachers and students should develop an information-filter in order to critically distinguish between what is accurate and relevant and what is biased "information-garbage." According to Taalas, another thing to consider is the fact that information is not knowledge: information becomes knowledge through insight and reflection. In this way students are taught to think and reflect and learn to shift, sort, weigh, and arrange pieces of information in order to make a sensible picture. These skills are very important in the information society. The problem of information has been eloquently reflected by T.S. Eliot[3], too: *Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?*

For teaching EFL the most intriguing element of the Internet is the fact that the dominant language there is English. Language can be studied in real life context and it has a true meaning and function. Moreover, electronic mail (e-mail) can be utilized for global communication between learners of English as a second language and also between learners and native speakers of English throughout the world. In addition to the Internet and e-mail there are also other ways of electronic communication: Bulletin Board Systems (BBS), computer conferences, videoconferences, and video lectures, just to mention a few. Networks open up the learning environment. Also the present tool applications, for example word processors and publication software, as such provide vast potential for teaching EFL.

There are many examples of successful use of computers as tools (see Newman 1992, Sheingold 1991, Solomon 1993, Tella 1992, 1994b). All these studies indicate a change in the teacher's role to a facilitator of learning and a change in the view of learning. They also report high

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[3] From *The Rock* (1934) by T. S. Eliot.

levels of satisfaction and motivation among learners and teachers, improved quality of student output, increased use of collaborative work methods, and in some instances the boundaries between disciplines have been broken and tasks related to real-world concerns. The information strategy is precisely aimed at breaking the boundaries between subjects. Constructivism and computers do marriage and open learning environments and technology actually work, but this calls for a change in the culture of the schools. This change is embedded in the information strategy.

It is not wrong to support old views and methods. Behaviorism works too, there are generations of proof of it. Sewell (1990), for example, claims that drill-and-practice and behavioristic principles are valuable in teaching skills that require a certain level of automation. In fact, as Gagne (1975) and Ganszauge and Hult (1993) argue, some of the subordinate skills must be automatic in order for a student to effectively carry out the constructive learning process. We must remember that change is not a synonym for progress (Fullan 1991). Each teacher must form his or her own perception of teaching and learning, but it should be based on the best available knowledge. Therefore, we need both theoretical and practical knowledge: *"Practice without theory is blind, theory without practice is impotent"* (Eero Laine, lecture, September 1995). Also according to Tanner and Tanner (1980), a philosophy is fundamental in determining criteria for curriculum design. However, according to Sewell (1990), the reality of classroom management is such that rigid pedagogical stances are rarely applied. A good teacher draws upon experience and intuition when dealing with everyday learning situations, varying the teaching style accordingly.

2.2 The meaning of educational change

To understand why it is so hard to change education and school practices and what the national information strategy's chances of success are, we need to understand the meaning of educational change in general and the culture of schools.

Hodas (1993) argues that the world outside schools is rapidly changing the ways it organizes its work, its people, and its processes, reconceptualizing them around the metaphors and practices enabled and embodied by its new machines, distributed microcomputer networks. This is the main point of the information strategy. According to Hodas, schools have been out of step with this change and if this misalignment continues, schools may become failures in reflecting the needs of society. Schools cannot be independent of the values of society at large: if those change, then schools must, too. If they do not, then they could be replaced, as Hodas puts it "recycled to the parts-bin of history."

Van Horn (1991:527) describes this discrepancy even more extremely: "If educators fight these inevitable changes...school as we know it will cease to exist." A more moderate view is presented by Weinstein and Roschwalb (1990:115): "...schools must enter a new phase if they are to be competitive, to stand up to international comparisons, and to meet the challenges of a global economy." Karppinen (1997:16) gives two alternatives for rural schools in Finland: to open up to the information society or die out. This discrepancy is a central issue in the information strategy and also Cohen (1990), Hodas (1993), and Tella (1991) for example urge that this problem should be thoroughly discussed in order to connect schools with the rest of society.

According to Fullan (1991), there are two important things we must understand: First, change is not progress. Secondly, change for the sake of change will not help. In order to reform schools to conform with the

information society the question is not simply to master single innovations or individual strategies, such as the national information strategy. Like Hodas (1993) and Fullan (1991) suggest the whole culture of the schools needs changing. They cite many studies and argue that the core problem is that education as it is now practiced does not engage students, teachers, parents, or administrators.

Fullan (1991) clarifies educational change and its implementation: No innovation can be assimilated unless its *meaning* is shared. Change agents need to develop a subjective understanding of change. Change cannot be dictated from above and too subjective individual realities may act as constraints to change. The extent of change must always be defined in reference to concrete situations, individuals and organizations. According to Fullan, deep changes take dedication, motivation, systemic and systematic evolution, and time. To change education we need a critical mass of people who take affirmative action to make positive changes in their situations, affecting as many as possible around them. Also, institutions must provide both pressure on and support for individuals. The way ahead is through melding individual and institutional renewal. Good intentions and rhetoric are insufficient.

Many factors ought to influence the implementation of the information strategy. Bird (1992) studied similar policy implementation and found that the conditions for effective implementation include: capacity in terms of resources (both human and capital); the commitment of individuals, the coordinators and principals of institutions; and good communication between all those involved.

Lots of things should be changed according to the information strategy but changes are not that simple. Hersey & Blanchard (1985:63-64) divide changes into four levels: 1) knowledge changes; 2) attitudinal changes; 3) behavior changes, and 4) group or organizational performance changes. Tella (1992:17) comments these levels and

points out that changes in knowledge can be easily made, whereas attitudinal changes are more difficult, because they are emotionally charged. Changes in individual behavior are even more difficult and time-consuming. Changes in organizations may occur through cycles: either participative or coerced change cycle. Fullan (1991) claims that coercion rarely works.

The issues of centralization and decentralization are prominent especially in the Finnish school system. Our schools have the chance to design their own curriculum, an aspect that has been suggested (e.g. Cradler 1996, Fullan 1991, McNeill 1988a, 1988b, 1988c, Tagg 1995) missing from many education systems and which is of great importance to a change process. The implementation of the information strategy involves redesigning the curriculum and if this is allowed, innovative and up-to-date schools can put the strategy into effect. But decentralized, school-based management is not without shortcomings either. Fullan (1991:200) argues that individual schools may lack the capacity to manage change and assessing attempted changes may not be tracked. Also, if students perform below national standards, the local school can be easily charged with poor instruction because it has set its own standards and designed curriculum accordingly.

Fullan (1991:211) concludes that neither centralization nor decentralization works. Mandates make people resist change. What does work is "interactive pressure and support, initiative taking, and empowerment through coordinated action based on individual realms of activity." Change should be a negotiated process.

2.2.1 Approaches to educational change

There are no definite rules or step lists to follow if one wants a change to succeed. As Firestone and Corbett (1987), Fullan (1991), Huberman and

Miles (1984), and Rogers (1995) suggest, the uniqueness of each situation is the crucial factor. What works in one situation may not work in another. Still, there are some general guidelines and phases of the change process these researchers have come up with. Different phases are labeled differently by various researchers but they all include the same general idea. For example, Fullan (1991:48) gives an overview of the phases in the change process and it is illustrated in figure 4.

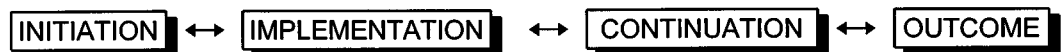INITIATION ←→ IMPLEMENTATION ←→ CONTINUATION ←→ OUTCOME

Figure 4. Simplified change process according to Fullan (1991).

Fullan (1991:48) reminds that first of all, it should be noted that figure 4 is a simplification and there are numerous factors operating at each level. Secondly, as the two-way arrows imply, change is not a linear process but rather one in which one phase can feed back to alter decisions made at previous stages, which then proceed to work their way through in an interactive manner. The information strategy should provide opportunities to influence for the different levels of the school system.

Initiation is the process leading up to and including the decision to proceed with implementation. It can take different forms, ranging from a decision by a single authority to a broad-based mandate. Considerations in the planning for initiation should include relevance (practicality and need), readiness (capacity and need), and resources (availability).

The factors affecting implementation and continuation consist of characteristics of change (need, clarity, complexity, quality/practicality), local characteristics (district, community, principal, teacher), and external factors (government and other agencies). These issues are very important in as complex change as the information strategy entails. Implementation is a social process, not a delivery date (Fullan 1991).

Most researchers agree (e.g. Owens and Steinhoff 1976) that demonstration and practical assistance is required. These issues will be discussed further in the subsequent sections with a focus on individual agents of change.

Educational change and the implementation of the information strategy can also be considered in the light of *systems thinking*. Senge (1990) describes systems thinking as a discipline for seeing wholes, recognizing patterns and interrelationships, and learning how to structure those interrelationships in more effective, efficient ways. According to Senge, systems thinking acknowledges the interrelated nature of the various subsystems or processes that constitute the whole system. We must look beyond individual issues, in this case individual change agents, towards a broader perspective, where an individual issue is seen as part of a coherent whole. Studying something in isolation from the environment in which it exists will also limit our understanding. For example, if we study the implementation of the information strategy only at the class and teacher level we cannot arrive at true understanding. The organization and the environment in which teachers operate ought to affect their work.

Betts (1992) claims that when considering the application of systems thinking to innovative or renovative educational programs, it is important to realize the importance of each part to make the whole. The goal of applying systems thinking is to increase the effectiveness and efficiency of the total system (schools) via the development of manageable subsystems (individuals or groups within the school system) with common focuses or purposes. In the case of the information strategy, this means that each level of the school system studied here, the district, the principal, and the teacher, play key roles in order to successfully implement the strategy so that it has an effect on the whole system. It means also that we must not over-emphasize any individual level, but to seek to understand the inter-relationships within the whole system. That

is, see the forest from the trees.

Systems thinking can also be applied to the society at large. Since systems thinking is based on the premise that a change in any part of a system affects its subsystems, a change in society, such as that from the Industrial Age to the Information Age should and does affect education.

2.2.2 The culture of schools

Hodas (1993) claims that schools are very much in the dark ages compared with the rest of society when it comes to information technologies. The norms of school culture are profoundly conservative, the underlying mission of schools is the conservation and transmission of pre-existing, pre-defined categories of knowledge. Hodas also claims that schools are founded on the core values of the bourgeois humanism that has developed in the western world since the Enlightenment: respect for hierarchy, competitive individualization, receptivity to being ranked and judged, and the division of the world of knowledge into discreet units and categories susceptible to mastery according to behavioristic principles.

Cohen (1990) and Hirsjärvi and Remes (1983) point out that schools and teaching have remained practically unchanged for centuries. Cohen (1990) and Cuban (1986) have asserted that textbooks, blackboards, radio, film clips, television, satellite systems, telecommunications and the computer have all in their time been hailed as modernizes of education. But with the exception of the textbook and the blackboard, none of these have had any significant effect on school organization or practices. The most widely used "technologies" are chalk, books, pens, and pencils and transmission approaches, i.e. lecture, textbooks, drill-and-practice, have dominated classrooms since the beginning of school. Cohen (1990) also

claims that most instructors concentrate on covering the content during their lessons, not on assuring that students truly understand it. The idea of the transmission approach originates from the view that learning should involve students in mastering and replicating the information and skills transmitted to them (Porter 1989, Stodolsky 1988, Lakoff 1987).

McNeill (1988a, 1988b, 1988c) argues that teachers tend to control their students in much the same way as they are controlled by administrators. If teachers are not given freedom to plan their courses but they are rather succumbed to administrative prescriptions, the result is likely to be flattened content and mechanical multiple-choice or fill-in-the-blank learning. Teachers are just going through the motions of teaching and learners merely concentrate on obtaining a diploma in a timely fashion. In this way learners are just raw material and graduates just products of schools with proper credentials, a view also supported by Hodas (1993). These are symptoms of the complex organizational dynamics within a school, therefore McNeill (1988a, 1988b, 1988c) claims that genuine reform will have to address the structural tensions in schools and be aimed at cultural reform of education.

Hodas (1993) suggests that schools are first and foremost organizations seeking nothing so much as their own perpetuity. Entrenched organizations often experience change most significantly as a disruption or an intrusion. What appears to outsiders as a straightforward improvement can, to an organization, be felt as undesirable if it means that the culture must change its values and habits in order to implement it. Schools' natural tendency to resist organizational change plays an important part in shaping their response to IT and to a change from above, such as the information strategy. Indeed, this is how organizations become entrenched: they are durable. According to Hodas (1993) technology is never neutral, therefore a technology that reinforces existing lines of school culture, like drill-and-practice software, is more likely to be adopted. The information strategy is all about changing the

habits and values of schools, therefore some resistance must be inevitable.

Although the education system is the focus of this study, it is the individuals who make strategies and changes happen. As Fullan (1991:352) concludes, "Systems do not change by themselves. People change systems through their actions". Next, change is discussed from the point of view of institutions and individuals, i.e. change agents.

2.2.3 Change agents

Kershaw (1996:48) argues that change cannot occur without individual members of the school system making the decision to alter their taken-for-granted ways of doing things. Fullan (1991) describes the complexity of change when seen from the point of view of the individuals involved: One person claims that schools are being bombarded by change, another observes that nothing has really changed. A teacher complains that administrators introduce change for their own self-aggrandizement and that they know nothing about what is actually needed in the classroom. Parents wonder whether the school can prepare their children for the future demands of society. Some argue that restructuring schools is the only answer for true change, others say that it is just a pipedream. An university professor argues that schools are just a reflection of society, they cannot bring about any change. Another professor says that if only teachers and principals had more vision and motivation any change would be possible. A legislator is trying to bring about change by introducing new strategies and innovations. The student is bewildered in the midst of all this fuss. They are all agents of change. Cultural changes need support from every level of the school system. What their respective roles are and what they should consider are our topics next.

2.2.3.1 The government

According to Eraut (1991a:279), a multilevel implementation process is capricious and slow. Government staff have wide responsibilities in overseeing changes called for through legislative policy making. There is usually constant pressure on governments to get high-priority programs delivered, like the information strategy, and to balance the competing demands from above and below. Fullan (1991) considers the government's ability to understand the principles and processes of what makes for effective change as very important. Governments' policies of implementation depend on the congruence between the reforms and local needs, and on how the changes are introduced and followed through. Especially with the information strategy, it is important to take all schools, urban and rural, into consideration.

Bringing about large-scale changes is always cumbersome. How to introduce change without dictating it? Tagg (1995) claims that the impositions of any national curriculum result in reduced motivation among school staff and poor results. Luckily, and as mentioned before, there is no binding national curriculum in Finland any more. Another thing to consider is how schools have actually made use of this. Fullan (1991:282-288) gives some guidelines for governments which can also help the implementation of the information strategy:

1. Governments should concentrate on helping to improve the capacity of other agencies to implement changes by supporting, guiding, and prodding its future development. Implementation depends more on capacity than it does on compliance.
2. Governments should be clear about what the policy is. The priority and need of the change must be demonstrated and opportunities to ask for clarification and assistance must be provided.
3. An explicit but flexible implementation plan is needed to guide the process of bringing about change in practice. Fostering interaction between local personnel, district, and government staff is necessary.
4. Governments should become preoccupied with achieving more basic changes in the teaching profession in the practice and organization of teaching, and in the learning patterns and

experiences of students.

5. Policy-makers must temper their desires for immediate and total change with an understanding of the complexity of the change process. Complexity and persistence go hand in hand.

2.2.3.2 The district administrator

The task for the district administrator is to lead the development and execution of a system wide approach that explicitly addresses and takes into account changes at the district, school, and classroom levels. Fullan (1991:191) argues that "the district administrator is the single most important individual for setting the expectations and tone of the pattern of change within the local district". Fullan (1991:197) continues and claims that "the role of the district is to help schools sort out and implement the right choices". In the information strategy the district's role is to provide resources for the acquisition of hardware and retraining (p.13).

Blumberg (1985:67) acknowledges that the district administrator's task is always a balancing act because there are so many pressure groups, including politicians, school boards, teacher unions, teachers, principals, and the community. Cuban (1988) identifies three roles for the district administrator: *instructional* (teacher of teachers), *management* (administrative chief), and *political* (negotiator).

Whether the district administrator takes the change seriously is of crucial importance. Adopted changes will not go anywhere unless district administration provides specific implementation pressure and support (Huberman and Miles 1984). Fullan (1991:198-214) asserts that the district must lead a process that

- focuses on instruction, teaching, and learning, and changes in the culture of schools;
- test out the need and priority of the change;
- determines the potential appropriateness of the particular innovation for addressing the need;

- clarifies, supports and insists on the role and improves the management skills of principals and other administrators as central to implementation;
- ensures that direct and indirect implementation support is provided in the form of available quality materials, in-service training, one-to-one technical help, and opportunity for peer interaction;
- allows certain redefinition and adaptation of the innovation;
- communicates with and maintains the support of parents and the school board;
- sets up information-gathering system to monitor and correct implementation problems;
- has a realistic time perspective;
- creates the conditions at the classroom and school level for collaborative teaching and principal professionalism; and
- orchestrates the pressure and support necessary for continuous improvement.

According to Fullan (1991:209-214), the relationship between the school and the district is complex; it should incorporate flexibility toward schools, but not at the expense of district-wide goals. Schools cannot redesign themselves. The role of the district is crucial. Individual schools may become highly innovative for a short period of time, but they should receive the district's attention in order to stay innovative. The paramount task of district administration is to build the capacity of the district and the schools to handle changes. Successful change consists of at least five- or six-year periods. The district administrator has the opportunity to lead the way for a large number of schools.

2.2.3.3 The principal

Principals are heads of schools and leaders of changes. This is what is expected of them. Yet, principals are often as confused of the proposed change as teachers are. Principals may end up leading the implementation of changes that they had no hand in developing and may not understand. Fullan (1991:145) claims that almost all districts stress the instructional leadership responsibilities of the principal - facilitating

change, helping teachers work together, and assessing and furthering school improvement. The principal has to take into account teachers' opinions and balance them with the influence of external ideas and people. Conflicts and dilemmas are therefore unavoidable.

Also according to Tanner and Tanner (1980:667), principals are under increasing pressure to be innovative and in tune with the latest trends. Tanner and Tanner argue that principals made teachers break the curriculum down into tiny skill objectives during the behavioristic trend. It can be argued that the same principals should now make their teachers "undo" the behavioristic changes once made.

Sarason (1982) claims that most of principals' time is spent on administrative housekeeping matters and maintaining order. Duke (1988:309) found in his study several dissatisfactory issues concerning the principal's work: policy and administration, lack of achievement, sacrifices in personal life, lack of growth opportunities, lack of recognition and too little responsibility, relations with subordinates, and lack of support from superiors. Also Fullan (1991) acknowledges the fragmentation and overload concerning principals' work: 1) principals are not often helped by central and district administrators, 2) they do not have or create much opportunity to professionally interact with other principals, 3) they may have to implement change they do not understand, in which subordinates are not interested, or in which they are interested but are unclear how to obtain necessary resources and assistance, 4) the principal is in the middle of highly complicated personal and organizational change processes. The English teacher and the information strategy are just pieces of puzzle that the principal must connect.

Smith and Andrews (1989) found that effective principals were engaged in four areas of interaction with teachers: as *resource provider,* as *instructional resource,* as *communicator,* and as *visible presence.* Fullan

(1991) suggests that effective principals do not neglect stability in favor of change, they protect the school from ill-conceived and unwanted change. He claims that projects and innovations that have the active support of the principal are most likely to succeed. Therefore the information strategy must receive support from the principal in order to be successful.

Sagor (1992) supports Fullan's (1991) belief in the importance of the simultaneous application of pressure and support during educational change. Murphy (1991) contends that effective principals manage the seemingly contradictory elements of the job: to develop leadership both from the top down and from the bottom up, to be both tough and gentle, leader and follower. Fullan (1991) found that successful principals showed an active interest by spending time talking with teachers, planning, helping teachers get together, and being knowledgeable about what was happening. They all figured out how to reduce the amount of time spent on routine administrative tasks and their schools had one common denominator: collaborative work culture.

Fullan (1992:19-20) argues "that principals would do more lasting good for schools if they concentrated on building collaborative work cultures rather than charging forcefully in with heavy agendas for change...principals have no monopoly on wisdom". Overattachment to particular innovation or philosophy restrict and suppress the voices of teachers who may have questions or who may be open to other ideas than the ones being considered. Principals can get blinded by their own vision if they feel they must manipulate the teachers and school culture to conform it. Principals should endorse norms of collegiality that respect individuality, lifelong teacher development, and restructuring initiatives. It requires sophistication: to express their own values without being imposing; to draw out other people's values and concerns; to manage conflict and problem solving; to give direction and to be open at the same time.

Fullan (1991, 1992) offers some guidelines for principals:

1. Understand the culture of the school before trying to change it;
2. Value your teachers, promote their professional growth;
3. Express and extend what you value;
4. Build a vision in relation to both goals and change process;
5. Avoid "if only" statements, externalizing the blame, and other forms of wishful thinking;
6. Start small, think big. Do not overplan or overmanage;
7. Focus on something concrete and important like curriculum and instruction;
8. Focus on something fundamental like the professional culture of the school;
9. Empower others below you: make menus, not mandates;
10. Use bureaucratic means to facilitate, not to constrain.

2.2.3.4 The teacher

It is often said that educational change, the implementation of new innovations or strategies like the national information strategy, depends on what teachers think and do. Although this is true to some extent, it is still an over-simplified view: equally important is what those around teachers at the school, district, and federal levels do. The previous sections have explained their role but now we turn to the teacher as an agent of change.

Levrat (1992:68) points out that teaching is a strange process in which basic skills and knowledge are transmitted along with social, cultural, and ethical attitudes. When IT is brought in, an entirely new set of problems arise. A policy, such as the information strategy, imposed from outside, meets with tensions, expectations, and fears of rejection. IT is costly and full of surprises, psychologically as well as technically.

Hodas (1993) suggests that teachers are usually overloaded with routine-like work and with high expectations of society. A teacher's job is usually secured for life and they have very much grown into it. They feel at home in today's schools because schools are similar to what they

experienced during their own school years. Introducing information technologies into this kind of environment is bound to be problematic. There is much more for teachers to cope with now than there was 10 or 15 years ago. Moreover, in the eyes of practicing teachers, the integration of IT may seem the area of least immediate concern (Brierley and Kemble 1991). In addition, some teachers are often more or less afraid of computers, it is no wonder that they may be reluctant to implement any change such as the information strategy. Low implementation of IT cannot be explained just by insufficient hardware and poor software, teachers' attitudes and motivation play a crucial role (Taalas 1995).

Fullan (1991) sees change especially cumbersome from the teacher's point of view when it is dictated from above. The information strategy may seem to them as a mandate from above, yet another burden to carry on top of an already heavy work load. Fullan (1991:127) emphasizes that "change is a highly personal experience - each and every one of the teachers who will be affected by change must have the opportunity to work through this experience in a way in which rewards are at least equal to the costs". It is of utmost importance that teachers feel that the change is needed, have the chance to plan it, and that they have sufficient information of it.

Fullan (1991:136-141) argues that teachers, individually and in groups, need to consider several issues before deciding to concentrate their energies into a particular change effort. First, they must consider the need and priority of the change. Critical evaluation is a necessity. Second, an attempt should me made to ascertain if the administration is, and will be, endorsing the change and why. Some form of active commitment by administrators will be necessary for freeing up the resources needed for the innovation to succeed. Third, the teacher should assess whether fellow teachers are likely to support the change. Fourth, individual teachers have the responsibility to make some