

# **OECD/CERI ICT AND THE QUALITY OF LEARNING PROGRAMME**

A Case Study of ICT and Organisational Change at  
Spejderskolen – Korinth Efterskole – Denmark

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# 1 Presentation of Spejderskolen – Korinth Efterskole

The school was started in 1922 as a domestic science school managed by two elderly ladies actively engaged in the Guide Scout Movement. The school applied only to girls and not until the 1970es – during the period when the present male principal was employed as a teacher – did the school open its doors to boys. At the end of the 1980es the school was changed into a continuation school (boarding schools for students on grade levels 8, 9 and (primarily) 10 from all over the country) with the structure it has today and subject to the legislation on independent schools.

Spejderskolen - Korinth Efterskole has capacity for 55 students boarding for one or two years and offers education on the 9th and 10th grade levels, and the students may enter for the standard leaving examinations of the folkeskole (primary and lower secondary school).

Above practical subjects and subjects related to scouting the students are offered the possibility of signing up for five subjects preparatory for leaving examinations: reading, mathematics, English, German and physics. As something new the school year has been divided into separate educational courses of which the first are thematic (for instance nature and environment, internationalization), while the finishing course is optional. During these periods all subjects are co-operating on the actual themes.

The staff consists of 9 persons including janitor and school secretary.

85% of the school's income derives from public funds, while the rest is paid by the parents. Of the school's budget for teaching material abt. 13% cover ICT – primarily the school's world wide web connection.

Above the computers the school is using for administrative purposes there is a computer room with nine personal computers plus a few distributed in the classrooms, which indicates a total of 6,1 students per school computer – all with www access. However, about half the students have a computer in their room, and added to the school computers this makes a total of 1,7 student per computer. The school computers were donated by a local bank which was updating its hardware. To upgrade the computers the principal

subsequently installed cd-rom drives. As far as software is concerned the school is licensed for a number of Lotus products and above that uses the freeware accessible on the www.

## 2 The past

From the very beginning and up till now the implementation of ICT at Spejderskolen - Korinth Efterskole has been signed for by the present principal's personal interest in the media and the perspectives he has seen therein. Thus, it was on his request that a computer for administrative purposes was installed by the end of the 1980es, and since then the updating of the ICT infrastructure has progressed steadily.

Today the school has its own server and internal web serving as a common notice board with diary, practical information etc. The teachers are granted the possibility of having their homebased computers connected via modem to the school server, which makes it possible to do a great deal of planning at home and to receive and forward practical information without having to be physically present at school. Like many other continuation schools Spejderskolen - Korinth Efterskole is connected with the Sector Web of the Ministry of Education.

During the period 1997 through 1999 the principal was acting as an ICT consultant for the independant schools. Primarily, the task consisted in counsel and guidance to the schools as to how ICT can be integrated into the teaching at school and into the students' and teachers' spare time in order to make ICT form part of the entire educational environment.<sup>i</sup> It was also in this capacity the principal was given the assignment of distributing 150 slightly used computers from a local bank, which offered the school the possibility of establishing a proper computer room.

When two years ago the school was to have a students' wing renovated, web connections were installed in all the rooms, so now the students are offered web access from their own room, provided they bring their

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<sup>i</sup> The idea behind the consultant arrangement was that three consultants sharing a full time teacher appointment should convey their own experiences to other schools. They had expected the task to have a more pedagogical character, but as at that time none of the schools involved had established networks etc., the job primarily consisted in technical support. (Consultant's report).

own computer. Students without a computer may use the school's computer room beyond school hours. It appears from a check-up made at the time of the study by some of the students that 22 boys out of 26 have a computer in their room, while only one girl out of 23 has one. The school intended to have web access installed in the remaining rooms in connection with a continued renovation of the students' quarters.

## 3. The present

### 3.1 ICT in organization innovation

Spejderskolen - Korinth Efterskole does not pursue a commonly determined strategy for the implementation of ICT; rather the strategy has been determined by the present principal's visions and competences. According to the principal several of his objectives have now been fulfilled: "*The basic idea that information should be allowed to flow in all directions via mail, homepages and intraweb are in order, and now we are refining things.*" (Principal).

At the time of the study a natural change of staff took place which offered new possibilities to the school but also required a period where the new conditions should be stabilized. Furthermore, the school was facing a change of principal, so that all things considered the school found itself in a transitory phase which will also have influence in the ICT field.

#### School culture and development

The school's basis of values and ideas comprises that "... *the school will attempt to establish a community of development offering the students a good education as far as subject matters and personal development are concerned preparing them for their future lives.*" (Principal in status report). This means, among other things, that the students should be supported in becoming responsible, helpful and independent persons; they should find their beliefs and respect those of others and learn how to take up an attitude to societal issues. At the same time, the school wishes to convey to the students experiences and knowledge of Nature.

One of the methods for strengthening the students' independence and responsibility is to delegate an increasing number of decisions to the students during a school year, for which reason many activities have not been planned at the beginning of the school year. The school bases its work on the principle of 'learning by doing', which implies, among other things, that the students themselves must find out how to get up in the morning, and since there is no staff employed for cooking and cleaning these fields are the students'

responsibility.

As regards the role of ICT in the school innovation it seems that attitudes have changed in course of time. Where, for instance, earlier it was considered hard to put information into the electronic diary, there is almost panic today, according to some of the employees, if the system has broken down temporarily. However, the risk which is a consequence of depending too much on ICT has a somewhat scaring effect on the principal: *“In fact we have no systems anymore to use as a substitute – they are all gone.”*

Although today the teachers find that ICT has been justified as part of the organization, and that they are under obligation to the students to include technology in their teaching, it is discussed how much room ICT should be allowed in the school life. In principle today’s students have the possibility of spending all their spare time at the computer, and experience shows that some students tend to isolate themselves in their rooms using much of their time for computer games. In such cases ICT is considered a mainly unsocial media, and especially in a continuation school, where the social life is placed centrally, both students and teachers consider this a problem.

The students have a right to be interested in ICT, but owing to the group of students who seem to be unable to manage their possibilities of using ICT, it is found that free access to computers is not necessarily an advantage. It is pointed out that there is a need for a discussion on the influence of ICT and its future position in the school. Among other things, some teachers find that it may prove necessary to implement restrictions on the use of ICT (for instance time limitations), and that the staff should take up the common attitude that it is unacceptable if ICT fills the major part of a student’s spare time.

However, control and regulations are not cherished by the school, and, moreover, several teachers realize that if restrictions on ICT use are put into effect, there must be alternative activities to engage the students. Activities strengthening the social interaction and outdoor activities are areas one might wish to develop, and which might offer an alternative to spending one’s time at the computer.

## Communication

A general attitude to ICT is that in educational as well as organizational connections technology should not be made something in itself, but should be interpreted as part of everyday life, and the intention is that technology should be used wherever it fits in naturally like other instruments used in everyday life. Thus, ICT is primarily used as a tool for systematical diffusion of information, and the teachers have made a deal obliging them to use the communicative instruments – among others a diary system contained in the school's server. The staff members find that it has become easier to keep oneself informed and have practical information diffused, which makes the organization more coherent although the teachers work different hours and do not see each other every day. At the same time it is considered a large advantage that the teachers are not compelled to do their preparation at school but have the possibility of getting access to various materials etc. from their home-based computers.

Externally the school's homepage has an important function as, according to the principal, it increases the school's possibility of getting 'discovered' by future students. Each month the homepage is frequently visited; in October 2000, for instance, there were 26.000 hits from 20 different countries.<sup>ii</sup> The principal expects that the interest from abroad is the start of a general process of internationalization attracting more foreign students. For the very same reason it is important that the homepage comprises an English version of which the updating is given as a task for the school's classes of English.<sup>iii</sup>

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<sup>ii</sup> The school is also approached from abroad vial e-mail, among other things it keeps up the contact with a couple of Lithuanian former students.

<sup>iii</sup> Apart from being the face the school is showing the world, its homepage represents a service to former students, where, using a password, the can get mailing lists and other information on their year.

## Staff development

Some years ago the principal arranged a series of minor internal courses, but the staff has not attended any proper educational courses, and apparently this has not had a high priority. In this connection it has been a disadvantage that the staff is so small – all functions have to be carried out as in any other school but by a far more limited number of persons. The consequence of this is that actually there has not been much time for in-service training at all. At the same time the teachers have tended to prefer subject-related courses rather than ICT courses, whenever they have been offered the opportunity of in-service training.

The teachers do not feel they have been encouraged to using ICT, and it has been up to themselves to decide how much time they wanted to use on acquiring the necessary ICT competences. Apart from a few initially taking independent initiatives to attending ICT courses the staff mainly have learned ICT by probing and by asking each other. The same is true about new staff members who get no introduction in particular to using ICT, and specific ICT competences are not demanded from applicants.

Today the teachers mainly use ICT as a mutual means of communication and source of information, but find that they could use competences specially aimed at integrating ICT into their teaching. However, it is open to discussion whether all teachers should be equally competent allround, or specialize within the ICT skills required in the subject they teach. Some find that by establishing that kind of structure the relevance of ICT to the individual teachers will be ensured thus implying a larger probability of ICT being integrated into the teaching. The teachers are unable to solve technical problems independently, thus having had to draw on the principal who is the only person in the organization possessing the competences to solve that kind of problems. That the principal is technically highly competent is considered an advantage to the school, but at the same time it is used by some teachers as an argument for not having tried to update their own competence – it has not been necessary. These facts also imply certain disadvantages for the principal himself: *“Whenever there is something the matter, they come to me, and in this way much of my time is used on these things.”*

## 3.2 ICT in teaching

Even though the continuation schools in Denmark are not subject to the same governmental regulations as the folkeskole, Spejderskolen - Korinth Efterskole has chosen as its starting point the recommendations of the Ministry of Education stating that competence in using ICT should be considered a cultural technique in line with other techniques. Seen from the point of view that ICT will become part of the students' everyday life it is, consequently, necessary that the school is capable of offering them access to the media and to a certain degree makes it part of the teaching. ICT in school works as an instrument to be used in connections where processes of work can be made more effective.

The development has implied that today many of the students have acquired the more basic skills of ICT before they start at Spejderskolen - Korinth Efterskole; some are even very able users. However, there is still a large variety in the students' knowledge and use of ICT.

A status report from Spejderskolen - Korinth Efterskole from 1997 states: *"It is evident that more experiments of integrating ICT in teaching should take place; however, the teachers lack the basic knowledge of the many possibilities of the equipment available."* Today it is still very different to what extent the teachers include ICT in their teaching, and the above mentioned admission has not been utilized in a concrete plan of action aiming at upgrading the teachers' qualifications. The teachers' competences are found on a personal user level, and the general attitude is that they are lacking when compared with the students, who in some cases are far more competent. Although the students would like ICT to become more integrated into the teaching they do not find it very problematic that the teachers are not always able to help, as, generally, they can find someone among the other students capable of offering the assistance they need.

As it is, it is possible for a student to leave school without being acquainted with ICT. On the other hand it is also possible to spend one's entire spare time at the computer, the school's policy being that the students themselves should administer their use of ICT. However, a few regulations for the use of the computer room have been necessary, so that students wanting to do their homework on the computers have priority to those who want to use it for private purposes. The computer room is considered a place of work, for which reason just one student per computer has access to the room at the same time beyond school hours, thus ensuring

that a certain degree of concentration is possible. Moreover, the computer room is locked during the students' joint activities, cooking, cleaning etc., so that no one is tempted to evade participation in these activities.

At Spejderskolen - Korinth Efterskole the wish to unite the school's pedagogical objectives, resources and ICT have led to the appointment of three students as system administrators. The job consists in – in co-operation with the principal – maintaining the school's computers and be of assistance when ICT-related problems occur. Their reward is the pleasure of being trusted with responsibility and increased experience with computers and interaction among persons. (Appendix C) However, it seems that ICT does not to any considerable degree form part of pedagogical courses and projects as anything but a practical instrument used for word processing, spreadsheets and seeking of information. If the students want to use other kinds of software and various skills it is mainly the individual student's concern to experiment.

#### Advantages and disadvantages at ICT in teaching

Spejderskolen - Korinth Efterskole points out the following advantages:

XThat some students have been granted access to the world wide web from their rooms has diminished the pressure on the school computers, as the individual students are able to do their homework on the personal computer in their room.

XIt may also be expedient to have a personal computer in the room, as it will often be easier to concentrate here.

XIt is quick and easy to gather new information on the www.

XICT is a good instrument for editing which makes it easier to make corrections in papers.

XTo those students who do not express themselves easily it has become easier and quicker to put something down in writing, and moreover ICT offers the possibility of ending up with a more spectacular product.

XICT offers possibilities of acquiring new competences through playing.

XICT makes it easier to activate more students during lessons. ICT is a good instrument for group work.

XIt is an advantage to the students to be able to co-operate on the mail system over distances, if for instance

being away from school over the weekend.

XIt is considered a great advantage that via the mail system the students can keep in touch with family and friends at home, as many of the students are living away from home for the first time in their lives.

The following disadvantages at ICT are pointed out:

XSometimes it takes much time to seek information on the www if you have no previous training.

XUsing ICT often takes place at the expense of other things, for which reason it is important to insist that one should be able to handle a task without having access to ICT.

XSometimes it is difficult to the students to find the limit where ICT is no longer expedient and other methods might be applied to advantage.

XHaving but one computer room can be problematic, this fact making it more difficult to spontaneously apply ICT in the teaching. (In such cases, however, it is an advantage that many students have a computer in their rooms).

XThe equipment of the computer room is very old, and it is a frequent source of frustration that technical problems often occur.

Apparently software is a very actual problem to everybody at Spejderskolen - Korinth Efterskole. The school is licensed to using various Lotus programmes, which does not meet with the students' wishes as they are used to the Microsoft office package, which to some students mean that they choose not to use the school's computers at all. This frustration is also noticeable among the teachers who express their regrets about the many converting problems due to the fact that their home-based computers use software programmes different from those of the school. Initially it was the principal's decision to use the Lotus software, and he is aware of the fact that this has brought about a certain degree of dissatisfaction. However, he considers it important to take up a critical attitude to the established ICT producers. Furthermore, he is of the opinion that primarily it is a question of readjustment to master Lotus, when possessing beforehand a certain knowledge of other programmes.

## Academic rigour and equity

The fact that some of the students are very competent is seen by the school as a potential to be used: *“They have some resources that are worth their weight in gold, they just have to be used positively.”* (Principal). To many of the students using a computer is a natural thing, and the great majority actually use ICT for written assignments, while only a few find that they do not benefit from ICT to any particularly high degree.

No experience from Spejderskolen - Korinth Efterskole points to the fact that some students profit more from ICT than others, but it is obvious that there is a marked gender difference when it comes to the interest shown by the students. For instance, as mentioned earlier, the great majority of the boys have brought their own computer, while just one girl has chosen to use this opportunity. As far as the use of ICT is concerned, gender differences are also detected – where the boys in general show much interest in ICT, especially in the opportunity to play games lying implicit in the media, the girls are more function-oriented in their use of ICT.

### 3.3 The diffusion pattern of the innovation

The diffusion of ICT is marked by a kind of ad hoc procedure, and no special events or periods have contributed to drawing the diffusion pattern. Nor is anything indicating that the principal has given priority to systematically transferring his knowledge to the other staff members – apparently the teachers’ knowledge of ICT has rather been gathered little by little as their individual needs have arisen.

#### The role of the leadership

According to the staff it is evident that the driving force in the process of implementation has been the present principal’s involvement and personal interest in ICT. The principal was the person who initially set the innovation in motion, and he has put many hours of work into upgrading and maintenance.

The principal considers his role in the organization more co-ordinating than managing, which is also linked up with the size of the teaching staff. According to the principal the school rests upon the employees’ involvement, for which reason he finds that it is of decisive importance that each staff member is granted the freedom to leave the mark on the school and the teaching he or she considers the most appropriate.

This attitude can also be said to have influenced the implementation of ICT. The teachers have not been interested in the media to the same extent as was the case for the principal, and the freedom of method being considered of great importance it has not been attempted to press the teachers into using ICT. Therefore, the ways in which the teachers integrate ICT in their teaching vary a great deal, but since the regulations of the Ministry of Education are not very precise either, the principal considers this variation inevitable and – to a certain extent – acceptable: *“If you do not consider it compatible with your style of teaching you must reduce it to a minimum that can be justified in relation to governmental regulations.”* (Principal). However, the principal expects that automatically ICT will be a greater part of the teaching in the future. ICT having become part of a major societal connection the teachers can no longer choose not to use it – if only because it will be a demand from the students.

Apart from the principal being interested in the technology ICT has also been considered a possibility of innovation and a means for renovation of the organization. The school must take up an attitude to the fact that in recent years the membership figures of the Guide Scout Movement have been decreasing, and that a new profile is necessary to be able to recruit new students for the school.<sup>iv</sup> In this connection ICT is considered a good supplement to the more traditional scouting activities, and the staff hopes that ICT may contribute to appealing to a larger clientele.

### Sustainability and scalability

Qua its principal Spejderskolen - Korinth Efterskole has had the specialized technical knowledge required for establishing its own ICT system. The prerequisite has been that the principal has had the interest and willingness to invest the time it takes to develop and maintain the system. However, only the principal – out of the entire school staff – possesses this specialized knowledge of ICT (for instance the server system).

Consequently, the change of leadership means that the school will find it difficult to sustain its ICT structure in the same way as hitherto. The principal's change of position means that all the knowhow and

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<sup>iv</sup> The school's basic values are those of the Guide Scout Movement, and not until recently has it refrained from the demand that admission was only granted students with a background as active members of the Movement. Today about 10 percent of the students have no scouting background.

technical competence required for sustaining the school's basic ICT model is disappearing. It has been realized only too late that this situation will lead to problems, and at the time of the study there was some uncertainty as to how it should be handled. The principal has the following comment: *"It is paradoxical because nobody has realized it until now at the last minute; in a way it may be my fault that I have not involved someone much more at an earlier stage – but then it demands that the interest is there."*

After the school board realized the problem they asked the principal to educate a teacher; however, at that moment it was not practicable to teach someone ICT from the very bottom, and apparently the necessary interest in an intensive introduction to the technological aspects of ICT was not present among the teachers. Instead, the board asked the principal, whether he might be willing to assist during a period following his change of position until a permanent solution can be found. The teaching staff has pointed to a solution where the school has to accept that the sustenance of ICT should be given a much higher priority on the budget than was the case earlier, thus, enabling the school to buy assistance from outside whenever necessary.

However, nothing indicates that ICT is moving out of focus at Spejderskolen - Korinth Efterskole. In the conditions of appointment for the new principal is included that the applicants must have reached a certain level of ICT competence. Thus, it should be expected that as a minimum the new principal will form part of the administrative work and the communication which are the primary functions of ICT at the school.

Seen in the light of the fact that the principal has acted as ICT consultant through several years it seems paradoxical that the school finds itself in its present situation, this problem being precisely one of the points he has attempted to pass on to other schools. The principal's point is that no matter how much technical knowledge a school accumulates internally, this knowledge should be diffused to several persons, so that the sustainability of ICT in the school does not depend on one individual.

Other prerequisites for a successful innovation are that, firstly, a school must consider how ICT can be integrated in the objectives and basic values upon which the school is based, and what consequences an ICT integration might have for the school culture. Subsequently, the school's needs should be uncovered, the

interest of the staff identified, and for what and how ICT should be used considered, in order to direct the innovation along a specific line.

*“The teachers’ interest and qualifications are decisive to the integration of ICT in teaching, and the continuation schools will have to increase their efforts in this field, to prevent that the difference between students’ and teachers’ knowledge and experience become too large.”* (from a consultant’s report).

As it appears from the quotation, it is, secondly, a prerequisite for integration of ICT that the teachers show engagement. One of the most important obstacles to a pedagogical innovation through application of ICT is the teachers’ lack of knowledge of the media’s versatility and possibilities.

One experience the continuation schools share with other schools is that new teachers possess too little of even the more basic ICT skills. Therefore, it is important that the schools have a long-term educational strategy comprising also how an effort can be made to educate the newly graduated teachers. (Consultant’s report).

# 4 Discussion of hypotheses

## 4.1 Hypothesis 1

*Technology is a strong catalyst for educational innovation and improvement, especially when the World Wide Web is involved. The rival hypothesis is that where true school-wide improvement is found, technology served only as an additional resource and not as a catalyst, that the forces that drove the improvements also drove the application of technology to specific educational problems.*

### Material supporting hypothesis 1

XSpejderskolen - Korinth Efterskole has experienced the necessity of a collective discussion on what role ICT should have at the school in the future, and how internal as well as external demands for integration of ICT into teaching can be met with.

### Material supporting the rival hypothesis

XToday the internal co-ordination of activities takes place via ICT, which has proved essential in an organization of this kind, where the students are boarding. Within such frames the co-ordinative work is extensive, and as not all staff members are present at the school at the same time, technology and especially the construction of an elaborate diary system has made the organization more coherent. In this connection it has been decisive that all staff members have www access from their home-based computers, as in this way both co-ordination and the planning of teaching have been made more flexible.

XIn relation to the students ICT is a major resource, as, for instance, the e-mail system has made it easier to communicate with family and friends at home.

At Spejderskolen - Korinth Efterskole ICT cannot be said to have acted as a catalyst for a radical innovation of the organization; however, technology has been an important resource as regards the upgrading of

communication within the organization. To a wide extent conditions have been established for meeting with the general objective as regards integration of ICT to 'let information flow' and upgrade information. Offering the students access to ICT has also formed part of a strategy that should contribute to ensuring the existence of the school in a long perspective, in the hope that through ICT the school will be able to renovate its profile, thus, appealing to a larger clientele.

## 4.2 Hypothesis 2

*The diffusion of the innovation/improvement (and therefore of ICT) followed the traditional diffusion pattern for innovations, as outlined by Rogers (1995). The rival hypothesis is that technology functions differently from traditional innovations and that therefore different diffusion patterns occur.*

### Description of the diffusion pattern

Today all staff members of Spejderskolen - Korinth Efterskole use ICT in their daily work, when acquainting themselves with the school's activities, planning etc. However, the teachers' knowledge of technology lies mainly on the user level, and the implementation process has been marked by the fact that no systematic efforts have been made to involve the staff and upgrade its qualifications.

In many respects the leadership plays an important role at the school – it is the principal who has been in charge of the new technology, and he has been the person who updated and maintained the system. He has arranged a few internal courses, which, however, took place some years ago, and no plans have been made subsequently to establish an ICT-related in-service training of the teachers. The school gives a high priority to the teachers' freedom of method, and have not demanded that they upgrade their qualifications. Moreover, in a school with a small staff it will often be difficult to do without the teachers in the daily work which, generally, makes it difficult to set aside time for in-service training. The principal is the dedicated person in the ICT field, and although a few staff members have attended ICT courses on their own initiative, thus accumulating competence, a network has not been established aiming at supporting the rooting of technology in the organization.

The diffusion has also been impeded by the fact that a certain resistance towards technology, such as it has been introduced at the school, can be traced among the staff. The teachers have no doubts about the

relevance of technology in teaching, but do not consider it necessary that all employees have the same competences. Thus, the staff members find that a strategy for development might be expedient which could set an objective for the implementation of ICT thus clarifying what competences are necessary.

### 4.3 Hypothesis 3

*Successful implementation of ICT depends mostly upon staff competence in the integration of ICT into instruction and learning. This hypothesis assumes that teachers mediate ICT applications when they are successful, and that ICT's academic value relates positively to teacher competence. The rival hypothesis is that the school technological infrastructure and student ICT competence rather than staff competence determine ICT implementation outcomes.*

#### Material supporting hypothesis 3

XIn a consultant's report of which the principal is co-author it is emphasized that the teachers' interest and qualifications are decisive for how ICT is integrated into the teaching. At the same time it is advised that the effort in the in-service training field is increased in order that the difference between students' and teachers' knowledge do not become too large.

XThe teachers of the school have not had the opportunity to attend in-service training courses, and all the teachers emphasize that they lack competence as regards the integration of ICT into their teaching. At the time of the study the teachers primarily used spreadsheets and word processing in their teaching, and only very rarely technology formed part of the planning of pedagogical strategies or projects. If the students want to acquire other skills or use other kinds of software, for instance for image editing, not much help is available from the teachers, and it is up to the students themselves to learn or get help from other students.

XAs regards the implementation of ICT the school does not work on the basis of a joint strategy or school curriculum – the teachers must comply with the minimum demands of the Act on the folkeskole, but otherwise they may decide independently how they will integrate ICT in their teaching, which has meant that ICT has not been integrated to any high degree and that the students may pass through the school year without really acquainting themselves with technology.

## Material supporting the rival hypothesis

XSeveral students point out that they would like ICT to be used more in the teaching, but when it comes to concrete assistance in connection with assignments they find that as a rule they can get help with fellow students, who are often more competent than the teacher.

XThe principal draws on specially appointed students in case of hardware problems; thus the students' competences are used actively for sustaining the infrastructure.

XThe school has at its disposal one computer room with a few computers, which makes it hard to use ICT spontaneously in the teaching. At the same time the equipment is rather old, and it gives rise to frustrations that technical difficulties often occur.

XThe school has made it possible for the students to bring their own computers, which means that they are not absolutely dependant on the equipment supplied by the school. Thus ICT access is considerably larger beyond school hours, but also in teaching situations, as the teachers integrating ICT will often take the opportunity to use the students' own computers in the solution of problems and assignments.

The material from Spejderskolen - Korinth Efterskole primarily points to the fact that it is important to take teacher competences into consideration, if ICT is going to be integrated into the teaching. The teachers of the school do not feel ready to face the task, and they lack actual knowledge of how ICT can be used. As no supportive arrangements have been made in order to upgrade the teachers' qualifications, ICT is only used sporadically in teaching connections. In some cases, however, there is a possibility for the students to draw on each other's competence, if they need help for actual assignments, but after all this potential is limited because of the teachers' lack of competences and in consequence hereof their choosing not to integrate ICT in their teaching.

It is a problem that the school has so relatively little equipment at its disposal, when the teachers do wish to use ICT, however, it is possible in such cases to draw on the students' own computers.

As regards the hypotheses we must conclude that the material points to teacher competences as the most important prerequisite for using ICT at all. However, it is evident that also the infrastructure (few and outdated computers in the computer room and many technical problems) may be an obstacle for using ICT

in the teaching.

## 4.4 Hypothesis 4

*Gaps in academic performance between high and low poverty students will not increase when all students have equal access to ICT. The rival hypothesis is that equal access to ICT will lead to more advantaged students increasing the performance gap with disadvantaged (high poverty) students.*

Material supporting hypothesis 4

XAt Spejderskolen - Korinth Efterskole no argumentation is found to support this hypothesis. Generally the teachers are not so willing to categorize the students – and as generally the students spend only one year at the school, one is extra careful with assessments.

Material supporting the rival hypothesis

XThe above statements are valid for the rival hypothesis.

On the basis of the material from Spejderskolen - Korinth Efterskole clear conclusions cannot be drawn as regards a possible connection between the implementation of ICT and the level of academic standards of different student groups'. However, there is another very clear difference between the students of the school: the difference between how girls and boys give priority to using the computer in their everyday life. Apart from a few practically all the boys have brought their own computers, whereas just one girl has done so. Experience from Spejderskolen - Korinth Efterskole also shows that generally the boys are more interested in ICT and use much of their spare time on technology, whereas the girls mostly use the computers in a teaching connection and, above that, primarily deal with the communicative possibilities of ICT.

## 4.5 Hypothesis 5

*Successful implementation of ICT will lead to the same or higher academic standards in spite of the low quality of many ICT materials. Academic standards are a function of teacher and school expectations and not of the standards of textbooks, ICT materials, and the like. The alternative hypothesis is that ICT use will lead to a lowering of academic standards as students spend more time on marginally beneficial searches and in browsing poor quality Web and courseware content.*

### Material supporting hypothesis 5

XGenerally, the teachers' expectations are considered important to how the students benefit from the teaching in the ICT field – but this far from indicates that the quality of software etc. is of no importance.

### Material supporting the rival hypothesis

XThe teachers' experience indicates that it is often difficult for the students to assess when it is obvious that ICT should be applied in given assignments, and when other methods or instruments can be used to advantage.

It is a general problem that the school uses software different from what the students and teachers are accustomed to. Many students are not sufficiently patient to readjust and as a consequence of this choose not to use the school's programmes using their own instead.

At the same time this gives rise to many conversion problems which causes much irritation among the teachers, who often do their preparation at home and, consequently, need to draw material from the school's server. The school's use of a selection of programmes which many consider of lower quality than the more popular ones, may influence both students' and teachers' use of software, and to some their dissatisfaction with the quality may mean that they do not develop their ICT competences to any particularly high degree.

The teachers attempt to prevent the students from choosing ICT for solution of tasks in cases where other instruments might be more expedient – and nothing indicates that the students' learning level is generally decreasing because of their way of using ICT. However, the school is aware of another problem related to a group of students who keep themselves isolated in their rooms with computer games and for that reason choose not to participate in social activities. This is opposed to the school's basic values according to which

it is attempted to strengthen the students' social competences, and therefore it is discussed whether free access to ICT in its present form is expedient, as, apparently, some students find this possibility difficult to manage.

On the background of the material from Spejderskolen - Korinth Efterskole there is no basis for confirming hypothesis 5 as regards the quality of the teaching material – the argumentation is in fact pointing in the opposite direction – however, it is probably possible to argue for a connection between the students' learning level and the expectations on the part of the school. As regards a possible inexpedient use of www etc. it is not the learning level that is primarily influenced, but rather the social life of the school.

## 5 The future

It is difficult to predict precisely where Spejderskolen - Korinth Efterskole is heading, as much depends on the change of principal. Nothing indicates that ICT will disappear completely from the programme, as there is general consensus as regards the justification of the media; however, sustenance of the present level will depend on many factors, among other things on the board's willingness to give ICT a high priority and authorize the expenses in connection with calling in technical assistance from the outside. Furthermore, it seems that time has come for a discussion on the future status of ICT at the school. The outcome of this discussion is not easy to tell, as it will lack the participation of the present principal who has a positive attitude to ICT. Also there is a task for the teachers and the future principal to discuss, how it is prevented that some students isolate themselves, and what might be offered as an alternative to ICT in the students' spare time.

# Appendix A

In Denmark the team behind 'Case studies – organisational change' comprised project leader Arne Carlsen, project researcher Lotte Broe and project assistants Lea Holst Spenceley and Ulla Milner Drewsen – all employees of The Danish University of Education. The study was carried through on the basis of the OECD/CERI design "A workbook for case studies of organisation change. Version 9b-August 8, 2000".

At an initial meeting the school was informed on the study in general, the requested amount of interviews, observations, additional material and the questionnaire part.

The school visit was carried through by the project assistants and lasted for five days. The programme was arranged by the school and consisted of one observation session of 60 minutes (only one teacher used ICT in his teaching during the week in question), and a total of 10 interviews.

The informants were: school principal (3 hours in 2 sessions), 5 teachers (45 min.), 3 groups of students, in total abt. 9 (30 min.). All the interviews were tape recorded and transcribed. Since none of the parents were living in the local area, it was attempted to make a telephone interview which, however, for various reasons was not carried through.

Out of 9 questionnaires 7 were answered. The school chose to let the answering of questionnaires be optional.

The additional material consisted of 8 appendixes comprising among other things a 'job ad' for students, (Appendix C), the school's status report and a consultant's report on ICT in the field of continuation schools.

# Appendix B

((Please insert Appendix B – Spejderskolen - Korinth Efterskole))

# Appendix C

## **Wanted: 2 system operators**

For maintenance of the student computers of School XX is wanted two system operators to be collectively in charge of soft- and hardware maintenance in concert with the principal.

### Qualifications:

X A wide knowledge of Windows 95 and DOS including establishing of the system.ini and win.ini. Into Windows 95 .

X Knowledge of the www and its service possibilities, especially www,ftp and mail. Knowledge on programming in HTML will be considered an advantage.

X Must be able to implement new programmes, detect errors and recover damaged software.

X Must have some knowledge of networking including TCP/IP.

X Must be able to offer guidance to peers in the use of computers in a sensible and systematic way without appearing obtrusive or superior.

X Be prepared to maintain a given level of security for protection of data.

Working hours: When need arises.

Salary: The contentment to be trusted with this responsibility and, hopefully, learn a lot about computers and people interacting.

Start: As soon as possible.

Applications should be addressed to the principal

Att. XXXXXX or via e-mail. Address = xxxx @ xxxx.edu.eu.org

Application must comprise a description of you and your qualifications and your reasons for application.

All applications are handled confidentially.

Latest date for application: Friday, August 25th.

School XX

Principal

# Notes