



The ITMF Secretariat

Evaluation of ITMF

Overall results

Evaluation of ITMF. Overall results

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Summary

About ITMF

The Danish project "IT, Medier og folkeskolen" (ITMF), in English "ICT, Media and Primary and Lower Secondary School", was carried through from 2001 to 2004. During the project period almost every second municipality and every third primary and lower secondary school have developed education in their schools in cooperation with researchers, supplementary training institutions, publishing houses, ICT and media experts and other relevant experts. Furthermore, DR Undervisning (Radio Denmark Education) have digitalized educationally relevant media products from their archive, which the schools have got access to. At the same time thousands of teachers and educators have participated in pedagogical supplementary ICT training under ITMF.

In 2000 the financial framework for the project amounted to DKK 340 million. Subsequently with indexation and savings the total sum was DKK 323 million.

The ITMF project in numbers:

Educational option (Development projects) <ul style="list-style-type: none">▪ 87 development projects during the period 2001-2004.▪ Development projects carried out in cooperation between schools, municipalities and counties. Network between teachers, publishers, ICT and media producers, parents, local actors and decision makers.▪ 46% of all municipalities in one or more development projects.▪ 32% of all primary and lower secondary schools (including 10th form centres and county council primary and lower secondary special schools) have been involved.▪ 32 websites developed where experiences and good examples from the projects are distributed. These have been developed by the development projects themselves, by researchers, evaluator and the ITMF Secretariat.▪ Research connected with all development projects, as well as a few best practice projects. All in all 91 research projects. Researchers from 5 universities participated.▪ Financial framework: DKK 112.3 million.	Teachers' qualifications <ul style="list-style-type: none">▪ 18 projects with focus on best practice in supplementary education for teachers.▪ 15,642 teachers have participated in Skole-IT with subsidy. Thus approx. two out of three primary and lower secondary school teachers have participated in a Skole-IT course.▪ 1,986 SFO teachers have participated in SFO-IT with subsidy.▪ 413 teacher training college teachers have participated in Seminarie-IT with subsidy.▪ More than 18,000 educators from primary and lower secondary schools, teacher training colleges, and educational staff from leisure-time activities centres have participated in pedagogical ICT supplementary training.▪ Subsidies provided to cover course fees and materials, whereas time usage for participation was covered by the institutions and the municipalities.▪ Financial framework: DKK 81.8 million.
Purchase of TV broadcasts (www.dr.dk/skole) <ul style="list-style-type: none">▪ DR has developed a total of 35 themes, clip collections and interactive features with underlying content elements such as teachers' guides and pupils' tasks.▪ Ultimo 2004 a total of 10,000 components in the digital media library.▪ Materials produced in 8 main areas: Media, Society, Science, Cultural life, Youth, History, Everyday life and Sports.▪ Financial framework: DKK 70.5 million.	Sektornet (ICT infrastructure of the schools) <ul style="list-style-type: none">▪ 355 primary and lower secondary schools have been connected to Sektornet. All primary and lower secondary schools have thus been offered connection to Sektornet/Internet paid for by the state.▪ For approx. 1,200 primary and lower secondary schools it is now technically possible to use images and sound in education.▪ Financial framework: DKK 31.5 million.
<ul style="list-style-type: none">▪ Financial framework for organization, evaluation and dissemination: DKK 26.9 million.	

See more information about ITMF at www.itmf.dk including the ITMF narratives (in Danish).

Results and impact of ITMF

The overall objective of ITMF is to strengthen the pedagogical use of ICT and other media in education, and to make ICT and media an active incentive in the daily life of the school. This can be specified in the following nine goals:

1. To support the reading, arithmetic, writing and language skills of the students, with focus on the learning process
2. To strengthen the students' general ICT and media qualifications

3. To strengthen the content of the subjects including themes, concepts and methods
4. To strengthen interdisciplinary work – in the individual subject, across subjects and relative to the students' lives in general
5. To aim at creating a more inclusive school
6. To create new learning methods in primary and lower secondary school
7. To strengthen knowledge sharing and exchange of experiences
8. To create and strengthen increased dialogue between the interested parties of primary and lower secondary school
9. To strengthen the students' influence on education

The assessment shows across ITMF's activities that the ITMF project has contributed in particular towards the fulfilment of the first seven goals mentioned in the above list.

A large number of development and best practice projects relevant to each of the seven goals and large parts of these projects have been successful. Most of the projects were successful, and important experience was gathered. Only few projects did not contribute towards fulfilling the goals of ITMF. 60% of the project managers estimate that the project concept lives on in the schools.

In addition to these goals ITMF has contributed towards putting ICT and media in a higher perspective on the agenda of primary and lower secondary school than before. A questionnaire study among a representative number of teachers in primary and lower secondary school shows that a large majority of the teachers have more frequent mutual discussions about the use of ICT and media now than was the case three years ago. The primary and lower secondary school teachers now have better access to ICT-based learning materials and pedagogical/didactic concepts as a consequence of ITMF.

The assessment of the development and best practice projects shows that five factors were particularly important in connection with the change of practice in the projects. The five factors are pedagogy and didactics, management, cooperation and networks, competence development, and personal commitment. Particularly *pedagogy and didactics* and *management* turn out to be absolutely essential to a change of practice regarding the use of ICT and media and school development in the long term.

Schools that had clear common goals and common values integrated ICT and media in education sooner and easier than other schools. Moreover, ICT and media contributed to a larger extent to a change of practice in these schools than was the case in other schools. The faster integration was especially due to the fact that there was a clear idea of the school's goals and thus the aim of the use of ICT and media. The assessment also shows that it is an important prerequisite for such development projects that the management of the school creates an innovative environment in the school with discussion of common values.

The assessment of Skole-IT (School-ICT) and SFO-IT (School-based Leisure Time Activities-ICT) shows that the participation in the course had a positive impact on the use of ICT in education and in relation to an increased degree of electronic communication. After participation in pedagogical ICT supplementary training every other teacher estimates that he/she has increased the use of ICT in education to some extent.

The assessment of DR's (Radio Denmark) project shows that the financial support of the development of www.dr.dk/skole resulted in a well-developed

digital learning tool, which can be very useful to both students and teachers in primary and lower secondary school in many different contexts. All in all, students and teachers are very satisfied with the pedagogical value and the quality of the students' tasks and teachers' instructions.

The research in connection with the ITMF projects has brought with it increased research in the field, and additional research capacity has been built up in the field. Rambøll Management, however, estimates that the research-related impact has not been the best, because some researchers had to actively help the project manager plan and implement the project, and the time allowed for analyzing and reporting was limited.

By and large, the quantitative use of ICT and media has hardly changed in primary and lower secondary school during the ITMF project. The extent of the use of technology is not a problem as such, if the reasons for selecting or rejecting technology are primarily pedagogical and didactic. The assessment, however, shows that in some cases the choice is affected by the teachers' user skills rather than by professional consideration.

However, the assessment shows that qualitatively there has been a development in primary and lower secondary school since 2001. Primary and lower secondary schools have to a certain extent started using ICT and media with a view to support professional learning, but some goals are far from being fulfilled as yet. The different technologies are more widespread, and a large number of teachers have gained more pedagogical and didactic knowledge about ICT and media. The teachers also experience improved access to good ICT-based educational material, concepts for integration of ICT and media, etc.

The assessment confirms on the one hand that ITMF's efforts in relation to development of the teachers' user qualifications have been necessary. On the other hand the assessment also shows that there is still some way to go before reaching the goal with regard to user qualifications.

ITMF's problem areas

ITMF has only to a lesser extent fulfilled the goals of *strengthening the dialogue with the interested parties of primary and lower secondary school* and *strengthening the students' influence on the education*. The supported projects, which have focused on strengthening the dialogue with the interested parties of the school through ICT and media, have in several cases been less successful. Moreover, only few of the supported projects have had increased student influence as a primary goal, just as only few teachers in primary and lower secondary school have had as a goal to integrate ICT and media in the curriculum.

Rambøll Management estimates that the most essential barrier for the ITMF project has been that the framework of the implemented development projects has not been the best at many primary and lower secondary schools. For instance, many primary and lower secondary schools have limited experience with systematic planning and implementation of development projects and follow-up. Thus, Rambøll Management estimate that more projects could have meant better and more systematically documented results if the prerequisites had been there. Furthermore, many projects were carried out by enthusiasts, and many of the projects lacked a continuous involvement of the *whole* school or the *whole* municipality with a view to anchorage and dissemination of the results.

The idea behind ITMF that ICT and media should be used consciously as a tool to support the learning of central skills (such as reading, writing, arithmetic and languages) has only penetrated with regard to a minority of the teachers. To take an example, only 31 % of the teachers believe that the aim of the ICT usage is to support the pupils' writing skills, in spite of the fact that word-processing is used in education by 72 % of the teachers.

The greatest impact of ITMF is found in relation to the teachers who are experienced users, and who from the start had already come far with respect to integration of ICT and media in their tuition. Many teachers still choose not to use ICT and media in teaching situations because of their lack of technological skills rather than for pedagogical/didactic reasons.

The assessment shows that the teachers' technical competencies still constitute an important challenge despite the staking on the Pedagogical ICT Licence. This indicates that many schools have not followed up on utilization of the teachers' new skills after having acquired the Pedagogical ICT Licence (Skole-IT). On the other hand the impact of the Pedagogical ICT Licence has been the greatest where the access to technical and pedagogical ICT instruction is immediate and where there are clear goals for the use of ICT.

In the ITMF project focus has been on dissemination of the experiences of the schools involved in an ITMF project to other schools. The assessment shows that every third teacher has heard about the ITMF project. At the schools that participated in an ITMF project the percentage is substantially higher (51%), whereas for teachers at schools that did not participate in an ITMF project the percentage is substantially lower (22%). However, fewer teachers, by far, possess knowledge of more specific matters related to ITMF. The relatively limited knowledge should be viewed in the light of the dissemination not being completed as yet. A questionnaire study among a representative selection of teachers was carried through in the autumn of 2004, when several mediation activities had not yet been carried through. Rambøll Management estimates that several newly developed educational materials including DR's large project www.dr.dk/skole will be spread further in the years to come. Furthermore, a number of teachers may utilize the experience and products of the project without actually knowing ITMF as a project.

Preface

This report sums up the main results of Rambøll Management's assessment of the initiative "IT, medier og folkeskolen" (ITMF), (in English ICT, Media and Primary and Lower Secondary School). The results are documented in detail in six sub reports, all of which are accessible at the website www.evaluering.itmf.dk (in Danish).

This report renders the conclusions of the six sub reports, but chapter 2 also contains Rambøll Management's overall assessment and recommendations based on a cross-analysis of the six sub reports.

The target group for this report is central decision-makers at a national level and others with an interest in the results and impact of the ITMF project.

1. Introduction

This report gathers up the results from Rambøll Management's assessment of the project "IT, medier og folkeskolen" (ITMF), in English ICT, Media and Primary and Lower Secondary School. The results are documented in detail in six sub reports, where the evaluation results are described in detail.

All the sub reports and other products of the evaluation can be seen on the evaluation website www.evaluering.itmf.dk (in Danish).

1.1 The background of the ITMF project

In the year 2000 the Danish government decided to implement a national project in the field of ICT and media in primary and lower secondary school. The project "IT, medier og folkeskolen" (ITMF) was carried through during the period 2001-2004. The financial framework of the project in 2000 was a total of DKK 340 million. Due to indexation and savings this sum was later adjusted to a total of DKK 323 million.

During the project period a large number of schools and municipalities have developed education in primary and lower secondary school in cooperation with researchers, supplementary teaching institutions, publishers, ICT and media experts and other relevant experts, and DR Undervisning (Radio Denmark Education) have digitalized educational media products from their archive to which the schools now have access.

The idea was to support the views of the education act governing primary and lower secondary school. The goal of the school education is that the pupils fully develop all their abilities. The school should allow for immersion, enterprise, mutual experiences and democracy. Pupils should experience the interaction between qualifications, insight, knowledge and social skills and learn to utilize and respect each other's differences. The spirit of fellowship in primary and lower secondary school should contribute towards ensuring that the pupils learn the value of personal development in an interdependent and responsible community. This was the basis of the ITMF project.

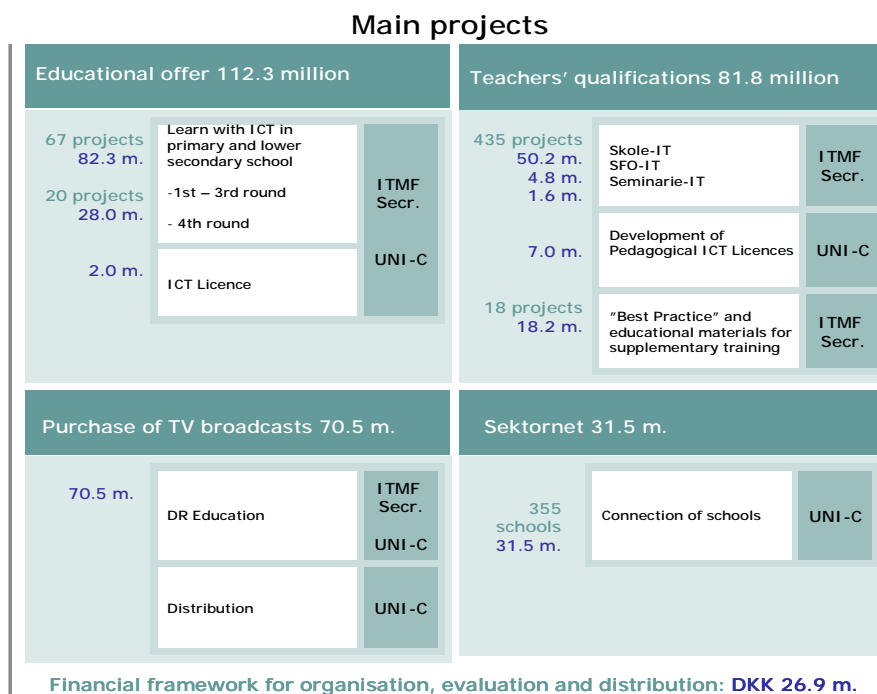
Below is selected financial information about the ITMF project:

Figure 1.1 – The ITMF project in numbers

<p>Educational option (Development projects)</p> <ul style="list-style-type: none"> ▪ 87 development projects during the period 2001-2004. ▪ Development projects carried out in cooperation between schools, municipalities and counties. Network between teachers, publishers, ICT and media producers, parents, local actors and decision makers. ▪ 46% of all municipalities in one or more development projects. ▪ 32% of all primary and lower secondary schools (including 10th form centres and county council primary and lower secondary special schools) have been involved. ▪ 32 websites developed where experiences and good examples from the projects are distributed. These have been developed by the development projects themselves, by researchers, evaluator and the ITMF Secretariat. ▪ Research connected with all development projects, as well as a few best practice projects. All in all 91 research projects. Researchers from 5 universities participated. ▪ Financial framework: DKK 112.3 million. 	<p>Teachers' qualifications</p> <ul style="list-style-type: none"> ▪ 18 projects with focus on best practice in supplementary education for teachers. ▪ 15,642 teachers have participated in Skole-IT with subsidy. Thus approx. two out of three primary and lower secondary school teachers have participated in a Skole-IT course. ▪ 1,986 SFO teachers have participated in SFO-IT with subsidy. ▪ 413 teacher training college teachers have participated in Seminarie-IT with subsidy. ▪ More than 18,000 educators from primary and lower secondary schools, teacher training colleges, and educational staff from leisure-time activities centres have participated in pedagogical ICT supplementary training. ▪ Subsidies provided to cover course fees and materials, whereas time usage for participation was covered by the institutions and the municipalities. ▪ Financial framework: DKK 81.8 million.
<p>Purchase of TV broadcasts (www.dr.dk/skole)</p> <ul style="list-style-type: none"> ▪ DR has developed a total of 35 themes, clip collections and interactive features with underlying content elements such as teachers' guides and pupils' tasks. ▪ Ultimo 2004 a total of 10,000 components in the digital media library. ▪ Materials produced in 8 main areas: Media, Society, Science, Cultural life, Youth, History, Everyday life and Sports. ▪ Financial framework: DKK 70.5 million. 	<p>Sektornet (ICT infrastructure of the schools)</p> <ul style="list-style-type: none"> ▪ 355 primary and lower secondary schools have been connected to Sektornet. All primary and lower secondary schools have thus been offered connection to Sektornet/Internet paid for by the state. ▪ For approx. 1,200 primary and lower secondary schools it is now technically possible to use images and sound in education. ▪ Financial framework: DKK 31.5 million.
<p>▪ Financial framework for organization, evaluation and dissemination: DKK 26.9 million.</p>	

The financial framework of the ITMF project in March 2003 is presented in the below overview:

Figure 1.2 – Financial framework



The financial framework of DKK 340 million in 2000 was adjusted due to succeeding indexation and savings in relation to the Finance Act for 2002. The final accounts for the ITMF project will be completed at the end of the project.

For detailed information about the activities of the ITMF project see www.itmf.dk (in Danish).

1.2 Focus of the evaluation

In 2002 Rambøll Management was chosen via a tender to carry out the evaluation of the ITMF project.

The focus of the evaluation was based on Rambøll Management's interpretation that the objective of the ITMF project was to create a broadly founded change of practice in primary and lower secondary school through integration of ICT and media as a natural element in the daily practice of the schools. In other words the subsidized projects under ITMF were to lead the way and generate experience and models that could inspire schools, municipalities and other interested parties. In the light of this Rambøll Management estimated that the tendered evaluation task had three goals:

1. To document project initiatives and results that further a change of practice in primary and lower secondary school as regards ICT and media. This with a view to dissemination of experiences and examples of/best practice to the interested parties of primary and lower secondary school.

2. *To assess whether the ITMF project had reached the goals and had supported the views of the Education Act.*
3. *To support the projects via a number of project management and evaluation tools and ensure that the projects themselves gathered results and experiences that could be used as an incentive for the project itself as well as a contribution to the overall evaluation.*

The emphasis of Rambøll Management's evaluation was placed on the first point.

During the process of the evaluation the results were commented and put into perspective in a Nordic context by a Nordic expert panel. The panel included researchers Ola Erstad and Sigmund Lieberg from the University of Oslo and Gunilla Jedeskog from Linköping University. All three researchers have thorough experience with evaluations of national initiatives in both Norway and Sweden, and they contributed constructively to Rambøll Management's work and interpretations.

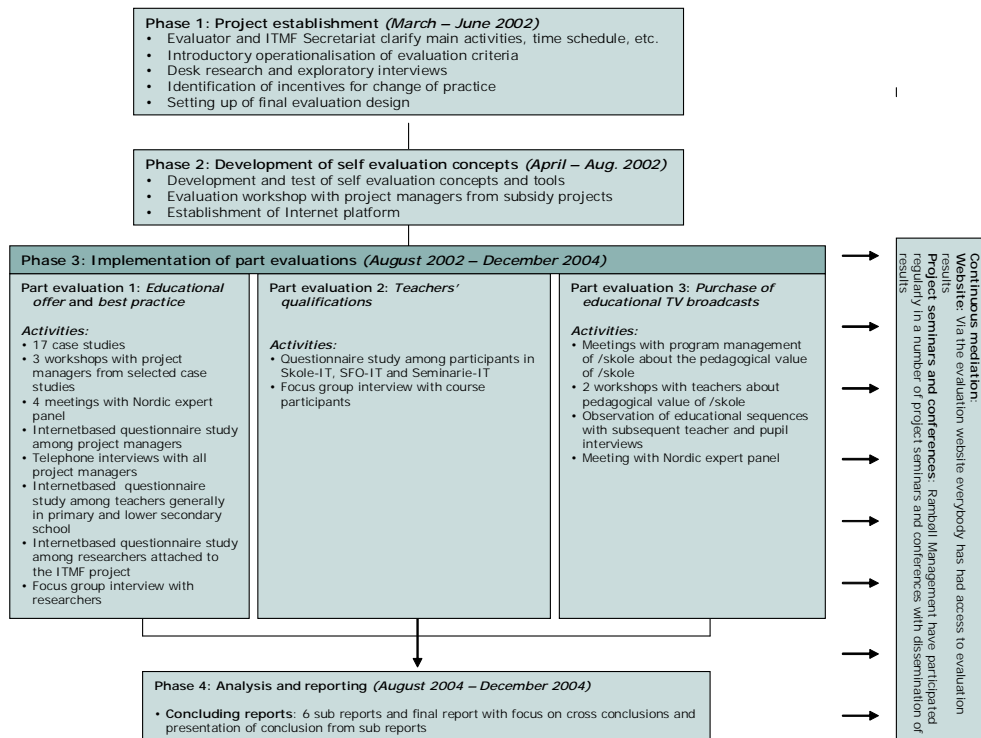
1.3 Activities, method and products of the evaluation

The evaluation was carried out in three main projects under "IT, medier og folkeskolen":

- Educational facilities
- Teachers' qualifications – including the sub-projects Best Practice, Skole-IT, SFO-IT and Seminarie-IT
- Purchase of educational television broadcasts.

Rambøll Management carried out the evaluation on the basis of the following evaluation design based on a number of quantitative and qualitative methods:

Figure 1.3 - Evaluation design



In addition to the general final report Rambøll Management produced six sub reports:

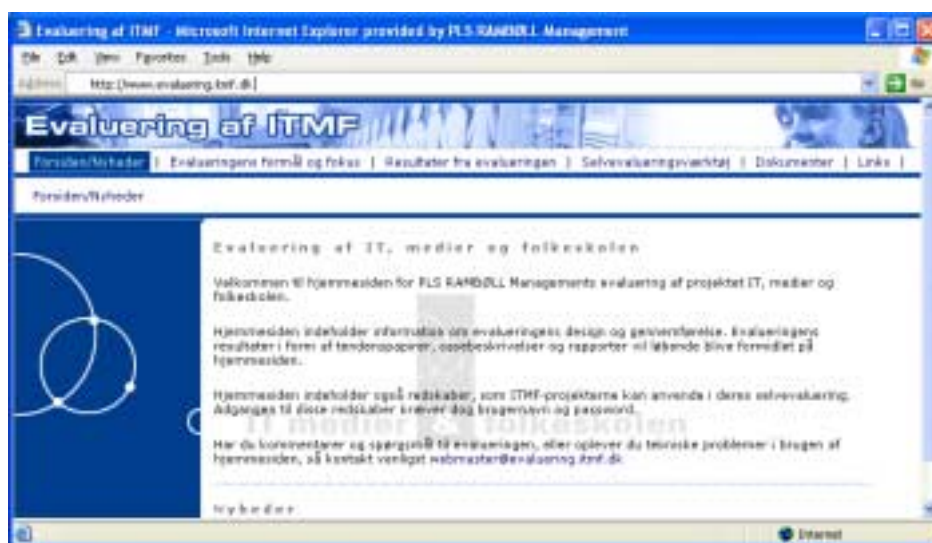
- Results and impact of project "IT, medier og folkeskolen"
- Motives for change of practice
- Evaluation of Skole-IT (School-ICT)
- Evaluation of SFO-IT (School-based Leisure-time Activities-ICT)
- Evaluation of Seminarie-IT (Teacher Training College-ICT)
- DR's experiences – development of a digital learning tool.

The latter report was produced in collaboration with DR Undervisning (Radio Denmark Education) and gathered DR and Rambøll Management's experiences from the main project Purchase of educational TV broadcasts (www.dr.dk/skole).

Apart from this Rambøll Management also in connection with the evaluation produced:

- An Internet-based self-assessment tool
- 17 case study reports
- Three interdisciplinary trend papers.

All reports and other evaluation products are accessible at www.evaluering.itmf.dk



Furthermore, via the evaluation work Rambøll Management identified critical success factors for integration of ICT and media and based on this developed three evaluation narratives, which can be used as Internet-based tools by other schools that wish to aim at ICT and media to a greater extent. The three evaluation narratives/tools are:

- Good advice on project management in primary and lower secondary school
- How to develop our school – integrating ICT and media in the day-to-day work
- Evaluation of projects in primary and lower secondary school – a self-assessment evaluation tool.

In future the three tools will be accessible via www.itmf.dk (in Danish).

1.4 Structure of the report

This final report gathers the conclusions of Rambøll Management's sub reports. At the same time Rambøll Management makes an estimation of where the present challenge lies in the field of ICT and media in primary and lower secondary school and give recommendations for the further work on the national as well as the local level.

Chapter 2 is the overall chapter of conclusions, where central conclusions across the evaluation are presented. In addition, Rambøll Management give a number of recommendations for further efforts regarding ICT and media in primary and lower secondary school.

Chapter 3 presents the overall conclusions of the sub report "Incentives for Changes of Practice". The chapter assesses the changes of practice at the participating schools and stress five central incentives for such changes of practice.

Chapter 4 gathers the main conclusions from the sub report "Results and Impact of project "IT, medier og folkeskolen"". In the chapter the results of

the individual projects are described as well as the impact on primary and lower secondary school as a whole.

Chapter 5 focuses on the essential experiences and recommendations in connection with Rambøll Management's evaluation of www.dr.dk/skole. The chapter evaluates DR's pedagogical and didactic choice in relation to preparation and mediation of the educational TV broadcasts for digital learning materials.

Chapter 6, Chapter 7 and **Chapter 8** gather the conclusions of the sub reports: "Evaluation of Skole-IT", "Evaluation of SFO-IT" and "Development of Seminarie-IT".

For more detailed data about the evaluation see sub reports and other products at www.evaluering.itmf.dk.

2. Overall conclusions and recommendations

This chapter first describes the overall conclusions of the evaluation and next Rambøll Management's recommendations for further efforts in the field.

2.1 Conclusions in relation to the objectives of the evaluation

Rambøll Management's evaluation of the ITMF project had three general objectives:

To document project initiatives and results, which further a change of practice in primary and lower secondary school with regard to ICT and media. This with a view to dissemination of experiences/best practice to the interested parties of primary and lower secondary school.

1. *To assess whether the ITMF project had attained the goals and supported the intentions of the education act.*
2. *To support the projects via a number of project management and evaluation tools ensuring that the projects themselves gather results and experience, which could be used to further the project and as a contribution towards the overall evaluation.*

Below are the most essential conclusions in relation to the objectives of the evaluation.

2.1.1 *Goal 1: to document project initiatives and results, which further changes of practice in primary and lower secondary school in the field of ICT and media. This with a view to dissemination of experience/best practice to the interested parties of primary and lower secondary school.*

To a large extent Rambøll Management's focus of evaluation has been to increase knowledge of incentives for changes of practice in the projects under the "Educational Option" and "Best Practice". The aim was to both *describe* the changes of practice that took place and *explain* why.

For many years focus had been on *barriers* to integration of ICT and media in primary and lower secondary school, but to stress the progressive focus of the ITMF project Rambøll Management in the evaluation of the projects focused on analysis and dissemination of the factors that contribute towards furthering the integration of ICT and media – the so-called *incentives for changing of practice*.

Changes of practice can be interpreted in several ways. In the evaluation of ITMF Rambøll Management chose on the basis of discussions with among others the Nordic expert panel to define change of practice in the following way:

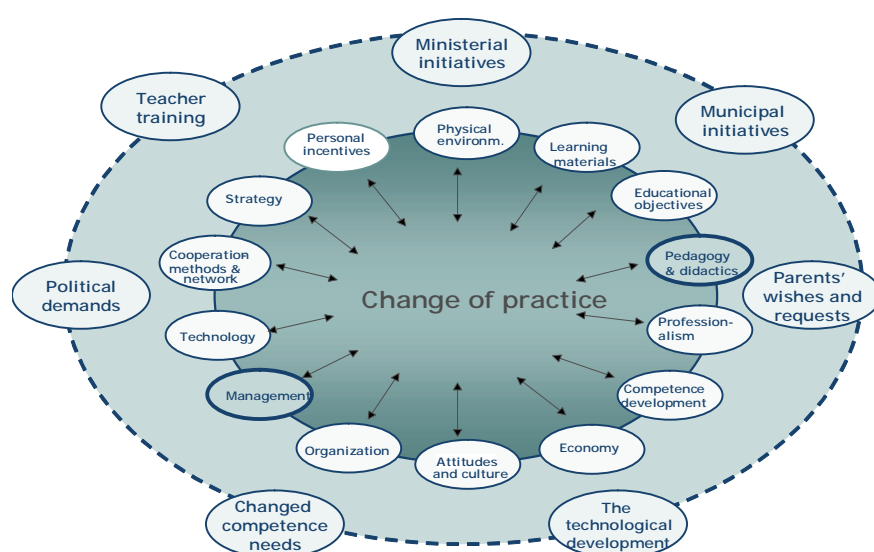
- That ICT and media becomes a deliberate learning incentive for the choice and use of the pupils' and the teachers' learning materials, learning activities and communication methods.
- That the teachers' and the pupils' ICT and media skills are improved.
- That ICT and media create new collaborative relations between the interested parties of the school.

The definition was broad because it was necessary to leave sufficient scope for ICT and media to create new, changed forms of practice in such a way that it was not just a supplement to the existing educational practice.

The next step was to explain the changes of practice that took place via the ITMF projects, i.e. to describe the incentives of the changes of practice.

The below figure shows the model of incentives that were the basis of the evaluation:

Figure 2.1 – Incentives for change of practice



In the innermost circle are the factors that can function as incentives of a domestic change of practice at the school, and which the school to a great extent can influence. The outer circle contains the external framework conditions, which can also function as incentives on which the individual school does not always have any influence.

In the evaluation Rambøll Management carried out 17 case studies and interviewed all the project managers to assess the degree of change of practice and attain a deeper understanding of the central incentives that caused the change of practice. During the course of the evaluation we gathered the experiences in three trend papers each of which focused on the roles of selected incentives in the projects.

The evaluation shows that 4 out of 5 ITMF project managers believe that their project caused changes within the focus area of the project. On a line with the project managers Rambøll Management concluded that by far the majority of the projects resulted in changes of practice in the focus area of their project.

The focus areas of the projects have primarily been to develop a certain subject or theme at certain educational levels rather than to develop the whole school. Thus the evaluation shows that the change of practice only in a minority of the projects had any effect on the other activities and teachers of the school.

Based on the experiences from the ITMF projects Rambøll Management estimated that five incentives have been particularly important in relation to creating a change of practice. They are the following:

- Pedagogy and didactics
- Management
- Collaboration and network
- Competence development
- Personal commitment.

The project managers also estimated that these five incentives were the most important in their own projects with regard to gaining results and anchoring the projects.

Especially the first two incentives – *pedagogy* and *didactics* and *management* – turned out to be absolutely crucial for the creation of a change of practice of the use of ICT and media and school development in the long term.

A clear conclusion of the evaluation was that the schools that had clear common pedagogical goals and common values integrated ICT and media in education faster and easier. Apart from this ICT and media contributed to a greater extent towards changing the practice at these schools than was the case at other schools. The faster integration was not least due to the fact that there was a clear understanding of the objectives of the school and thus also the aim of the use of ICT and media.

The evaluation also shows that it is a crucial prerequisite for such development projects that the school management creates an innovative environment at the school with discussion of common values.

Apart from this it must be stressed that through www.dr.dk/skole a well-developed digital learning material has been built, which teachers and pupils can utilize in future thus strengthening the integration of ICT and media in education. Among the pupils and teachers involved in the development process there has been marked satisfaction with the educational value and quality, although there is still scope for improvement.

The conclusions on incentives for change of practice are described in detail in Chapter 3 and also in the sub report: "Incentives of Changes of Practice".

2.1.2 *Goal 2: To assess whether the ITMF project had attained the goals and supported the intentions of the education act.*

To assess whether the ITMF project has attained the overall goals Rambøll Management in dialogue with the ITMF Secretariat have identified a number of concrete goals for the ITMF project. This was done on the basis of central background documents of the ITMF project, including the political agreements behind the ITMF initiative.

These goals were applied for assessing whether the overall objectives of the ITMF project were attained. The evaluation thus assessed the extent of the contribution of the ITMF project towards:

1. Supporting the pupils' reading, arithmetic, writing and language skills with focus on the learning process
2. Strengthening the pupils' general ICT and media qualifications
3. Strengthening the content of the subjects including themes, concepts and methods
4. Strengthening interdisciplinary work – in the individual subjects, between subjects and in relation to the childrens' lives as a whole
5. Furthering an inclusive primary and lower secondary school
6. Creating new learning methods in primary and lower secondary school
7. Strengthening knowledge sharing and exchange of experiences
8. Creating and strengthening increased dialogue between the interested parties of primary and lower secondary school
9. Strengthening the pupils' influence on education

These goals were evaluated across the ITMF activities with special focus, however, on the evaluation of the 105 projects that were carried through under the "Educational Option" and "Best Practice". The study was based on the following four data sources, a.o.:

- Interview with all the project managers where it was practicable.
- Questionnaire study among all researchers attached to the ITMF project, as well as a subsequent focus group interview with selected researchers.
- Questionnaire study representatively among teachers in primary and lower secondary schools in Denmark.
- 17 in-depth case studies.

The evaluation shows across all ITMF's activities that the ITMF project has contributed considerably towards fulfilling the seven first mentioned goals in the list above.

The main results of the interviews with project managers and case studies were that ITMF has created increased focus on pedagogical/didactic integration of ICT and media in primary and lower secondary school, among other things in the form of more discussions, increased knowledge among the teachers and more new learning materials.

Furthermore, the evaluation shows that teachers who received support via the ITMF project to participate in Skole-IT (School-ICT) have increased their use of ICT in education. After participation in pedagogical supplementary ICT training every second teacher estimates that he/she has increased his/her use of ICT in education to a certain extent.

As a whole, across all primary and secondary schools, the use of ICT and media has not changed quantitatively during the ITMF project. The extent of technology application does not in itself present a problem, if the selection or rejection of technology is made for pedagogical and didactic reasons. However, the evaluation shows that the choice in some cases was influenced by the teachers' user qualifications rather than professional reasons.

However, the evaluation shows that there has been a qualitative development in primary and lower secondary school since 2001. To a certain extent schools have started using ICT and media with a view to support the professional learning, but some goals are still far from fulfilled as yet. The various technologies have become more common, and a large group of teachers have acquired an increased pedagogical-didactic knowledge of ICT and me-

dia. The teachers also experience improved access to good ICT-based learning materials, concepts for integration of ICT and media, etc.

On the one hand, the evaluation confirms that the efforts of ITMF in relation to development of the teachers' user qualifications have been necessary. On the other hand, the evaluation also shows that there is still some way to go before the goal is reached as regards user qualifications.

All in all, Rambøll Management's assessment is that ITMF's goal regarding strengthening of pedagogical/didactic use of ICT and media in education in primary and lower secondary school has been attained to a certain extent.

Generally, most of the supported projects have reached satisfactory results, and the goals of the projects are highly relevant as regards the national objectives. Rambøll Management estimate based on case studies, interviews with project managers and researchers that the majority of projects have attained real results and have gathered important experience during the course of the project. Very few projects can be said to be decidedly unsuccessful. This is also supported by the fact that 60 % of the project managers estimate that the project concept lives on at the schools to a high degree.

Rambøll Management, however, estimate that the framework of the implementation of development projects in many primary and lower secondary schools has not been the best. For example, many primary and lower secondary schools have limited experience with systematic planning and implementation of development projects and the follow-up. It is Rambøll Management's estimate that more projects could have reached better and more well-documented results if the schools involved had had greater capacity for planning, implementing and documenting the development projects.

As already mentioned the supported projects have contributed towards realization of seven of the nine national objectives. The remaining two objectives regarding the *strengthening of the dialogue with the interested parties of primary and lower secondary school* and *the strengthening of the pupils' influence on education* are only partially fulfilled.

ITMF primarily had an impact among the teachers that were already in the forefront of integrating ICT and media in their tuition. It is primarily these teachers that seek more knowledge about application of ICT and media in primary and lower secondary school, that know the ITMF project and are the first to test new methods and technologies. This appears from a questionnaire study among a representative number of teachers in primary and lower secondary school.

One group of teachers, who from the starting point had not got very far with regard to integration of ICT and media in education, is, however, the exception to this conclusion. ITMF had a noticeable impact among the teachers of the network schools. The network schools are the schools that participated in the ITMF project as part of a network, but where the school did not have the responsibility of project management. The teachers here did not differ significantly from the average in the primary and lower secondary school in 2001, but they developed more than the other groups of teachers over the next three years. Two factors could be important for the development of the network schools. First of all demands were made from outside, because they committed themselves to participate in a project that was a challenge to them. Many network schools were thus recruited for the project via contact from a project management school without any active effort on their part.

Secondly, they could get help from the project management schools, which were typically further advanced as regards ICT and media.

Other conclusions in this area were:

- *That ITMF has contributed towards making good ICT-based learning materials and pedagogical/didactic concepts more accessible to the teachers, but primarily the most active teachers are aware of their existence.*
- *That the dissemination of the experiences from the ITMF projects was limited at the time it was assessed in the autumn of 2004, but the dissemination is expected to continue in the coming years via distribution of the new learning materials that have been developed.*
- *That the teachers' technical qualifications are still a central problem despite the Pedagogical ICT Licence. The teachers that are the most skillful technical users also have the strongest pedagogical/didactic qualifications in relation to integration of ICT and media in education.*
- *That the ITMF project has created new broad and in-depth research and contributed towards increased research capacity in the field, but that the framework conditions to some extent have made the work difficult for the researchers.*

For more detailed description of the above conclusions see Chapter 4 and the sub report: "Results and impact".

2.1.3 *Goal 3: To support the projects via a number of project management and evaluation tools ensuring that the projects themselves gather results and experiences, which could be used to further the project and as a contribution to the overall evaluation.*

As part of the ITMF project it was the intention that the project participants should reflect on the development and results of the project through self-assessment activities. With a view to supporting the reflection and self-assessment of the projects Rambøll Management developed an Internet-based evaluation tool (see www.evaluering.itmf.dk). The evaluation tool was an option for the projects and it was introduced at project management seminars and at five evaluation workshops.

Rambøll Management carried through two different forms of evaluation workshop. "Evaluation workshop I" focused primarily on the purpose of self-assessment and the work with self-assessment in the introductory stages of an ITMF project. "Evaluation workshop II" focused primarily on the different methods that project managers can use in connection with self-assessment. The tuition in both types of workshop has been based on the material that is accessible on the Internet.

Based on the experiences and the feedback from the five evaluation workshops and the project managers' evaluation of the process and the tool advanced in connection with interviews with the project managers, it is the evaluator's estimate that the self-assessment work was a mixed success.

Only approximately 30 % of the project managers have worked actively with the self-assessment tool. Rambøll Management estimates that this is due to several factors:

- It was not a formal requirement that the projects should work with the self-assessment tool, which meant that several projects also worked with other self-assessment concepts.
- There is not a long tradition in the primary and lower secondary school sector for working systematically with self-assessment. Lack of knowledge of self-assessment and thus also lack of competence has kept project managers from working with this aspect.
- The role of project manager has been a challenge to many project managers, and therefore focus was elsewhere, especially in the start-up phase of the projects.

However, based on feedback from the five evaluation workshops and on interviews with all the project managers it is Rambøll Management's impression that the evaluation tool has been very useful to the project managers that have used the tool. Not least, it has strengthened their own reflections on the aim and results of the project and thus it has also been a useful project management tool.

The project managers who have used the self-assessment tool have been very positive, however. Acknowledging that it takes motivation and competence to work with self-assessment in primary and lower secondary school Rambøll Management upon agreement with the ITMF Secretariat has adapted the self-assessment tool based on the requirements of the users and has made the tool generic. The self-assessment tool is accessible on www.itmf.dk/eval02



2.2 Conclusions regarding the other evaluation activities

Apart from the three central goals of the evaluation it was also a part of Rambøll Management's task to carry through evaluations of the ITMF initiative regarding the Pedagogical ICT Licence (Skole-IT, SFO-IT og Seminarie-IT) and the main project "Purchase of educational TV broadcasts", which focused on www.dr.dk/skole.

www.dr.dk/skole

The evaluation of www.dr.dk/skole was to currently evaluate the utility and to qualify the pedagogical content and the pedagogical methods in DR's work and products. The evaluation, moreover, was to gather experiences regarding the work with the pedagogical quality and value in the digital learning material www.dr.dk/skole.

The evaluation was centered around user evaluations and was therefore planned with a number of activities where it has been possible for teachers and pupils to test and comment on the different parts www.dr.dk/skole. The

activities included two teacher workshops and observation of study courses with subsequent interviews with teachers and pupils.

The evaluation shows that the economic support of the development of www.dr.dk/skole has resulted in a well-developed digital learning material, which is useful to pupils as well as teachers in basic school in many different educational contexts.

Among pupils and teachers there is generally great satisfaction with the pedagogical value and quality of the existing tasks for pupils and the teachers' guidelines. A more detailed description of the evaluation of www.dr.dk/skole can be seen in Chapter 5.

In relation to the experiences that can be generalized DR and Rambøll Management via their collaboration have prepared a publication, which is included in this evaluation in the form of a sub report: "DR's experiences – development of a digital learning material".

Pedagogical ICT Licence

The evaluation of Skole-IT and SFO-IT, which was undertaken via Internet-based questionnaire studies and focus group interviews, shows that the participation had a positive impact on the use of ICT in education and regarding a greater degree of electronic communication.

The evaluation of Skole-IT shows that every two teachers after participating in Skole-IT to some extent increased their use of ICT in education, and of these every third teacher increased his or her use to a great extent.

The evaluation of SFO-IT shows that the use of ICT together with the children has increased, and that more SFOs have developed rules regarding the application of ICT. This should be viewed relatively to the fact that SFO-IT is a new option, and that the course participants were among the first to receive a supplementary education regarding pedagogical use of ICT in the SFOs.

In the evaluation the focus was also on the importance of a number of framework conditions for the degree of impact. Both the evaluation of Skole-IT and of SFO-IT show that ICT is used the most where there are clear goals for the use of ICT. Furthermore, the evaluation of Skole-IT shows that the impact was greatest where access to technical and pedagogical ICT training and access to equipment was immediate.

The impact of Seminarie-IT was not clear at the time when the evaluation was carried out.

The main conclusions of the evaluation of the Pedagogical ICT Licence can be seen in chapters 6, 7 and 8. See further three sub reports where the results are described in detail.

2.3 Recommendations for further work with ICT and media

In the following Rambøll Management presents four central recommendations for further work with ICT and media in primary and lower secondary school. The recommendations are based on an interdisciplinary analysis of the ITMF project and are directed at facts and circumstances on a national as well as a local level.

The teachers' qualifications – a constant challenge

Rambøll Management's evaluation of Skole-IT shows that the Pedagogical ICT Licence has had a positive effect so that the teachers to a higher extent integrate ICT in education after completion of the course. Apart from this, the evaluation of Skole-IT and Rambøll Management's impact study show that the teachers' user skills are highly important for the teachers' interest in and knowledge of application of ICT and media. The skilled ICT users possess a greater pedagogical/didactic knowledge of the use of ICT and media in education than the average, and they are also much more active when it comes to seeking more knowledge. So to a large extent it is the same teachers that possess the technical and the pedagogical/didactic knowledge in the field.

Therefore, it is a central challenge to ensure that nearly all teachers complete Skole-IT supplementary training or in some other way update their competences. It is interesting to note, however, that the framework conditions of the schools also have a considerable effect on how much they get out of their participation in Skole-IT. If a school has clear objectives in the ICT area, and if there is access to pedagogical and technical ICT instruction, the evaluation shows that the teachers benefit more from Skole-IT than is the case in a school without these framework conditions.

Therefore, Rambøll Management recommends that schools work locally on optimization of the framework conditions for the integration of ICT in order to attain the optimum effect of the Pedagogical ICT Licence.

It is also an important point from the analysis of incentives for changes of practice that competence development functions as an incentive especially if the activities are close to practice and ad hoc-oriented, i.e. short courses, which are carried through just before the acquired skills are to be used. This is another essential argument for locally following up on the implementation of the Pedagogical ICT Licence.

The role of the management is central for the creation of innovation

The analysis of incentives for changes of practice shows that it is simpler to integrate ICT and media if everybody, and especially the teachers of the school, have a clear set of local educational values and objectives. The objective of integrating ICT and media is more evident in these schools and thus ICT becomes a tool – and not an objective per se.

As an example of this, one of the schools where Rambøll Management carried through a case study is worth mentioning. At this particular school the common objective was among other things that a special effort was to be made in connection with the visually intelligent children. The objective was clear, and there was a common attitude towards it among the teachers. In that way it became an obvious choice to use digital (video)cameras and editing tools in the tuition, because these are the technologies that support the visually intelligent children's' competences and narrative skills.

To create a common set of values and local objectives is very much a management task at a local level. It is Rambøll Management's recommendation that the school management should initiate this development and establish a framework for development.

As a consequence of this recommendation Rambøll Management has developed a management tool that can motivate the manager to establish a framework for an innovation culture with focus on the basis of common values. The tool can be seen at <http://www.itmf.dk/eval03>. The tool is not least

created on the basis of the acknowledgement that the schools have expressed a considerable need for management development in this area.

Rambøll Management are of the opinion that the role of the management in connection with the development of primary and lower secondary school in this field is central and should be followed up nationally by further initiatives to support the development of the role of management in primary and lower secondary schools in Denmark – also in the field of ICT and media.

Dissemination of experience via learning networks

Rambøll Management assess that there is still a need for making an active effort to disseminate the experiences of the ITMF project. The evaluation shows that dissemination efforts have already been made both on a local and a national level. In relation to the local level a majority of the projects stated that they had initiated the spreading of experiences to other schools. Many of the initiatives were of relatively limited extent, however.

Rambøll Management therefore concludes that the Ministry of Education would be well advised to initiate a more systematic dissemination of selected created products, etc. in addition to the publication on www.itmf.dk. In this connection we are of the opinion that the most effective method of dissemination is via personal mediation from teacher to teacher rather than just via concepts, learning material, etc. Rambøll Management's impact study of ITMF thus shows that the group of teachers that at present only use ICT and media to a limited extent do not on their own initiative seek knowledge about ICT and media.

As an inspiration for future initiatives one can look at experiences from Norway. In Norway's latest strategy for ICT in the education sector "*Program for digital kompetanse 2004-2008*" (Program for digital competence 2004-2008) one of the main initiatives is creation of a learning network where experience is disseminated among educators at institutions that are far advanced in the ICT area to other educators, who are not so far advanced. This initiative has just been started and it is thus too early to tell what the impact is. In a Danish context it is very interesting because Rambøll Management's evaluation shows that the teachers' competences have improved especially in the network schools in the ITMF project. A systematized initiative a la learning network could create the framework for knowledge dissemination in Danish primary and lower secondary schools – perhaps also across other types of institution.

User involvement in development of digital learning materials creates a framework for success

Several of the ITMF subvention projects and www.dr.dk/skole in particular have focused on collaboration between the development side (for example publishers) and the users (teachers and pupils) in the preparation of digital learning materials. Experience shows that close cooperation between the development and the user side has led to far more user-adapted products, which are easier to implement in education.

For several years technical tests and testing of user interface have been the usual activities in the development process of digital learning materials. Especially in Rambøll Management's evaluation of www.dr.dk/skole there have been other activities such as teachers' workshops, observation of tuition with subsequent interviews of teachers and pupils. It is Rambøll Management's estimate that these educational activities have strengthened the pedagogical value of the digital learning materials that have been developed.

Therefore, Rambøll Management's recommendation is that a model with a high integration of user groups, also with relation to the pedagogical aspects, should be followed by developers in future. It is also Rambøll Management's recommendation that public subsidies for future development of digital learning materials should depend on integration of users to strengthen the pedagogical value.

3. Incentives for changes of practice

A central focus in Rambøll Management's evaluation of the ITMF project was to establish more knowledge of the factors that help further integration of ICT and media in primary and lower secondary school. For many years the focus has been on *barriers* to integration of ICT and media in primary and lower secondary school, but to stress the forward-looking aim of the ITMF project Rambøll Management in the evaluation of the projects focused on analysis and dissemination of knowledge of the factors that contribute towards promoting integration of ICT and media – the so-called *incentives for changes of practice*.

This chapter briefly describes the method applied in the evaluation and the central conclusions from the sub report "Incentives for changes of practice".

3.1 Method

By way of introduction a so-called focus paper was prepared in which Rambøll Management described theories of the individual incentives. This was based both on Rambøll Management's and the ITMF Secretariat's extensive knowledge of the incentives that previously have contributed towards a change of practice in Danish primary and lower secondary schools with regard to integration of ICT and media. These experiences were supplemented by a number of interviews with practitioners and researchers in Denmark and the Northern countries. The focus paper was used as the basis of the evaluation - see "Focus paper".

Throughout the evaluation focus was on analysis of:

- Which incentives are most important for changes of practice – and how?
- Is there any interaction between the different incentives?
- Which incentives contribute towards which kind of change of practice?
- Are there any incentives that the incentive model does not catch?
- What is the importance of the external framework conditions for changes of practice?

This was illustrated via:

- 17 case studies
- Three trend papers
- Interviews with all ITMF project managers.

Projects selected for participation in case studies have been projects where Rambøll Management have expected that a number of changes of practice have taken place. Each case study consisted of an introductory telephone interview with the project manager, study of project documents, expert evaluation of the concept and potential of the projects, visits at the projects with interviews with the project manager, participating teachers and pupils, the school management, municipal management, collaborators and parents.

At www.evaluering.itmf.dk are 17 case reports where the experiences of each project are described in detail in relation to changes of practice and incentives.

The case studies were gathered in three groups where Rambøll Management focused on different incentives and different changes of practice. Based on each group Rambøll Management wrote a trend paper that gathered the experiences across five projects. The three trend papers can also be seen on the evaluation website.

Finally, in the autumn of 2004 Rambøll Management interviewed all the project managers. Focus in these interviews was to collect final data on the project managers' assessment of practice changes and incentives.

3.2 What are the incentives for changes of practice?

In the evaluation focus was on incentives for change of practice. Thus it was the aim both to *describe* the changes of practice that have happened and to *explain why*.

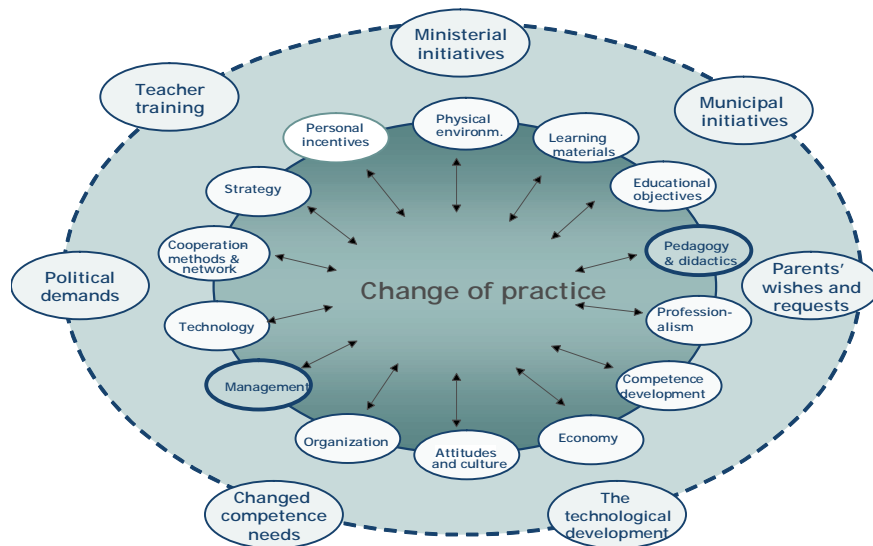
Changes of practice can be interpreted in many ways. In this evaluation Rambøll Management has chosen to define change of practice in the following way:

- That ICT and media become a conscious and learning promoting part of pupils' and teachers' choice and use of learning materials, learning activities and communication forms.
- That teachers' and pupils' ICT and media competences are improved.
- That ICT and media create new collaborative relations between the interested parties of the school.

The definition is necessarily broad so as to allow scope for ICT and media to create new, changed forms of practice, so that they do not just become a supplement to the present teaching practice.

The next step was to explain the changes of practice that have taken place during the ITMF projects, i.e. to explain the incentives behind the changes of practice. The illustration below shows the model for incentives that was the basis of the evaluation.

Figure 3.1 – Incentives for changes of practice



In the inner circle are the factors that can function as incentives for a change of practice locally at the school, and on which the school itself can have influence to a large extent. The outer circle contains the external framework conditions, which can also function as incentives, and on which the individual school does not always have any influence.

3.3 The projects have resulted in a change of practice

Four out of five project managers estimate that their project has resulted in a change of practice in the focus area of the project.

Rambøll Management still agrees with the project manager's estimate that by far the majority of the ITMF projects have resulted in a change of practice in the focus area of the project. However, it is our opinion that in a minority of the projects the change of practice has affected the other school activities. It is our clear recommendation that the school management should take up the challenge and assess how the ITMF project can have as much influence as possible on the rest of the school activities.

It should be mentioned here that the focus of the ITMF projects varied a lot from one project to the other. The majority of the projects focused on anchoring experience and change of practice in the use of ICT and media in the long term, with focus on among other things development of new learning methods, knowledge sharing and exchange of experience among the teachers. There have also been projects, however, where the goal of the project was limited to implementation of a learning process or development of specific learning material. Thus, there are large variations in the projects relative to purpose and content and therefore also regarding any *potential* changes.

3.3.1 *Change of practice 1: That ICT and media become a conscious and learning-promoting part of the pupils' and teachers' choice and use of learning materials, learning activities and communication forms.*

Rambøll Management's case studies show that ICT and media have become a conscious and learning-promoting part of the pupils' and teachers' choice and use of learning materials, learning activities and communication forms.

An area where a high degree of change of practice in several of the ITMF projects can be observed is the work with pupils with special needs, for example backward readers. Several projects have developed or applied new learning materials, and both teachers and pupils have experienced a change of practice as a direct result.

In connection with the integration of a knowledge sharing system in several of the projects it can be observed that several pupils have developed their knowledge and consciousness of the possibilities and limitations of the media. Via the daily practical use of the media the pupils have developed their competences, and they begin to use the media in new contexts where this is relevant.

Experience: In the project "Collaboration platform across municipalities" (project 311) the pupils have welcomed the platform and use it for their own projects. For instance, they organize small "clubs" and chat with each other after school. The pupils also store homework on the platform which they have not actually been asked to place there. At the same time the pupils are also good at viewing the use of ICT with a critical eye. They protest if they cannot see the purpose of the teacher's suggestion – just as they in some cases suggest a quick search on the Internet instead of visiting the library. Thus the pupils include a comprehensive use of the platform in their work and leisure time.

In some projects it is the experience that the pupils have started communicating and collaborating with each other in new ways with the integration of knowledge sharing systems. It can be seen that the pupils use each other as learning tools.

3.3.2 *Change of practice 2: That teachers' and pupils' ICT and media competences are improved.*

The case studies show that many teachers and pupils have improved their ICT and media skills via the projects. This was both an aim in itself but it was also a side effect of the concrete experiences.

To better understand what ICT and media competences are Rambøll Management found inspiration in Karsten Gynther's "*Mellem "know how" og "how know" - iagttagelser af IT-integrationen i uddannelsessystemet i Danmark og USA*" (Between "know how" and "how know" – observations of the ICT integration in the educational system in Denmark and the US). Based on this we have defined ICT and media competences in four dimensions. In the table below is a survey of the four dimensions and types of change of practice that have been observed in the ITMF projects.

Table 3.1 – Dimensions and types of change of practice

Learning dimension in relation to ICT and media	Definition	Examples
Learning <i>to use</i> ICT and media	Skills that are acquired via the use of different applications, ICT and media types	<ul style="list-style-type: none"> • Learning how to use digital cameras • Learning to use editing programs
Learning <i>with</i> ICT and media	Competences, which teachers and pupils acquire via integrating ICT and media in the learning situation	<ul style="list-style-type: none"> • The professional benefit with regard to the subject Danish obtained through production of one's own film
Learning <i>about</i> ICT and media	Competences, which are built up through assessment of the impact of ICT and media on social development	<ul style="list-style-type: none"> • To be able to decode and interpret the media productions of other people, e.g. news mediation
Learning <i>through</i> ICT and media	Competences, which teachers and pupils build up by using ICT and media for communication and production and to reflect on what they have learnt	<ul style="list-style-type: none"> • Application of portfolio and log books as part of the documentation and evaluation of individual learning sequences • Film shots of the pupils' working process as basis for discussion and reflection on learning sequences

Learning to use ICT and media: To be able to integrate ICT and media in education it is a natural prerequisite that both teachers and pupils know how to use the tools. The case studies showed quite clearly that both teachers and pupils have learnt to use a number of quite complex technologies and media.

Learning with ICT and media: It is one thing to know how to use ICT and media – it is quite another thing to be able to use the technologies as a learning tool. This has been the focus in primary and lower secondary school since the Education Act of 1993. Learning with ICT and media has been the hub of a number of reports and research initiatives. In relation to the case studies we have carried through we wish especially to point out that the new technologies such as digital (video) cameras contribute considerably towards changing the practice.

Learning about ICT and media: An essential element in ICT and media competence is the ability to be critical towards the use of ICT and media and to be able to interpret the importance of the choices made by the producers, for example. In a number of the case studies the pupils have become much more competent and critical users of ICT and media because they themselves have tried producing. New technologies make production of media products simpler. And the fact that the pupils themselves go through the practical and creative processes during the product development has meant a strengthening of their ability to assess the products of others.

Experience: In the project "The visually created reality, a dialogue collaboration between primary and lower secondary school and Radio Denmark Education" (Project 352) a group of pupils produced a film about the Home Guard. The group decided that the program should depict the Home Guard as "trigger-happy boors". This view was applied throughout the project. The same view was stressed in the cutting, and interviews which did not fit in were dropped. This very sharp approach was criticized in a debate in the classroom where the pupils discussed viewing, manipulation and ethics of journalism. Both teachers and pupils found the discussion very instructive because the participants were personally involved in the issue. In Hammel an important part of the project is the combination of theoretical and practical work with media to develop the pupils' media skills. For example, they use the actant model (a tool for analysis of narratives) often as a tool for analysis of narratives in primary and lower secondary school. The actant model was also used in the project, but instead of a "mere" analysis of other people's narratives the pupils have used the actant model in their own creative work. Because the pupils did not just use the actant model analytically but also creatively they attained a deeper understanding of the theory.

Learning through ICT and media: Several of the ITMF case studies focused on the point that the pupils were to reflect on their own work and learning process both during the development of their products and at the completion of their development process when they themselves were the producers. This contributed considerably towards a change of practice for the evaluation of education.

Experience: In the project "Technology and Daily Life" (Project 237) the teachers see to it that all the narratives produced by the pupils are presented in plenum where the narratives are commented on. This had the effect that the pupils assisted each other in learning to reflect on the development processes and are conscious of the choices they have made all along.

Change of practice 3: That ICT and media create new collaborative relations between the interested parties of the school.

It was a basic requirement that the ITMF projects should focus on networks and thus create new methods of collaboration. Via a number of the case studies new collaboration relations and new collaboration methods have been developed resulting in a change of practice.

Collaboration has been developed – between the teachers in the individual schools, between schools generally, across counties and municipalities, and with other actors such as private companies.

Experience: The project 'Network in learning' (Project 125) has resulted in collaboration across county and municipality borders, which heads of schools and ICT consultants stress as being very rewarding. The collaboration has two great advantages: First of all the collaboration allows for inspirational opposition and for knowledge sharing and exchange of experiences with a broad network of people with an interest in ICT. For example, the ICT instructors can now seek help and inspiration from each other across counties and municipalities and thus develop better ICT options. Secondly, the collaboration means that the municipalities can share the expense for development of the learning materials and thus better utilize existing resources. This means that it becomes possible for the schools to participate in larger and more exciting projects. The many positive experiences have had as a consequence that collaboration continues in future.

Experience: Teachers in the project 'Urd's spring' (Project 381) have cooperated with publishers and with authors on development of a new system for teaching of Danish. The cooperation has given creative input and new views on how to combine the teaching of Danish with ICT and media.

3.4 Five central incentives

On the basis of the experience from the ITMF projects five incentives seem to have been especially important in connection with the creation of a change of practice. They are:

- Pedagogy and didactics
- Management
- Cooperation and network
- Competence development
- Personal involvement.

The project managers also estimate that these five incentives have been the most important in their own projects for attaining results and anchoring the projects.

Especially the first two driving forces – *pedagogy and didactics* and *management* – are absolutely basic for the creation of a change of practice regarding application of ICT and media and school development in the long term.

3.4.1 *Pedagogy and didactics*

The schools that have clear common pedagogical goals and common values have integrated ICT and media faster and more easily during the project period. Also ICT and media have contributed to a higher extent towards a change of practice in these schools than in other schools.

An example of this is a school which during the past few years has focused especially on developing common pedagogical values and objectives for the school. It has been a long-lasting task, but the result is that both the management, teachers and parents all know the school's objective, for example to focus especially on the "visually intelligent children" and develop their competences. When a school acts on the basis of common goals it becomes easier to assess which learning materials to choose – exactly because the objective is clear. In the concrete case with the visually intelligent children

the school could see the perspective in using digital cameras and image processing to strengthen the visually intelligent childrens' narrative skills. And everybody both in the management and in the group of teachers agreed about this. Thus the use of ICT and media has a clear pedagogical aim, and the application of ICT and media in this special case contributed towards strengthening and further development of the effort.

The experiences from the ITMF projects indicate that pedagogy and didactics can be strong incentives if the following course of action is pursued:

- The basic pedagogical objectives of the school must be in focus. The pedagogical objectives of the school should form the basis for the integration of ICT and media.
- ICT action plans with good visions are not sufficient for integration of ICT and media. Integrate concrete experience and good examples of how ICT and media can support the educational aims in the ICT action plans.
- Good experience exists concerning the application of new learning methods supported by ICT and media. Others are recommended to try this.
- Include ICT and media in the educational plan. Experience shows that this contributes towards committing the teachers and supporting the considerations concerning the goals that ICT and media should set with regard to education.

3.4.2 *Management*

It is Rambøll Management's experience that a readjustment process requires a particularly active management with a clear vision as regards the pedagogical objectives and values including concrete aims for integration of ICT and media. The competent leader in a readjustment process is a leader who also in the professional, pedagogical and didactic area has the courage to lead the way.

A democratic culture like the education culture requires, however, that the management meets the teachers where they are. Fiery souls must be encouraged, but skeptics must also be confronted. The management should have an understanding of the resistance to the change, but also signal quite clearly that there will be changes. There must be scope for discussion about the pedagogical and organizational goals and means, but in the changing process there must also be a "point-of-no-return", where the discussion about the aims and former practice is dropped and where the energy is used on carrying through the new goals.

The management can be an important incentive for integration of ICT and media if the following advice is followed:

- Involve the management in the project. Depending on the aims of the project the management should be involved in a project at different levels.
- The school management must always be involved in a project.
- Accordance must be ensured between the objectives of the school and the objectives of the project.
- Involvement of the management is not a prerequisite for implementation of the project, but a decisive factor in anchoring the experiences. Anchoring project experience and development of practice in the school requires managerial focus and time.

3.4.3 *Cooperation and networks*

In the ITMF projects cooperation and network establishment have been both a *means* and an *aim* – both an incentive and a change of practice. Via com-

mon development projects it has been an aim to establish lasting networks and cooperative relations, which can support the fulfilment of the goals set for primary and lower secondary school.

Cooperation and networks have also turned out to be an important incentive when it takes the form of cooperation between teachers in teams at the schools. In the teams the participants have committed each other to the common objective of using ICT and media, and at the same time they have supported and assisted each other in a flexible way.

Networks across schools and cooperation between different actors were required by ITMF. There are several good experiences to the effect that it has been both challenging and inspirational, but it is not an active incentive force.

Experience: In the project "The media and ICT-pedagogical skill and the subjects of the school (project 132) the development and the implementation of educational courses with ICT and media has taken place as teamwork. These teams have been important as places where teachers could admit the things they could not do; Here they could ask for help and find immediate sparring. The teachers stress that these teams and autonomous groups functioned as important support during the project.

However, the evaluation shows that "*cooperation for cooperation's sake*" quickly dies out. In several projects the cooperation and network have been something "extra" without anything concrete and meaningful to cooperate about, and in those cases the cooperation logically has not been an incentive. But in the situations where there has been a clear common goal that could be attained more easily via cooperation – such as year groups that cooperate on using ICT and media in education – cooperation has been a strong incentive.

Experience from the ITMF projects indicate that cooperation can be an incentive if the following advice is followed:

- The teachers should not stand alone regarding the integration of ICT in education. Use existing teams or build new teams at the school committed to the application of ICT in education.
- Cooperation and exchange of experience across schools can be inspirational for both teachers and pupils creating volume and perspective. It is crucial, however, that the cooperation has a clear and meaningful goal.
- Cooperation does not come about on its own accord. There must be a concrete demand for the cooperation and a clear goal.
- Virtual communication should be supported by physical meetings.

3.4.4 *Competence development*

Competence development is another important incentive in relation to *enabling* the teachers to utilize ICT and media. Targeted and realistic competence development with good support functions is also crucial in that it makes the teachers feel sufficiently *confident* and *prepared* to use ICT and media.

The results of the evaluation show that competence development has been an important incentive for the teachers in the situations where the courses were targeted towards practical use, as the teachers could use what they learnt in connection with their daily work directly. They were more confident

regarding the use of ICT and media, and they had concrete, good experiences with the use of ICT and media. However, the evaluation also shows that formal competence development initiatives – such as courses – are not enough. The places where teachers and pupils can easily find help and guidance when problems arise in connection with ICT and media are the places where they dare engage in the application of ICT and media. A recurring factor here is that competence development is not just about making teachers and pupils competent *enabling* them to use ICT and media, but just as much about making them feel confident, so that they *actually* do it and thus create a lasting change of practice. The experiences of the ITMF projects show that this is best done via competence development focused on concrete experiences.

Experience: In the project "Media plan for ICT, TV and Net" (Project 364) a tutor arrangement was established where the tutors include teachers who have participated previously in a media course, and who have used their media skills in education succeedingly. The tutors are to assist the teachers, who after the course have to teach media for the first time. Thus the municipality has encountered the criticism that some teachers have participated in courses whereas others have not, and focus has been on dissemination of the experiences to other schools.

Competence development initiatives can be used as an incentive for integration of ICT and media if the advice below is followed:

- Competence development initiatives should be realistic and implemented as close to the application time as possible.
- The ICT instructors are central, because the teachers dare use their ICT skills. Prioritize time so that the ICT instructors can instruct the teachers on the pedagogical use and assist in connection with acute technical problems.
- There is a demand for flexible competence development initiatives. Provide ad hoc courses and support increased, domestic cooperation between the teachers.
- Experiences are good regarding involvement of pupils in the competence development. Try to make them take an active part in your planning – both in cooperation with teachers and with each other.
- Try engaging external experts in the competence development. Experience shows that it is inspirational and challenging for both pupils and teachers.

3.4.5 *Personal involvement*

Via the evaluation work the marked personal commitment among the project participants has turned out to be an important driving force. Personal commitment is pointed out by the project managers as being the most important incentive by far, both with regard to gaining results in the projects and to ensuring that the ideas will live on after the project.

Enthusiasts with a marked personal commitment have displayed a considerable work effort and attained incredible results. All the same, Rambøll Management wish to stress that it is a problem that so many ITMF projects were carried out based on personal commitment as the most important incentive. At some time or other the commitment dwindles and the person in question leaves, and in that case it is not certain whether "normal operation" can continue without the enthusiast's extra effort and commitment.

Recommendation: At the website "Good advice on project management in primary and lower secondary school" project managers from the ITMF projects describe their experiences as project managers offering relevant advice to others on for example: How to ensure successful kick-off of the project? What is the role of the project manager? How to ensure commitment and ownership among the parties involved? The degree of involvement of the management? How to ensure anchorage of the project? The focus of the website is project management in primary and lower secondary school. Visit the website at <http://www.itmf.dk/eval01/>

The evaluation clearly shows that personal commitment is a very strong incentive but that it should be used with care:

- The management should ensure a framework supporting the enthusiasts and at the same time spreading their efforts in the organization and anchoring their experiences.
- Other domestic incentives.

Other factors than these have also been incentives in the projects but to a lesser extent. It is obvious that a well-developed ICT infrastructure, the new technological possibilities, and access to digital learning materials are not in themselves incentives for integration of ICT and media in daily practice. However, experience from the ITMF projects shows that the integration of the equipment can be improved if the framework of the use is developed.

- **ICT infrastructure:** A well-developed technical infrastructure is not an incentive in itself. Launch initiatives and projects that will provide teachers and pupils with concrete experience of application of the ICT equipment.
- **Technology:** The technology has become more advanced, but at the same time it is easier to use. Do not let the technological possibilities overwhelm you. Focus on the demand. Use as a starting point the ICT competences of teachers and pupils and choose ICT equipment in keeping with this.
- **Learning materials:** The learning materials are not in themselves an incentive to changes of practice, but the framework in which the learning materials are placed can be an incentive to a change of practice. The way the school chooses, develops and works with a learning material, however, can be an essential incentive to change practice.
- **Physical framework:** The application of ICT and media is increased when the equipment is easily accessible to teachers and pupils. Place ICT equipment in or close to the classrooms.

Experience: In the project "Netbased parallel classes" (Project 159) the goal was to develop cooperation between the schools of the municipality. The project management had considerable expertise regarding the many different intranets and knowledge sharing systems, but they focused on the fact that the goal of the project was to develop the cooperation and not to test different systems. Therefore, their choice was SkoleKom, which many teachers and pupils knew already. This made it easier in the project to focus on the content of the virtual cooperation, and the distraction of having to learn a lot of new systems was avoided. In the opinion of the project manager and the participants this is of great importance for the implementation of the project.

3.4.6 *External incentives*

It may be mentioned here that the factors, which are the most important incentives, are all of them domestic factors at the schools. It was expected that factors outside the schools such as municipal initiatives or parents' wishes and requirements would all be important factors for a change of practice.

If we leave out of account the importance of the financial support no *external* factors such as for instance municipal initiatives, political requirements or parents' wishes are mentioned as the most important incentives for the implementation of the project. In connection with the anchoring of the project experience, however, the project managers expect that municipal initiatives will be important.

Contrary to expectation the parents did not turn out to be an incentive to the integration of ICT and media in the ITMF projects.

4. Results and impact of the ITMF project

This chapter contains a summary of the sub report "Results and impact of the ICT, media and primary and lower secondary school project".

4.1 The focus of the evaluation

On the basis of the documents which form the central background for the establishment of the ITMF project combined with dialogue with the ITMF Secretariat, Rambøll Management identified a number of objectives. These objectives were used as criteria for assessing whether the overall aim of the ITMF project was achieved.

Thus, the evaluation assessed to which degree the ITMF project contributed towards:

1. ... supporting the pupils' skills with regard to reading, maths, writing and foreign languages with focus on the learning process
2. ... strengthening the pupils' general ICT and media qualifications
3. ... strengthening the content of the subjects including themes, concepts and methods
4. ... strengthening interdisciplinary work – in the individual subjects, across subjects, and in relation to other aspects in the lives of the pupils
5. ... creating increased inclusiveness in primary and lower secondary school
6. ... creating new learning methods in primary and lower secondary school
7. ... strengthening knowledge sharing and exchange of experience
8. ... creating and strengthening increased dialogue between the interested parties of primary and lower secondary school
9. ... strengthening the pupils' influence on the tuition.

4.2 The method of the evaluation

The overall evaluation of the extent to which the ITMF project achieved the set goals was undertaken based on an analysis of data collected across ITMF's activities during the evaluation and concerned both qualitative and quantitative elements. It was, however, especially in focus in the qualitative assessment, which consisted of the 17 in-depth case studies and a focus group meeting with researchers about the effects of the ITMF project, and the quantitative analysis that built on three studies:

- Interviews with all project managers
- Questionnaire study among all researchers involved in the ITMF project
- Questionnaire study representatively among teachers in primary and lower secondary school in Denmark.

4.2.1 *The interview study with the project managers*

The evaluation included an interview study among the 96 out of 105 project managers equivalent to a response rate of 91 %. It was not practicable to interview the remaining 10 project managers. The first 10 interviews were carried through personally, while the other 86 interviews were undertaken by telephone.

The primary goal of the study was to obtain knowledge about the degree to which the aim of the projects was achieved in relation to partly the local and partly the national ITMF objectives. Furthermore, questions about the sustainability of the project concept after the completion of the project as well as the effort of the project with regard to dissemination to other schools.

The identification of national ITMF objectives of relevance to the project was handled in cooperation between Rambøll Management's interviewer and project manager.

4.2.2 *Questionnaire study among teachers in primary and lower secondary school*

The evaluation further included a questionnaire study among a representative number of teachers in primary and lower secondary school. The spot test comprised 765 teachers from 63 schools. The schools in question were 16 project manager schools, 11 network schools, and 36 ordinary schools. Contact was first established with the school management, who then distributed a contact letter to a random number of teachers as instructed by Rambøll Management.

Rambøll Management received 491 answers from the teachers equivalent to 64 per cent of the spot test, which was satisfactory.

The aim of the study was to obtain knowledge about the role of ICT and media in primary and lower secondary school today and the development over the last three years. For example, the teachers answered questions such as:

- How often and why they integrate ICT and media in their lessons.
- Their experience regarding security as ICT users.
- Their pedagogical/didactic knowledge in relation to ICT and media.
- The accessibility of ICT-based learning materials and guidelines for integration of ICT and media.
- The teachers' knowledge of ITMF.
- The teachers' use of products and experience regarding ITMF.

Teachers, who implemented instruction with regard to the ITMF project, or who participated actively in the management of the project, were left out in relation to a number of questions, for example whether they had heard about the ITMF project.

4.2.3 *Questionnaire study among researchers involved in ITMF*

Rambøll Management carried out a questionnaire study among researchers attached to the ITMF projects. The aim was to obtain the assessment of the researchers regarding the individual projects. The concept of involving the researchers was to reap the benefit of their pedagogical/didactic insight as well as their knowledge of the projects and primary and lower secondary school. In addition, the researchers were interesting, because they were more detached from the projects than the project managers.

The core of the study among the researchers was the individual ITMF project, i.e. that only one questionnaire was completed per study, even if there were several researchers attached to the project. Similarly, some researchers who were attached to more than one project completed more than one questionnaire.

Rambøll Management received answers regarding 65 projects of the 86 relevant projects with attached research equivalent to a response rate of 76 per cent, which is satisfactory.

A few researchers pointed out that they were not sufficiently attached to the projects to be able to assess the results on the premises of the project. This reflects the fact that the researchers' relations to the projects varied considerably. It is, however, Rambøll Management's assessment that the answers from the researchers are generally valid. In connection with all the questions it was possible to answer "don't know".

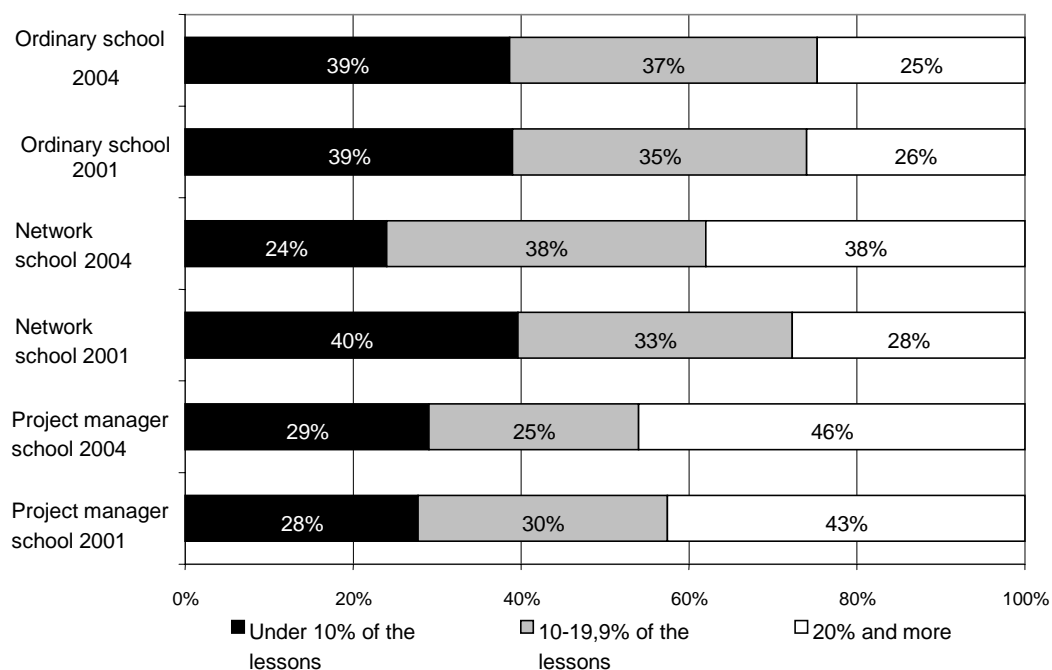
4.3 The conclusions of the evaluation

In this chapter Rambøll Management presents the main conclusions of the part evaluation.

- *Some degree of realization of the general goal of strengthening of pedagogical/didactic use of ICT and media in education.*

ITMF contributed towards placing a pedagogical/didactic perspective on ICT and media on the agenda of primary and lower secondary school than before, and the project resulted in a higher degree of innovation in relation to new methods of integrating the technology. A number of new learning materials have been developed, which may have considerable impact in the coming years.

Figure 4.1 – Development regarding application of ICT and media in lessons distributed on school categories, 2001 and 2004



Note: Primary and secondary school teachers were asked to assess the extent to which they integrate ICT and media in their lessons – within the past two months (autumn 2004) and three years earlier. An 'ordinary school' is a school that has *not* participated in an ITMF project. A 'network school' is a school that has participated in an ITMF project, but did not have the management of the project. A 'project manager school' has had the project management of an ITMF project.

Among teachers at schools that participated in ITMF projects the use of ICT and media has increased from 2001 to 2004. Especially, a considerable development can be observed among teachers at the network schools. At schools that did not participate in the ITMF projects there is no increase in the use of ICT and media during the same period. In average and across all school categories the application of ICT and media has hardly changed quantitatively in primary and lower secondary school during the ITMF project.

The extent of application of technology is not a problem as such, if the selection or rejection of technology is primarily due to pedagogical-didactic reasons. However, the evaluation shows that in some cases the choice is influenced by the teachers' user skills rather than by professional considerations.

However, the evaluation shows that a qualitative development has taken place in primary and lower secondary school since. The different technologies have become more widespread, and a large group of teachers have gained more pedagogical-didactic knowledge about ICT and media. The teachers also experience improved access to good ICT-based learning materials, concepts for integration of ICT and media, etc. The primary and lower secondary school has to some extent started using ICT and media with a view to supporting the professional learning, but some goals are still far from having been realized.

Table 4.1 – Development of application of different technologies in education according to the teachers, 2001-2004

	More often today	Same frequency	Not as often today	Do not know	Total
The Internet	55%	34%	9%	2%	100%
Word processing	42%	47%	10%	1%	100%
ICT-based learning materials	41%	46%	8%	5%	100%
Photo (recording/editing)	37%	51%	8%	5%	100%
Knowledge sharing systems	25%	63%	4%	8%	100%
Spreadsheets	20%	59%	9%	11%	100%
Logbooks	20%	67%	4%	9%	100%
Video (recording/editing)	15%	67%	10%	8%	100%
Portfolio	15%	71%	3%	11%	100%
Illustration programs	14%	71%	8%	8%	100%
Creation of websites with pupils	13%	70%	7%	10%	100%
Sound (recording/editing)	12%	70%	8%	9%	100%
ICT-based test of pupils' skills	12%	75%	4%	10%	100%

Note "For each technology please state how the frequency of application of the technology in education has developed over the past three years."

Table 4.2 – Teachers’ assessment of the development over the past three years of accessibility of good ICT-based learning materials

	More accessible today	Same degree of accessibility	Less accessible today	Do not know	Number
Total	56%	30%	4%	10%	404
Project management school	52%	31%	7%	9%	109
Network school	75%	12%	1%	12%	68
Ordinary school	52%	33%	4%	10%	207

In general, the part evaluation shows that *to a certain extent* the ITMF project fulfilled the goal of strengthening the pedagogical integration of ICT and other media in education.

- *Increased focus in primary and lower secondary school on pedagogical/didactic integration of ICT and media in education.*

The ITMF project has contributed towards placing ICT and media higher on the agenda in primary and lower secondary school in Denmark and changing the focus of the agenda towards an increased integration of the technologies in the daily life of primary and lower secondary school. The evaluation shows, for example, that a majority of the teachers discuss the subject more often now than they did three years ago.

ITMF has made the pedagogical/didactic problems concerning integration of ICT and media in primary and lower secondary school visible. The visibility has for instance been attained via the professional magazine *Folkeskolen*, the national and local media, ITMF’s website and the large national conference *Uddannelsesforum* (Educational Forum). The stories have reached a broad audience both in primary and lower secondary school and in the national and local media. In comparison, ITMF’s website and the conference *Uddannelsesforum* have reached fewer people, but on the other hand they have been the basis of more in-depth knowledge.

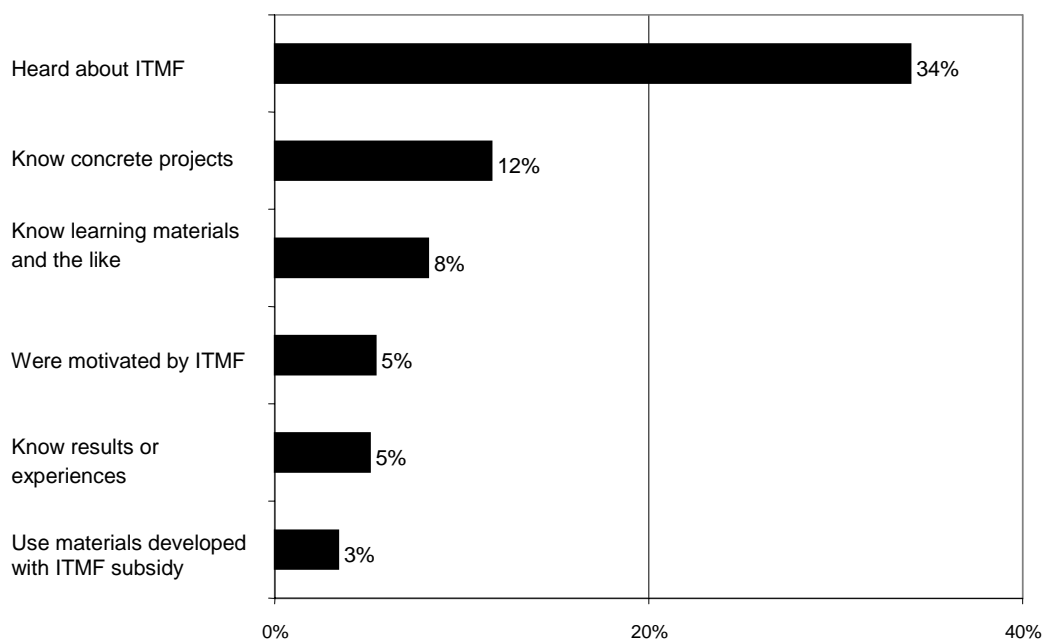
- *The dissemination of experience has so far been limited but will continue in the coming years.*

If the ITMF project is to have a broad impact on the application of ICT and media in primary and lower secondary school it is necessary that the experiences are disseminated from participating schools and network schools to the rest of the country. There was focus on this in the ITMF project where it was a requirement that dissemination should be an integrated part of all the projects.

The evaluation shows that every third teacher had heard about the ITMF project, In schools that participated in the ITMF project the number was considerably higher (51%), whereas the number was considerably lower (22%) for teachers from schools that did not participate in an ITMF project.

Figure 4.2 below, however, shows that fewer teachers, by far, knew about more specific matters regarding ITMF. In relation to concrete utilization of the experiences 5 % of the teachers had been motivated by ITMF, and 3 % had used learning materials developed on the basis of support from the ITMF project.

Figure 4.2 – Percentage of teachers with different levels of knowledge of ITMF



Note: The assessment was made relative to all teachers in primary and lower secondary schools in Denmark.

The relatively limited knowledge should be viewed in the light that the dissemination is not yet completed. The questionnaire study was carried out in the autumn of 2004 when several mediation activities had not yet been carried out. Rambøll Management estimates that more newly developed learning materials including DR's large project, www.dr.dk/skole, will be distributed further in the coming years. Furthermore, a number of teachers can utilize the experiences from the project and the products without knowing ITMF as a project.

- *Primarily, effect among teachers that were most advanced with regard to integration of ICT and media in education. The network schools, however, depart from this rule.*

The impact of ITMF is the largest in relation to the teachers who are skilled users themselves and who were already far advanced with regard to integration of ICT and media in education.

There was no indication that the hesitant groups of teachers developed significantly during the three years. In that way and viewed in isolation ITMF has contributed towards creating greater differences between the teachers regarding their use of ICT and media in education.

One group of teachers, who were not from the start particularly skilled users, are an exception to the rule, however. ITMF has had a clear impact on the teachers at the network schools. These teachers did not differ significantly from the average in primary and lower secondary school in 2001, but they have developed to a larger degree than the other groups of teachers during the last three years.

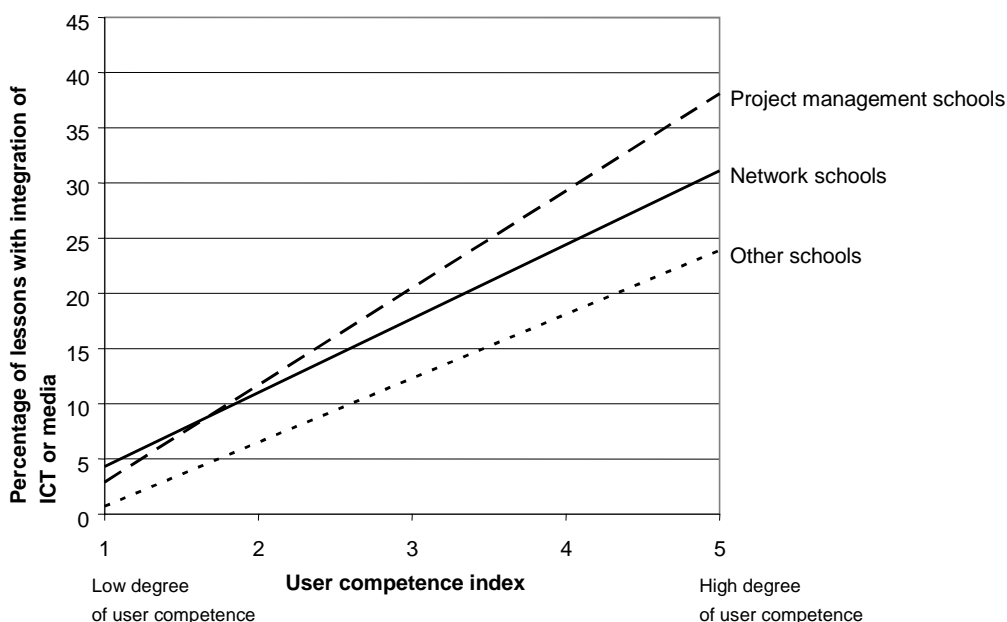
Two factors could be decisive for the development of the network schools. Firstly, requirements were put to them from outside, because they had committed themselves to participate in a project that challenged them. Many network schools were recruited to the project via contact from the project manager school without any active effort on their part. Secondly, they could get help from the project manager schools, which were typically more advanced with regard to application of ICT and media.

- *The teacher's technical competence is still a central problem despite the Pedagogical ICT Licence.*

In spite of the mentioned effects of ITMF Rambøll Management estimates that primary and lower secondary school is in a long-drawn-out establishing phase concerning integration of ICT and media in education. Thus, far from every teacher naturally integrates ICT and media in education. The rejection of these technologies is still in many cases made on the basis of the teacher's hesitancy towards technology rather than for pedagogical/didactic reasons. The evaluation shows that the teacher's competence is thus still a central problem despite the aim of the Pedagogical ICT Licence in recent years.

The model below shows that ICT and media is most frequently applied by teachers with strong user skills. Apart from user skills, however, it is important whether the teachers come from project manager schools, network schools or ordinary schools.

Figure 4.3 - Model of the relation between the share of lessons with integration of ICT or media and the teachers' user competence



Note. The teachers indicated their own user competence relative to 13 technologies. The value 1 represents the response "unskilled/never tried" whereas the value 5 represents the response "very skilled". The index reflects an average of the 13 responses.

- *ITMF has made ICT-based learning materials and pedagogical/didactic concepts more accessible to the teachers, but primarily the most active teachers are aware of their existence.*

One of the effects of ITMF is that the teachers in primary and lower secondary school now have better access to good ICT-based learning materials and pedagogical/didactic concepts. Many teachers answer that such learning materials and concepts have become more accessible. At the same time many of the supported projects have developed such products.

Despite this general development over the last three years there are still large groups of teachers who do not experience easier access to good ICT-based learning materials and pedagogical/didactic concepts. Part of the explanation can be that the teachers are not sufficiently investigative with regard to the learning materials, or that they lack the necessary skills to see the possibilities. The most active teachers in relation to ICT and media thus experience to a larger extent than their colleagues that the learning materials are accessible. The survey also shows that many teachers to a higher degree look for pedagogical-didactic tools rather than new software.

- *Satisfactory results of the supported projects.*

The results of the supported ITMF projects are generally *satisfactory*, and the objectives of the projects are to a large extent relevant in relation to the national goals. Rambøll Management estimates that most projects have created real results and gathered important experience during the project. Very few projects can be described as definitely unsuccessful. This is also supported by the fact that 60 % of the project managers estimate that the project idea continues at the schools.

With regard to the content the projects have contributed towards the fulfilment of seven out of nine national goals for ITMF. The supported projects, which have focused on strengthening the dialogue with the interested parties of primary and lower secondary school through ICT and media, have in several cases resulted in less convincing results. Furthermore, there are only a few supported projects that have increase of the pupils' influence as a primary goal, just like only a few teachers in primary and lower secondary school have as a goal to integrate ICT and media in education.

The evaluation of the supported projects, however, has allowed for the fact that the framework of implementation of development projects at many primary and lower secondary schools is not the best. For example, many primary and lower secondary schools have limited experience with systematic planning and implementation of development projects as well as follow-up. Thus, it is Rambøll Management's assessment that several projects could have created better and more systematically documented results if these premises had existed.

- *The ITMF project has created new research-related, in-depth as well as broad knowledge and has contributed towards construction of increased research-related capacity in the field.*

The research attached to the ITMF projects has resulted in a considerable increase of research in the field. The researchers reported that ITMF has both resulted in research in areas where the existing Danish research knowledge was limited, and that more consolidated and nuanced knowledge in the area has been the result. Finally, ITMF has resulted in building up of further

research capacity in the field, as the research task was extensive in comparison to the research capacity existing in the field at the time. This means that the existing researchers in the field have allocated a lot of time to ITMF-related problems, just as there are more researchers with knowledge of the field today than was the case three years ago.

Rambøll Management, however, estimates that the research-related effects are not the best. Some of the researchers worked under difficult conditions, as they had to assist the project manager with planning and implementation of the project. At the same time many researchers found that they had very limited time for the analysis and report phase, and that the large amount of gathered empirical knowledge could therefore not be analyzed in the best possible way.

Finally, the researchers focused very much on the individual projects to which they were attached. Thus, there was not sufficient research in the fact that there were several ITMF projects within the same theme, which might have strengthened the empirical basis for the individual researcher.

5. Evaluation of www.dr.dk/skole

In the project "Purchase of education-related TV broadcasts" Rambøll Management has focused on evaluation of the pedagogical value and quality of the digital learning material www.dr.dk/skole.



The pedagogical value and quality has in this context been viewed on the basis of an assessment of whether DR's pedagogical and didactic choice in relation to preparation and mediation of the education-related TV broadcasts to digital learning materials is desirable in relation to the target group's application of the learning materials in education.

The evaluation resulted in several action documents:

- Short recommendation notes to DR based on the individual evaluation activities. These notes have been used currently by DR during the project for further development of www.dr.dk/skole.
- A final memorandum for DR containing a number of general recommendations as to how DR can strengthen the pedagogical quality and value in connection with future development of www.dr.dk/skole.
- A gathering of experience developed in cooperation with DR and based on DR's and Rambøll Management's concrete experiences from www.dr.dk/skole. The target group for the reference book consists of actors who are going to develop and produce digital learning materials, and who lack inspiration as to how to handle the development process.

In this section we describe the method, www.dr.dk/skole, as well as the overall results of the evaluation.

5.1 Method

The evaluation was centered on user evaluations and was therefore planned with a number of activities providing the teachers and pupils with an opportunity to test and comment on the different parts of www.dr.dk/skole.

The activities included:

- Two teacher workshops where the teachers were asked in advance to evaluate parts of www.dr.dk/skole based on criteria agreed by DR and Rambøll Management in unison.
- Observation of an educational sequence planned in accordance with specific teacher's guidelines with subsequent teacher and pupil interviews. Here, too, the focus was determined by DR og Rambøll Management in unison.
- A Nordic expert panel consisting of two leading researchers in digital learning materials. They have given a number of recommendations with regard to pedagogical strengthening of www.dr.dk/skole.

The time schedule for the evaluation is set out in the table below.

Activity	Month 2004
Kick-off meeting	March
First all-day workshop with teachers	April
Half-day workshop with pupils	April
First recommendation note	June
Expert assessment from the Nordic expert panel	July
Second recommendation note	September
Second all-day workshop with teachers	October
Preparation of final recommendation note	November
Preparation of DR's experience – development of digital learning materials	December

5.2 About www.dr.dk/skole

The foundation of www.dr.dk/skole is 'The Digital Media Library', which contains sound and pictures from DR's unique archive.

Pupils and teachers have access to selected parts of the archive via 'The Digital Media Library', which opens up quite new possibilities of exploring Danish culture, seeing and hearing historical witnesses and experiencing phenomena and localities independent of time and place.

The learning workshop, among other things, via the Agent and the Workshop enables the pupils and the teachers to work interactively and in a process-oriented manner with the content of 'The Digital Media Library. DR makes digital resources and tools available to pupils and teachers, who can thus work concretely and professionally with the content – with the possibility of analyzing, describing, adapting and producing, thus actively building up their own knowledge.

The content of www.dr.dk/skole is structured based on seven main topics: History, Media, Society, Everyday life, Natural sciences, Cultural life and Youth. Each main topic is divided into themes and clip collections:

- A theme is built around video clips with matching short texts. In addition, a theme contains extra boxes with various material, for instance pictures, quotations, numerical material, graphs, etc.
- A clip collection is a collection of archive cuts structured according to a given theme.

For themes as well as clip collections pupils' tasks and teacher instructions have been prepared, which – in addition to providing inspiration for possible educational sequences – refer to the step by step goals of the Ministry of Education for the individual subject areas.

5.3 Conclusions and recommendations

There is no doubt that the financial support of the development of www.dr.dk/skole has resulted in a well-constructed digital learning material, from which both teachers and pupils of primary and lower secondary school can derive benefit in many different educational contexts.

Pupils and teachers generally express great satisfaction with the pedagogical value and quality of the existing pupils' tasks, teacher guidelines, the Agent and the Workshop and the website in general, although there is still room for improvement.

In the following the teachers', pupils' and researchers' evaluations are described at an overall level with regard to www.dr.dk/skole generally as well as pupils' tasks and teachers' instructions.

5.3.1

www.dr.dk/skole generally

www.dr.dk/skole is very information heavy and can seem overwhelming – further focus may well be directed towards user-friendliness. Because there are so much information and so many possibilities at www.dr.dk/skole the website can seem overwhelming and it can be difficult to get an overview. The design gives the impression that everything is equally important, and it takes a long time to orientate oneself. When everything is of the same size or equally prominent at the website it can be difficult to find the right thing. Therefore, user-friendliness is an area to which teachers and pupils wish to draw the attention to an increasing extent.

There is generally a good combination of different media and content. The teachers are satisfied with the media combination and stress the fact that the combination of ICT and media clips provides the possibility of some very interesting expositions and viewings of the different topics and themes. With the media combination there is concrete access to abstract themes and help to find new angles and perspectives on the themes, which has an inspirational and appealing effect on the pupils. The learning materials on www.dr.dk/skole are therefore perceived as a good supplement to other learning materials, as the website contains a number of more or less interactive elements, which cannot be found in books.

The themes are generally short and clearly structured. Generally the themes are divided into short and clearly structured areas. The teachers, however, are not quite agreed whether this is a positive or a negative thing.

Some teachers are of the opinion that there is a tendency towards shallowness, and that there is too little possibility for absorption, while other teachers think that it is a positive thing that the short and clear divisions have the effect that the user goes on searching elsewhere, both on and outside www.dr.dk/skole to find more information on the subject.

They are, however, fully agreed that www.dr.dk/skole provides a good and secure information search, as the search can be undertaken within a limited area/theme, and thus the pupils are not overwhelmed by the amount of information that they would generally find on the Internet.

5.3.2 *Pupils tasks*

Several levels in the tasks as a basis for differentiation of teaching. It is considered to be a positive thing that there are several levels in the different tasks, and that the degree of difficulty varies. There are many well-planned tasks with short, concise questions and short, open questions. There is a good interaction between exact knowledge and the free exercises. The history material, for instance, gives a good historical overview and provides a possibility of selecting the things that fulfil one's requirements.

The tasks provide a basis for utilization of the different competences. The teachers estimate that the variation of the types of task provides a possibility for the pupils to utilize and explore their different competences. For example the tasks where the pupils are encouraged to work with presentation programs such as PowerPoint or the integrated Workshop where the pupils can apply their digital skills in a professional context. The tasks that contain mediation and presentation elements are pointed out as task parts that should be part of all sets of tasks.

The themes and the tasks are comprehensive and relevant for many people, but more overall introductions to the themes are desired. In the opinion of the teachers the pupils' tasks deal with a number of topics that are relevant for many people. There are many good suggestions for activities, which the pupils can undertake, and the questions form a good basis for further work with the activities. Because of the pupils' lack of understanding, however, it is the teachers' opinion that it can be difficult for the pupils to select the right clips and pictures, and therefore the teachers are looking for a general introduction to the themes via texts, so that the instruction does not become so teacher-controlled. In addition, they recommend a possibility of opening one task at a time instead of a whole set of tasks.

www.dr.dk/skole is most applicable within the school area. Among the teachers there is agreement that www.dr.dk/skole is most applicable for group work or teacher-centered education.

As the use of www.dr.dk/skole requires Internet access as well as the right utility programs and capacity and bandwidth to show the clips, the teachers estimate that it can be difficult to use www.dr.dk/skole in connection with work at home, as not all pupils have access to the Internet at home or have sufficiently powerful and fast PCs.

Moreover, it is the teachers' opinion that a reasonable use of www.dr.dk/skole requires fairly good ICT skills and search function experience.

The Agent and the Workshop are two excellent tools. The teachers see great possibilities in the Agent and the Workshop and the built-in functionalities. The Agent is practical and well-structured in that it is possible to search both topic and free text, and the fact that it is possible to integrate the clips in one's own presentations in the Workshop or share them with class mates in connection with group work and project work contribute towards activating the pupils.

5.3.3 *Teacher's Guide*

There are good descriptions of objectives with a clear description of the connection with Common Goals. The teachers generally want clear descriptions of objectives, which also the Nordic experts stress as a very important aspect of the Teacher's Guide. The teachers estimate that the existing teacher's guides in www.dr.dk/skole generally have good descriptions of objectives, and that they have very reasonable and clear relations and references to Common Goals.

The Teacher's Guide contains good practical instructions regarding the use of the material, and it supports the teaching methods that are used today. Especially the teachers whose task has been to estimate the topic History are very satisfied with the way in which the Teacher's Guide presents practical instructions on the use in a concrete and contemporary educational context. The assessment is that the teacher's guides are a good basis for pedagogical planning of the tuition.

More examples of application of the educational material – especially for groups of low-performing pupils would be welcome. Generally, it is the teachers' assessment that there is a good interaction between facts and scope for the teachers' own opinions and planning. But more concrete examples are welcome, especially as a help for the teacher in cases where the pupils' assignments are very extensive.

The teachers looked for ideas for application of the material in connection with low-performing pupils. Although there are good suggestions for differentiated teaching and collaborative tasks, the teachers do not find sufficient inspiration as to how the material can be used as an educational material for backward readers for example.

The teachers' guides are a good basis for differentiated teaching. All in all the teachers are satisfied with the teachers' guides. The assessment is that it is fairly easy to see how one should work with the material both didactically and pedagogically, and that the teachers' guides are a good basis for differentiated teaching.

The teachers' Guide is a good basis for collaboration between the pupils, but to a lesser extent for use in cross-curricular contexts. The teachers estimate that generally there are good suggestions as to how to use the individual themes and clip collections to stimulate cooperation between pupils. At the same time it is assessed that the assignments and the clips can be used in a group context in such a way that a group of pupils can share a single computer and work together. But further ideas are welcome regarding the use of www.dr.dk/skole in cross-curricular contexts.

The teachers want a comprehensive view and clarity. Throughout the evaluation the teachers have expressed a great need for clarity and a general overview of what an educational material contains, and DR has adapted to the changing assessments during the entire process.

Generally the teachers have expressed great satisfaction with the way in which www.dr.dk/skole is structured, although it is still the opinion that the placement of the Teachers' Guide must be further clarified and placed under a special entry for teachers.

6. Evaluation of Skole-IT

Support of supplementary training of the pedagogical staff in primary and lower secondary school, including primary and lower secondary school teachers, is a prime target of the ITMF stake. The teachers' qualifications are considered to be crucial to the success of integration of ICT and media in a pedagogically reasonable and efficient manner.

The objective of the assessment was to examine the changes in the use of ICT and media which participation in the course entailed, and to throw light on the factors that contribute towards making the teachers – after having participated in the course – actually start using ICT and media in their day-to-day work.



In this section follows a description of conclusions from the sub report "Assessment of the Pedagogical Licence for Compulsory Education" as well as the applied method.

6.1 Method

The assessment was undertaken in the form of a questionnaire study combined with focus group interviews with participants who had completed the course.

The study focused on:

- The background for the teachers' participation in the course
- An assessment of the course concept
- To what extent and in what way has the use of ICT increased after completion of the supplementary education in the form of the Pedagogical Licence for Compulsory Education
- Requirements of future competence development.

The assessment was carried out between November 2003 and January 2004.

6.2 About Skole-IT

The teachers registered for the course either because it was required by the management, or because the individual teacher experienced a need to know more about the pedagogical use of ICT in education. Another essential reason for participation is a need to develop basic ICT skills.

The users' reasons for participation in the course are reflected in their use of ICT after completing the course. The teachers that stated that they participated in the course because they felt a need or were motivated by colleagues have integrated ICT to a greater extent in the planning and implementation of the lessons after participating in the course than those who participated in the course because the management demanded it.

Participants emphasize the possibility of planning their time usage and their work in teams throughout the course. These two factors are emphasized by most teachers as being very important to their completion of the course. However, in several cases criticism of the teams has been raised where the requirements regarding the qualifications of the participants and the expectations from the course, however, have not been adjusted.

There are considerable differences in the time usage of the participants. Half of the participants in Skole-IT used between 50 and 100 hours to complete the course, 30 percent used more and the rest less. There is also a difference as to how much time the participants were allotted for completion of the course. Time pressure has resulted in certain inexpediences, for example so that several of the participants had not read the tasks through when the work was delegated in the team.

6.3 The impact of Skole-IT on the use of ICT in schools

Before participating in the course the teachers used considerably more time on preparation than they did on class-room teaching. 64 percent of the teachers used ICT weekly or more frequently in connection with preparing the lessons compared with 25 percent in connection with class-room teaching.

The use of ICT in connection with preparation of the lessons has increased after the participants have completed the course. Subsequently every third teacher uses ICT for information retrieval and production of educational material. Advanced use of ICT has only increased marginally.

Every other teacher has to some extent increased the use of ICT in teaching, and every third teacher has increased the use of ICT. Most teachers have increased the use of ICT in lessons where the students search information on the Net. In addition, the course has furthered the use of both standard and subject-specific programs. There is hardly any effect, however, on the students' use of ICT for presentations or communication.

The use of ICT as a means of communication has primarily increased between the teachers, and between teachers and the school management. Only a few teachers have as a result of their participation in the course started using the media for communication with the students and their parents.

Limited impact on the teachers' participation in IT-strategic decisions. Nearly 60 percent of the teachers answered that they have not increased their participation in IT-strategic decisions after their participation in the course with regard to for example purchase of new IT equipment or development projects.

Those who used IT daily before the course benefited the most. The study shows that those who were using IT daily before their participation in the course derived the highest benefit from the course, whereas those who before the course only used ICT to a lesser extent, often have not increased their use of ICT after the course. The situation is even worse for those who never used ICT before the course.

6.4 The importance of the framework conditions for the use of ICT after participation in Skole-IT

The connection between the teachers' use of ICT in education and the framework conditions of their school has been analyzed more closely. It turns out that isolated framework conditions have no independent impact on the use of ICT. Generally the difference is insignificant – between 5 and 15 percentage points.

- In schools where there is focus on offering the students new forms of expression with ICT the teachers integrate ICT in the lessons to a larger extent. A similar tendency applies to approximately every tenth school where they work with digital logbooks letting the students manage their own individual learning.
- Where the technical ICT adviser has fixed office hours, and where it is possible to make an appointment for help or instruction teachers have increased their use of ICT in education more than in the case where he or she is difficult to find. In schools where the pedagogical ICT adviser is an enterprising person an increased positive impact is seen on the use of ICT after the teachers' participation in Skole-IT.
- Where access to ICT equipment has been easy and where the equipment functions well teachers have integrated ICT to a somewhat higher extent in lessons and in communication with colleagues. The data material supports the importance of accessible and well-functioning ICT equipment, but the study also shows, however, that this is frequently not the case. Only a third of the respondents find that they have access to well-functioning ICT equipment when they need it.
- Many schools have set up goals for the use of ICT, especially common are rules concerning the students' access to and use of ICT as well as the development of the ICT infrastructure. Teachers at schools with an objective regarding integration in the planning and organization of the daily work have increased their use of ICT more than the average.
- Where the use of ICT is integrated in the appraisal interview there is a slight impact on the use of ICT in training.
- The attitude of the management has an impact on the use of ICT for communication between the teachers. At schools where the management has a positive attitude towards ICT the use has increased to a greater extent than at schools where the management appears to have no particular interest.
- Where the ICT integration takes place in form of a process and the teachers insist that the management aims at ICT participation in the course the use of ICT in education has increased. Likewise, where the school has taken part in development projects or where the teachers have cooperated with others on the use of ICT in education the teachers have integrated ICT in the lessons to a slightly higher degree.

6.5 Demands for future competence development

The teachers express a great demand for more information about concrete educational courses and more advanced use of ICT and new pedagogical learning resources. The course, however, seems to have exhausted the demand for knowledge about basic ICT.

According to most teachers future courses should either be in the form of ad hoc courses or courses where specialists at the school cooperate with both teachers and students. However, the participants were satisfied with the form of the course, and approximately 60 percent would like to participate in a similar course in future.

7. Evaluation of SFO-IT (school-based leisure-time activities centres)

Support of supplementary education of the pedagogical staff in primary and lower secondary school, including pedagogues in the SFOs, is included as one of the main aims of ITMF. The qualifications of the pedagogical staff are considered to be crucial to the integration of ICT and media in a pedagogically sound and desirable way.

The aim of the evaluation has been to find out which changes in the use of ICT and media participation in SFO-IT has entailed, and to illustrate which factors in the SFOs are essential to the fact that the pedagogues – after their participation in the course – actually start using ICT and media in connection with their daily work.



Conclusions from the sub report "The Evaluation of SFO-IT" and the applied method are presented in this section.

7.1 Method

The evaluation was carried through in the form of a questionnaire study supplemented with focus group interviews among the course participants that had completed the course.

The study focused on five themes:

- Background for the pedagogues' participation in SFO-IT.
- Assessment of the concept of SFO-IT.
- The extent to which and how the use of ICT has increased after participation in SFO-IT.
- Framework conditions for integration of ICT after participation in SFO-IT.
- Wishes for future competence development.

The evaluation was carried out from November 2003 to March 2004.

7.2 About SFO-IT

A need for basic ICT skills and knowledge of the pedagogical use of ICT are the participants' primary reasons for participating in SFO-IT. Every fourth person, however, participates in SFO-IT, because it is demanded by the management. It turns out, however, that those who participate for this reason benefit to a slightly lesser extent from the course. Inspiration from colleagues and merit awards only have a small impact on the participation in

the course, but on the other hand it has a considerable impact on the use of ICT afterwards.

Among the respondents there is considerable satisfaction with the flexible time frame, the written assignments and the instructions. The participants find that they have been able to transfer what they have learnt to daily practice, but many still wish for more focus on practical use of different programs.

The largest limitation to the benefit of SFO-IT is that the participants have had too little time for completion of the course. There is a demand for clear directions as to the allocation of time for the course. Technical problems have not significantly limited the benefit of the course, but there is some criticism of the fact that known technical problems were not solved or communicated further to other participants.

There is general satisfaction with the team work, but the respondents have expressed a wish for a more differentiated composition of the teams. In several cases there have been large differences between the qualifications of the participants, which was experienced as a problem; on the whole one third of the participants had no ICT skills before the course.

7.3 SFO-IT's impact on the integration of ICT in the SFO

Before the course more than half of the participants had very limited experience with the use of ICT together with the children. After participation in SFO-IT the use of ICT with the children has increased. It appears – as expected – that computer games generally take up a lot of time and space in the SFOs, and they still do compared with other forms of use – as for example Internet and creative activities with the computers. As a result of SFO-IT more institutions have developed rules for games in the SFO, and every fifth pedagogue has increased the use of the Internet with the children. SFO-IT has generally meant an increased focus on the possibilities connected with the use of ICT together with the children as well as advantages and disadvantages.

Before the participation in SFO-IT more than 50 % used IT to communicate with colleagues and parents on a weekly basis or more often. SFO-IT has primarily increased the use of IT for communication inside the SFO. The use of IT for communication with the parents has only increased slightly. Communication via e-mail has increased the most, and every third participant has participated in electronic conferences.

Word processing and browser for the Internet is used the most. There is only a limited use of creative program and equipment types, for example digital video camera and illustration programs.

It is expected that future course participants can focus more on the integration of IT and less on the development of the framework conditions. Participation in IT-related discussions and development of rules for IT has increased to a great extent. During the focus group interviews it was stressed that the ICT-readiness of the SFOs is a maturing process. SFO-IT has created the basis for a discussion of the use of IT in the SFO and development of rules regarding this. The participants regarded themselves as a "first column" that lays the foundation of the future integration of IT in the SFOs.

The skilled users have increased the use of IT the most. Those who before participating in SFO-IT used IT frequently afterwards increased their use the

most. However, the participants who rarely or never used IT derived very limited benefit from the course – apart from the use of standard programs such as word processing, Internet or e-mail.

The course participants who are managers in the SFOs have – after participating in SFO-IT – increased their application of ICT considerably in connection with their daily work in the SFO.

7.4 Framework conditions in the SFOs regarding integration of ICT

In many institutions ICT is in the early stages yet, and the participants in SFO-IT are frequently the first in the institutions to acquire competence development regarding ICT. Many of them have started from scratch. There has been a need to discuss why ICT should be applied, just as it has been a task to purchase the necessary equipment – not least so that the pedagogues could turn their acquired knowledge into practice.

The study shows that the framework conditions in the SFO mean quite a lot to the participants' use of ICT after they have completed SFO-IT.

- Where there are explicit goals for the use of ICT in the SFO the impact of the participation in SFO-IT has been the greatest. Every other institution has set up goals for the children's access to and use of ICT; where there are no goals they are set up ad hoc.
- The attitude of the management means quite a lot to the use of ICT after participation in SFO-IT. Seven out of ten managements support the use of ICT and show an interest in how to apply ICT. The staff also generally has a positive attitude towards the use of ICT. The use of ICT has increased the most in the SFOs where the management has a positive attitude towards ICT, and where ICT is integrated in the performance reviews.
- The pedagogical access to ICT is important to the impact of SFO-IT. The impact of SFO-IT is the largest in the institutions where there is focus on providing the students with new forms of expression via ICT. The impact is also considerable in the institutions, where ICT is considered to be a tool to the same extent as for example drawing on paper.
- Access to mobile equipment and rules for the program supply increases the use of ICT after participation in SFO-IT. More than 50 % find that the ICT equipment is generally efficient. Every third finds that there is sufficient ICT equipment, while every fourth is of the opinion that his/her use is limited by the fact that there are too few computers available. The study shows that rules regarding which programs and games may be used support increased application of ICT. The explanation for this probably is that the students thus can work independently with the equipment without any risk. Only one of 10 institutions has mobile equipment, but here a positive impact on the utilization rate can be observed.
- It is easy to find help and guidance regarding the use of ICT. However, only in rare cases there is an ICT assistant in the SFO, but instead there is someone attached to the school or the municipality. It is of no great importance, however, whether the ICT assistant comes from the municipality, the school or is appointed in the individual SFO. Where the ICT assistant is a driving force the effect is greater after the participation in SFO-IT.

- Cooperation with others on the use of ICT in new ways is important to the integration of ICT. It appears, however, that seven out of ten have a positive attitude towards the use of ICT, but unfortunately only every third person cooperates with colleagues on the use of ICT in new ways.
- At home nearly all have a computer with Internet access. Every fifth participant in the study has direct access from his/her home to the files and documents of the institution. This has a slightly positive impact on the integration of ICT after the completion of SFO-IT.

7.5 Wishes for future competence development

In their wishes for future competence development the pedagogues focus on skills before background knowledge. There is the greatest interest for use of more advanced program types and equipment, for example digital video camera or creation of websites. There is also an interest for other creative applications such as drawing and image processing programs. There is also a need for skills regarding the technical aspects of ICT. However, there is only a slight interest in the basic program types such as word processing, for example.

The following education methods are desired regarding future competence development: "Out-of-the-house" courses with external instructors, ad hoc courses at the SFO run by the local ICT assistant or other colleagues with special competences, courses held in the same way as SFO-IT and the teams in the SFO, where there is an obligation to help each other with regard to the use of ICT.

8. Evaluation of Seminarie-IT (Teacher Training College-ICT)

Support of supplementary training of the pedagogical staff in primary and lower secondary school including teachers at teacher training colleges is a main target area of the ITMF effort. The qualifications of the teachers are considered to be crucial for a successful integration of ICT and media.

The purpose of the evaluation has been to evaluate the content and form of the course, the framework conditions of teacher training colleges regarding participation in the course and how ICT and media is applied at the teacher training college in an educational context and in the organization.

Conclusions from the sub report "Evaluation of Seminarie-IT (Teacher Training College-ICT)" and the method applied are presented in this section.



8.1 Method

Only a few teachers at the teacher training colleges had completed the course at the time of the study. Therefore, Rambøll Management chose to carry out the evaluation via telephone interviews with participants who had completed the course and participants who were in the middle of the process. Thus the result of the evaluation is the teachers' own evaluation of the integration of ICT and media at the teacher training colleges.

The study focused on six themes:

- Background for participation in Seminarie-IT (Teacher Training College-ICT).
- Framework conditions for implementation of the course.
- Evaluation of the content of Seminarie-IT.
- Evaluation of the form of the course.
- The participants' application of ICT in their daily work after participation in Seminarie-IT.
- Framework conditions for the integration of ICT at the teacher training colleges in general.

The study was carried out in February and March 2004, and 21 teachers from different teacher training colleges were interviewed.

8.2 About Seminarie-IT

Although only a few of the registered course participants had completed Seminarie-IT at the time of the study by far the majority of them expect to complete the course. Time pressure is the main reason why the teacher

training college teachers are delayed with regard to completing the course. Many actually started later than the time when they registered, and most of them took between ½ and 1½ years to complete the course. The reason for this is that it is difficult to squeeze the course into a busy schedule. The greatest barrier to completion of the course has been the time pressure. The interviewed teacher training college teachers have been allocated between 0 and 50 hours for Seminarie-IT. It is felt to be a great problem if a teacher has not been allocated any time at all for the course. The teacher training college teachers, however, are generally willing to use some of their "own" time on the course, but it is difficult for them to find consecutive time. As a minimum the time usage is 50 hours for completion of Seminarie-IT, but most of them use much more time.

Many join the Seminarie-IT course because they must do so, but most of them also follow their own wish to join the course. The expectations from the course cover a wide field. From very concrete expectations about learning about ICT tools to broader expectations regarding good discussions and a pedagogical view of ICT. Most of their expectations are fulfilled, but this applies to a higher extent to those who had broad expectations than it does to those who had very concrete expectations.

The professional content of the course is considered to be relevant and interesting to most of them, which is part of the motivation for the teacher training college teachers to complete the course. The ICT Toolbox, the folder and the website are used very differently. Mainly the ones that are familiar with the use of ICT derive benefit from the website and the ICT Toolbox, whereas the less experienced ICT users find them confusing and difficult to use. It can, therefore, be something of a problem for those who do not possess very advanced ICT skills to get something out of the course material.

Team cooperation is a motivating factor for the course participants with regard to the completion of the course. This applies both to cooperation across professional groups and across ICT skills. Similarly it has been important for their motivation that they experience a connection between the course and their daily work. The majority think that there is a connection, but a few people find it difficult to see the connection.

The instructors have not in fact been very supportive towards the interviewed training college teachers regarding their completion of the course. The role of the instructor has in many cases been limited to approval of the submitted assignments, which has been a disappointing fact to some. The panel of resource persons is not used at all.

8.3 The use of ICT in the daily work after participation in Seminarie-IT

The degree of use of ICT in education differs among the teachers that were interviewed. All of them use ICT to a large extent for communication with the student teachers, whereas the extent to which ICT is otherwise integrated in education varies. Administratively, ICT is used to a high degree for communication. In a few places the paper-free teacher training college has been introduced.

Only a very few think that their participation in Seminarie-IT has changed their use of ICT in education. However, several people think that the course has changed their way of thinking about the application of ICT in education.

8.4 Framework conditions for integration of ICT in teacher training colleges

The teachers find that ICT has a high priority at teacher training colleges, regarding both administration and teaching. At many teacher training colleges formal goals have been set up regarding integration of ICT. The management are seen to promote the integration of ICT. This may be both because the management uses ICT a lot, and/or because they allocate resources to the field. It is important mainly in relation to the administrative work.

Colleagues' use of ICT can be effective with regard to the way the individual teacher uses ICT in education. Experience shows that if a group of colleagues use ICT a lot they inspire each other and develop their use of ICT together. The students do not, however, ask for application of ICT in education.

The teachers estimate that the technical conditions are very important for their application of ICT. They assess that it is important that a sufficient number of PCs with Internet connection and projectors for showing Power-Point presentations are available. Many of them find that conditions have improved, but in some places the limited technical conditions still present a problem.