Technology and Learning

Helios II

Helios II seminar

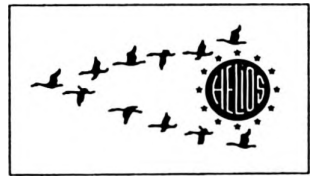
Technology and Learning

School Integration of Students with Special Educational Needs

New Technologies

Open and Distance Learning

Teachers Training



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The method

For the first time under HELIOS II, a conference report has been produced on the basis of completely new principles, in which the participants in the conference became greater in number than just those who were actually present at the conference, and where the work of the conference continued after the departure of the participants.

The HELIOS II conference took place in Høje Taastrup near Copenhagen on November 10-13, 1995, under the theme of "New Technology, flexible and open learning and teacher training".

Around 100 people participated in the actual conference, while a much larger number of people have had the possibility of discussing the previously mentioned report, as this has been accessible as a working document on the Internet at the following address:
http://www.tic.dk/projekt/tess/konf/hn17.htm.

The application of communication and information technology has thus been an active tool in formulating the contents of the document.

Many people have utilized the opportunity of discussing the contents of the working document and the discussions have led to qualitative improvements which can be read in the document.

The Process

The problem perspectives used at the conference have been retrieved from Helios reports and working documents in the period of 1992 to 1995:

1. Advice - the professional network.
2. The teachers' qualifications - basic and in-service training.
3. Open- or shut-door policy of the administration.
4. Curriculum, syllabuses and special educational needs.
5. Lifelong learning and lifelong education.
6. Transfer of knowledge from specialized systems to mainstream education.
7. New paradigm - "who controls floating knowledge?"
8. Parents and other user-groups - the ethical change.
9. The school of the future - the teacher of the future.
10. New technology, open learning supported by new technology, teacher training at a European level.

At the conference in Copenhagen the problem perspectives were formulated as questions and an important part of the conference was the cross-national group work, where the participants worked with these questions.

Two questions were allocated to each of the twelve groups:

Group 1 - questions 2 and 9

2. *How can local and national initiatives be set up, which promote the insight of the individual teachers and auxiliary staff in integrated education contexts?*
   Which are the main elements to be considered for a realistic and high quality levelof teacher training.
   Can a network with a transnational character be created, where advice between colleagues will help to promote integration of people with disabilities in everyday classroom contexts?
9. *Who is to decide whether pupils with disabilities can be taught in normal classes at mainstream schools?*
   Can information technology help to promote opportunities for active involvement by the teachers, in such a way that a qualified level of teaching can be given to all pupils in the selected school?

Group 2 - questions 1 and 3

1. *Is it possible to describe what "good guidance" within the field of educational integration is?*
   How can the European dimension be strengthened?
3. *How can we in our daily work contribute to clearing the way for a European strategy which develops a type of school administration, in which the pedagogical work entailed in educational integration is strengthened?*
   What kinds of qualities should the school administration have?

Group 3 - questions 3 and 9

3. *How can we in our daily work contribute to clearing the way for a European strategy which develops a type of school administration, in which the pedagogical work entailed in educational integration is strengthened?*
   What kinds of qualities should the school administration have?
9. *Who is to decide whether pupils with disabilities can be taught in normal classes at mainstream schools?*
   Can information technology help to promote opportunities for active involvement by the teachers, in such a way that a qualified level of teaching can be given to all pupils in the selected school?

Group 4 - questions 5 and 8

5. *What initiatives should be taken in order to promote a national strategy for supporting the right of disabled people to have a lifelong education?*
   Ought the initiatives be incorporated in an ordinary set of provisions or in a set of special provisions?
   What factors have a strengthening effect on integration?
8. *What kind of theory will it be, which strengthens the interests of the users and their interplay with the professionals, and promotes integration of people with disabilities in the communities in Europe?*
   How can individuals themselves participate in promoting a European strategy?

Group 5 - questions 7 and 10

7. *What new innovative possibilities exist within the field of information technology and educational integration?*

Can the "bottom up" strategy help in developing the school so that integration is increased?

10. *What kind of tempo and goals should be employed in changing conditions, so that the integration of people with a disability can continue to the benefit of the individual and the benefit of the communities as a whole?*

Group 6 - questions 4 and 6

4. *Using a European perspective, how can one solve the dilemma that all pupils have the right to be included in national and local curricula and at the same time are not all able to follow them and their evaluation?*
   Analysis of difficulties and practices.
6. *Does a European strategy exist which promotes the transfer of knowledge from specialized contexts to mainstream contexts, and which promotes an educational integration?*
   How is the strategy made operative?

Group 7 - questions 5 and 7

5. *What initiatives should be taken in order to promote a national strategy for supporting the right of disabled people to have a lifelong education?*
   Ought the initiatives be incorporated in an ordinary set of provisions or in a set of special provisions?
   What factors have a strengthening effect on integration?
7. *What new innovative possibilities exist within the field of information technology and educational integration?*
   Can the "bottom up" strategy help in developing the school so that integration is increased?

Group 8 - questions 2 and 10

2. *How can local and national initiatives be set up, which promote the insight of the individual teachers and auxiliary staff in integrated education contexts?*
   Which are the main elements to be considered for a realistic and high quality level of teacher training.
   Can a network with a transnational character be created, where advice between colleagues will help to promote integration of people with disabilities in everyday classroom contexts?
10. *What kind of tempo and goals should be employed in changing conditions, so that the integration of people with a disability can continue to the benefit of the individual and the benefit of the communities as a whole?*

Group 9 - questions 4 and 9

4. *Using a European perspective, how can one solve the dilemma that all pupils have the right to be included in national and local curricula and at the same time are not all able to follow them and their evaluation?*
   Analysis of difficulties and practices.
9. *Who is to decide whether pupils with disabilities can be taught in normal classes at mainstream schools?*
   Can information technology help to promote opportunities for active involvement by the teachers, in such a way that a qualified level of teaching can be given to all pupils in the selected school?

Group 10 - questions 1 and 6

1. *Is it possible to describe what "good guidance" within the field of educational integration is?*
   How can the European dimension be strengthened?
6. *Does a European strategy exist which promotes the transfer of knowledge from specialized contexts to mainstream contexts, and which promotes an educational integration?*
   How is the strategy made operative?

Group 11 - questions 7 and 8

7. *What new innovative possibilities exist within the field of information technology and educational integration?*
   Can the "bottom up" strategy help in developing th school so that integration is increased?
8. *What kind of theory will it be, which strengthens the interests of the users and their interplay with the professionals, and promotes integration of people with disabilities in the communities in Europe?*
   How can individuals themselves participate in promoting a European strategy?

Group 12 - questions 2 and 6

2. *How can local and national initiatives be set up, which promote the insight of the individual teachers and auxiliary staff in integrated education contexts?*
   Which are the main elements to be considered for a realistic and high quality level of teacher training.
   Can a network with a transnational character be created, where advice between colleagues will help to promote integration of people with disabilities in everyday classroom contexts?
6. *Does a European strategy exist which promotes the transfer of knowledge from specialized contexts to mainstream contexts, and which promotes an educational integration?*
   How is the strategy made operative?

Each group gave in a report of their work. These 12 reports formed the basis of the conference's concluding plenum discussion.
The reports were arranged into the following categories and the concluding plenum discussion proceeded with these categories as the agenda:

A. 1. The school of the future / 2. Teacher qualifications
B. 1. Floating knowledge / 2. Pupils - parents - professionals
C. 1. Lifelong education / 2. Generalization - specialization
D. 1. Administration / 2. Professional network

All the material gathered was put together into one document and put out on the Internet as well as being produced in a printed version which was sent out to all of the members of HELIOS theme group 4, the working group on educational integration, European and national experts in the field and key people with knowledge in the field.
From March 1996 until July 1996 there was activity centred around the material and the many comments and improvements have been incorporated into the finished product.

The report is thus a practical result of an active application of new technology as a tool in the communication process.

Conclusions

The information society has become a reality and technological developments are moving rapidly. Past discussions concerning the justification for new technology are definitively passé. Now discussions must centre around the purposes for which, and ways in which, new technology should be used; decisions will have to be taken and courses of action to meet the desired goals implemented.

The conference realizes clearly that:

New technologies provide access to knowledge - and with knowledge, possible courses of action are multiplied.
New technologies break down traditional barriers like time and place.
New technologies increase competence in the individuai citizen.

The conference has ascertained that:

New technologies will influence the society we live in, in such a way that all citizens will obtain equal opportunities for personal development.
New technologies will lead us towards mutual understanding between nations, and knowledge which removes prejudices regarding individuals and groups of citizens.
New technologies will significantly change our understanding of teaching, and the roles of schools and teachers will undergo a change.
New technologies applied in teaching open new and hitherto unknown possibilities for achieving the goal of a school for everybody - a society for everybody.

The conference proposes:

- that Europe unites around a strategy for the achievement of the desired goals, in which exchange of experiences and knowledge is strengthened and developed.
- the building up of European electronic networks in which accessibility and standards enable use by all citizens.
- strengthening of networks, which represent knowledge, specific skills and a common understanding of the European cooperation, which through HELIOS II and related programmes, contributes towards developing a school and a society for everybody.

Introduction

"Society embraces modern technology and attempts to find ways of organizing it. It influences values and people. We hardly know how, but in the process it is important to ensure the following four things:

1) free access to information and its exchange must be safeguarded;
2) democracy and the individual's right to influence must be supported;
3) personal development must be assured; and
4) weaker groups in society must be protected."

Lone Dybkjær,
member of the European Parliament,
Helios seminar, 1995.

A modern society which places great value on information is radically different to that of an industrial society. The strength of traditional industry lay in being able to manufacture large quantities of uniform products. Today this production has been fully automated and rationalized. Competition today revolves around giving products a difference: information is used to adapt the product exactly to the customer's wishes. From both the educational sector and industry the message is that knowledge as a product and learning as a process will be the most important strategic resource in future with information technology as the powerful tool which can promote the acquisition of knowledge.

Information has a transitory quality and is constantly changing. Change is the fundamental condition of the information society, and this creates the requirements of flexibility and the ability to carry out constant renewal. Mechanical rote learning, routine solutions and blindly copying other people's solutions are no longer viable strategies.

Interestingly enough the need for an ideological stance and a theoretical framework through which to comprehend the world will become greater. Without a system of values to act as a filtering mechanism, the enormous amounts of information will just constitute pure "noise".

Equally important will be the ability to communicate and cooperate. The information society revolves, to a very great extent around communication, and once again around values like the will to cooperate, openness and tolerance. The society of the future will be characterized by a very high awareness of the natural and physical foundations for life itself. This lifestyle will create requirements with regard to recycling and a very exact appropriately adapted application of the resources which are precisely necessary in order to fulfil a need. One could imagine an ideological shift in which views on the quality of life and development cease to be synonymous with a larger consumption of the natural resources, but that wealth and growth are instead identified with knowledge, creativity and human contact.

Basic schooling is a key area with regard to creating a broad basis for the

development of the information society. If one wishes to ensure that the whole population will be in a position to actively use the possibilities inherent in information technology, then basic schooling must contribute towards making this come about.

A.1.
The school of the future

The school-for-everybody is a familiar concept in European educational policy, where strategies aimed at diversity and universality struggle with strategies which promote ideas of ability grouping and "special courses for special children".
UNESCO statements, Salamanca.

Who will decide whether pupils with disabilities can be taught in ordinary classes at mainstream schools?

Using the picture of current developments just described as a starting point, it must be the school's task to pass on values like creativity and the ability to constantly renew one's outlook. Pupils' views of the world will have to be tempered in some fundamental way by an understanding of the fact that the world is continually changing and that they will have to change with it. The most important function of school will thus not be as a place for learning concrete facts, but instead as a place for passing on human values, attitudes, motivation and the ability to make evaluations. The school will have to give pupils an awareness of collective values and responsibility towards the community as a whole.

The school-for-everybody or educational integration is one of the most important factors for influencing this development in the long term. Educational integration in basic schooling is a prerequisite for people with special needs being subsequently able to find a place in the educational system or on the job market.

Another important factor is the introduction of Information and Communication Technology in basic schooling (ICT). Information and communication technology is well-suited to school curricula and development, as it can be used to develop new knowledge. The key terms in the development of the information society will be information retrieval, communication of information and the communication processes themselves.

From the very beginning of schooling children must be given skills in sorting,

selecting, processing and using the vast resources provided through ICT. This also means that they must learn to devise questions which provide access to the relevant information. For this reason, curricula must focus on giving pupils proficiency in retrieving information, processing it to form new knowledge and communicating the results for the benefit of all users.

The democratisation processes in the various European societies, which among other things entails the development of tolerance, acknowledgement of diversity and universality, must be passed on to the educational systems as an ideological goal of a school-for-everybody.

In the efforts for integration, the concept of equal worth rather than equality is emphasized in educational provision. Educational provision which upholds the concept of equal worth means education in which the fact that pupils have different needs, abilities and personal circumstances is taken into account. The objective is no longer that everybody has to have the same curriculum, the same exercises or the same workload. On the contrary, having equal worth means having the right to be different.

In school the concept of integration is often associated with individual pupils - pupils who are described as "pupils with a disability". It is common to speak of integrated pupils or an integrated pupil. This leads to a situation in which the pupil is characterized in relation to a deficiency in ability or reduced functioning, as opposed to an individual evaluation of the pupil's possibilities. Using this starting point in defining the school-for-everybody objective, when the question is put: "who is to decide whether children with special needs can be taught in a mainstream school/school-for-everybody?", the immediate and unanimous response is: "It is the right of the parents and the children to decide where the child is to be taught". This response is subsequently coupled with factors which issue from the question of how this right can be achieved, how it is to be administrated and how the quality of the individual child's schooling can be safeguarded. Analyses in Helios 2 show that these factors reflect a weighting/prioritization of integration efforts and that the parents' free choice may not be a valid choice.

Discussions from the 1995 conference in Copenhagen indicate that the fact that each individual school/local area can decide the extent to which a local educational plan/decision with regard to children with special needs is to be formulated creates a reality where the decision is about the right to exclude. "This can be overcome by the introduction of legislation, which effectively means that the choice of integration is taken out of the school's control and implemented and resourced through legislation."

This statement will be examined in more detail with a description of some of the changes which have occurred and which will be necessary for a continuing development. To make the content more readily comprehendible the description is divided into several levels:

1. At governmental level the regulatory framework which is worked out must be simple and readily comprehendible and in close keeping with regulations which

are applicable to the other operational areas in basic schooling. Experience from, among other things, the Helios programmes and Horizon initiatives have shown that shortcomings in the legislative coordination between the educational and social sector can lead to a situation where the gap between the individual educational levels becomes large. Rules must exist governing cooperation between basic schooling and further education (post-16), and the ways in which pupils can transfer from one educational level or system to the next, so that pupils who are particularly vulnerable in the transition from one part of the educational system to another are not subjected to hazards arising from administrative complications. An important task at the governmental level is the laying down of regulations for the distribution of financial responsibility. These regulations have had, and continue to have, a considerable importance for the way in which integration occurs.

2. The organizational level represents the general decentralization which has led to a local/regional administration of the local/regional education department. The objective has been that one could, on a local level, create an internally coherent system which deals with all needs with regard to education and assistance which might arise within the area. Here a considerable task still remains in coordinating knowledge and possibilities in the system's various forms of schooling and creating a clear distribution of tasks and flexible administrative procedures.

3. On the institutional level the European schools have been working on changing the concept of the school in order to create better opportunities for the pupils. The development has been to adapt the school environment to the pupils' personal circumstances and in this way get away from perspectives which exclusively see difficulties as arising from the pupil's situation. Furthermore, the development has shown that changes to the school are necessary in order that the opportunities of the pupils can be taken into consideration. The tendency is for a break with the traditional perspective that mainstream education and special needs education are considered, both in formal and professional terms, as being separate areas of provision. The general view now is that pupils have a right to an education which matches their abilities and personal circumstances - basic schooling must provide all pupils with differentiated schooling. The task of educational special needs is to strengthen the possibilities for the individual teacher of providing differentiated teaching to all pupils, as well as a framework for social development for groups of pupils with a wide variation with regard to personal circumstances and needs.

4. The group level: a prerequisite for a successful differentiated curriculum is a close cooperation between the teachers. Experience shows that if this cooperation does not exist, it might be possible to plan and initiate a complex curriculum, but it will not be possible to carry it through. For example, measures for supplying resource teachers can easily lead to a situation where the subject teacher teaches the class while the resource teacher takes care of an individual pupil, who thereby becomes segregated from the group both socially and academically. In the school of the future cooperation between teachers is a cornerstone which will lead to changes in the organizational structure and curriculum of the school.

5. Individual level: In addition to educational qualifications the individual teacher must be able to enter into a coordinated effort, entailing a continual reformulation of problems and objectives and a continual acquisition of new knowledge. The modified role of the teacher will be described in a later section.

Can information technology help to promote opportunities for active involvement by the teachers, in such a way that a qualified level of teaching can be given to all pupils in the selected school?

The technological challenge is so all-encompassing that quite fundamental educational paradigms cannot remain unaffected by it.
The curricula for basic schooling incorporate to an increasing degree the requirement of computer-related activities: an emphatic indication that the future needs of the pupils for education demands qualifications which have not previously been assigned as being the task of the school. This is an expansion which stretches beyond introduction to basic skills which the familiar cultural faculties of reading, writing and arithmetic constitute.

Discussions about technology in school should not revolve around the purpose of the technology - but on the purpose of school; and the purpose of school is to qualify the pupils to live in the environment outside the school. In other words: it is not school-related skills which pupils need but real-life skills. If the school is going to qualify pupils to be able to cope in real life outside school, then pupils must, among other things, learn to master the use of the computer. Use of the computer was implemented in the surrounding community a long time ago - including the working environment which pupils are going to emerge into.

The computer is of great importance - as a tool when one is in need of learning something. Throughout the whole of their lives people will have a need for self-directed acquisition of new knowledge; the school is a step on the way in this learning process. A very decisive step. The school career has a considerable influence on the way in which people relate to their own opportunities for learning.

It will thus make a decisive difference whether pupils learn to wait for the tutor's questions - or whether they are encouraged to explore possibilities themselves and seek out new information, including other pupils' and teachers' experiences, in order to subsequently pose their own questions. These methods, based on curiosity, necessity and willingness to cooperate, must be developed.

When children use the computer as a personal working tool, they can learn at their own pace, at their own level and with tools supported by new technology which they themselves have chosen. Computers with access to external network systems provide flexibility with regard to where, and with whom, one wishes to work and which information one wishes to have access to. If the pupil is allowed to work in the self-directed and active way which the computer provides the opportunity for, one will begin to experience pupils who, via the computer and each other, find answers to questions which the teacher would never have thought of asking.

The computer is a tool which turns the user into an active participant in his or her own learning process. It demands initiative on the part of the user - otherwise nothing will happen. If one, for example, is going to retrieve information on an electronic network, then one has to have a clear idea of where one is going to look, what one wishes to know and which questions will be of relevance.

The computer is not a teaching machine, it is a tool which can be utilized and applied by the learner. This application might consist of writing, doing the layout for texts and reports, planning and structuring a presentation, creating multi-media presentations, music or working with figures in a spreadsheet, as well as communicating through a network and retrieving information in databases. There are many possibilities; the key to these possibilities lies in what exactly the pupil is given access to - and the educational principles which underpin the process.

A.2.
Teacher qualifications

The teachers and auxiliary staff surrounding pupils with special circumstances and needs who are integrated in mainstream education have an on-going need for in-service training. Likewise there is a need for a new strategy for basic teacher training (as seen in the analyses in HELIOS).

How can local and national initiatives be set up, which promote the insight of the individual teachers and auxiliary staff in integrated education contexts?

Whereas integration is an endeavour to attempt to fit groups of people falling outside the defined norms into mainstream curricula, a "school-for-everybody" expresses the idea of attempting to adapt mainstream curricula to take account of the plain fact that all pupils are different.

Mainstream curricula have been characterized by the fact that: all pupils are to learn the same things - within the same temporal frameworks - and in the same educational setting (one class, one teacher). In the school-for-everybody, flexibility with regard to structure and content must characterize the objective of the curricula: to provide each individual pupil with relevant teaching and optimal opportunities for development.

The development towards the school-for-everybody will necessarily entail performing more and more, and also more complicated, educational tasks on a local level. This will entail, in the case of teachers in basic schooling, an

increasing need to be provided with specialized subject knowledge.Positive concrete educational experiences need to be communicated from central to local school environments and vice versa.

If cooperation between teachers is to succeed and constantly develop, it will be a condition that educational goals with regard to curriculum are established and capabilities and basic attitudes are discussed on a collective basis.

A debate like this will create a situation in which one will become more aware of one's own ideological stance with regard to education, and one's own attitudes, and that one will become able to listen, to discuss and to ask. This process will release teachers from their traditional "isolation". The role of the lone teacher will be changed to a situation where the staff are collaborative partners with an equal worth and a collective responsibility.

The collective responsibility with regard to the pupils will mean obtaining a picture of each individual pupil which contains more nuances.

A local/national initiative could be the goal of making schools into learning organizations. An important step towards fulfilling this goal is the formation of network groups among colleagues, which will be a forum for the necessary development of competence.

The implementation of ICT in basic schooling will have a "spin-off" effect on ways of working, thinking, analyzing problems and finding solutions. The introduction of information and communication technology may therefore be the catalyst for innovation in the learning processes of the school.

With information and communication technology in the school, there will, among other things, be a greater opportunity of differentiating the curriculum: the ambition is to move towards a situation where the curriculum supports the development of the individual pupil in a self-directed learning process.

Which are the main elements to be considered for a realistic and high-quality level of teacher training? Can a network with a transnational character be created, where advice between colleagues will help to promote integration of people with disabilities in everyday classroom contexts?

The professional in the basic school is the key person, because the conditions required for integration in the community are first established during the school years. It is important that professional people as well as pupils understand and experience variation and diversity. It is therefore important that professionals in basic schooling have the necessary qualifications to enable them to organize a basic schooling programme which contributes to a situation where all pupils develop into self-directed, responsible people who function well in a community.

The development of the school and competences demands a high level of subject-related and educational skills and a willingness to share one's

experiences with both pupils and colleagues. It requires teachers who are themselves committed to learning, and therefore open to change. The teachers themselves must be the "pupils" in the school with the highest level of curiosity and willingness to learn. And they must themselves be able to accept being taught by other colleagues - and pupils. Knowledge has to be gathered at its point of location, forcing one to traverse age, subject-related, national and technological boundaries.

Network groups among colleagues must be established on all levels: at the individual school, in the local area, nationally and transnationally. Experience has shown that network groups among colleagues become effective and influential if the various network groups are connected together in electronic communication and information technology systems.

Experiences from HELIOS 2 show that a development is in progress in which educational institutions are taking on new tasks with regard to the need for in-service training, and where in this connection innovative methods are being developed and modern technology is being used in the curriculum.

The incorporation of modern technology in the curriculum has been given many names. For instance, teaching systems supported by new technology, distance learning, flexible education. English-language terms often used are: distance education, open learning, open flexible learning and open distance learning. The many different terms reflect the fact that we are dealing with a very wide spectrum of teaching forms.

In the Socrates programme's "action 2" concerning open and distance learning (ODL), ODL is described as a teaching form which encompasses the use of new methods - technical and/or non-technical - to achieve greater flexibility with regard to time, place, choice of content and entry requirements to the educational sectors through distance studying. Open and distance learning makes it possible to transcend the barriers which exist in relation to transnational mobility, and to develop a real mobility, which is a significant factor in the building up of an educational cooperation in Europe.

If we now turn the focus to the in-service training of teachers in basic schooling, a double-edged educational objective can be found: on the one hand the teachers have to have a technical insight into how the technology functions and on the other hand this technical background must endow teachers with the ability to use the new technology in their teaching.

The purpose of network groups among colleagues is to create a model of how an electronic network and distance learning can be used to develop competence in the professional in his or her subject area, in such a way that integration of people with a disability can be carried out using new perspectives and using the individual's own circumstances as a starting point.

Democratic principles will not, however, be automatically transferred to teachers' own practice merely by being described in resolutions and programme objectives. Experiences show that the development of schools must take place at

the individual school and through teacher cooperation. The development must come from the bottom up and be fully known to and defined by those people whose task it is to realize the development.

In this connection, application of ODL in in-service training of teachers plays a significant role: ODL is addressed and open to the teachers wishing to improve their teaching performance according to every pupil's needs, in the field of teaching.

ODL encourages the exchange of information and experiences so as to enforce the qualitative and quantitative sources of education in order to facilitate the possibility of creating equal opportunities for all citizens of Europe without any educational discrimination.

European and/or national programmes and action plans show best results when models for the teachers' in-service training use theory, reflection and practice as starting points; at the same time developing the dynamics between these three factors. Training uses the actual practice as a starting point, while this is in progress. If in-service training and teaching supported by new technology (ODL) are combined, an extension of training can be achieved so that this encompasses the possibility of dialogue and cooperation with colleagues which traverses school, regional and national boundaries. Teaching systems which are supported by new technology provide the possibility for organizing the teaching according to individual and/or local needs, in order to convey teaching to the home or workplace of the student (here: teacher) and to make the teaching accessible when the student (teacher) has time.

In this field the possibility thus exists of developing an in-service model, "Knowledge without frontiers". This model uses ICT in the exchange of experiences within a subject and educational cooperation which traverses national boundaries. This is achieved by teachers being offered in-service training in the fields of specialized subject, education and didactics. At the same time the teachers become qualified in using communication and information technology.

The learning principles can be described as student-centred principles, based on educational theory/practice and psychology, which create a favourable climate of communication, thus facilitating the transmission of knowledge.
The concept of in-service training in the colleagues' network provides possibilities for the exchange of experience and cooperation within subject fields: 1) cooperation between teachers from the same school; 2) study groups, which traverse professional sectors and boundaries, for discussion (electronic conferences) of specific educational problem areas; 3) schools cooperation via data networks between teachers from different schools and countries.

The model for dynamic concepts is asynchronous teaching. This model is often referred to as "the virtual classroom", as it combines elements from classroom teaching and temporal (and geographical) flexibility. The model is based on the fact that the individuals, either at home or at their school, participate in a curriculum where they are both involved in a dialogue with the group tutors on

a running basis, and with their fellow students. This could take place as electronic mail or in the form of conference systems or other electronically mediated systems, where several students are working within the same "electronic space".
The target of the enterprise is the exchange of information between tutor and student (teacher) and/or student (teacher) and student (teacher), which will profit the student and help to enrich the participants' mutual experience for the better quality of the teaching performance, which again operates to the profit of the pupil.

Distance training is based on a combination of centrally produced written material divided into teaching units, localized tutoring and counselling services. The use of multimedia gives new opportunities by planning, creating and producing teaching packages for every need with simultaneous possibility of feedback and re-evaluation of the programmes.

B.1.
Floating knowledge

The application of information technology is completely transforming familiar, traditional balances of power between, for example, centralized and decentralized authorities - between teachers and administration. Information technology makes it possible to seek out knowledge in alternative locations and based on another paradigm than the "established" one.

What new innovative possibilities exist within the field of information technology and educational integration?

The introduction of new technology on all levels in school and educational systems places a demand on resources, and if the resources in the system are to meet the demands, then alternative models for rational utilization and dissemination of the experiences which have been gathered must be devised.

The greatest challenge in basic schooling is that three generations have to be educated at the same time: the pupils, the newly graduated teachers and largely speaking the whole of the rest of the teachers - while, at the same time technological development is occurring at breakneck speed.

The other great challenge in European basic schooling is the further development of integration efforts toward a school-for-everybody.

New central educational concepts will be "co-determination" and "joint responsibility", "self-organization" and be "problem-orientated" in approach. The teacher will, to an increased extent, take on the responsibility for creating learning opportunities based on the situation of pupils, and of selecting suitable tools and methods, working forms and teaching materials. It will be important to work on quality and analyze and evaluate the self-directed learning processes.

Examples exist where technology can be used to overcome geographical and temporal distances between teacher and student. These examples can, in this context, be extended to also encompass new teaching and communication forms.

"Educational integration and information technology" could be a theme on a European school network.

Can the "bottom-up" strategy help in developing the school so that integration is increased?

Development of schools must occur on the level of the individual school, through cooperation between teachers, and in a context constituted by the daily situation. Development must come from the bottom up, and not be alien to the people who are to realize the goals. The fundamental ideal in the bottom-up principle is that knowledge must be brought into the school by letting teachers use and formulate their own knowledge in cooperation with colleagues.

A qualitative development of a school-for-everybody can, as a starting point, most readily be realized in the arena in which teachers are located. The development and the subsequent necessity of in-service training must be experienced as relevant for the teachers and pertinent to their requirements. In the reports from Helios 2's thematic groups it was indicated that the teachers do not primarily have a deficiency of subject-related knowledge, but that they lack pedagogical knowledge about how they should execute and organize a differentiated curriculum.

In the same way, experiences from Helios 2 show that transnational exchange and cooperation has a considerable importance for the development of schools in the field of "teaching of children with special needs".

Attention must be focused on the possibilities made available in a transnational context by information technology. In the future development of schools, electronic teacher networks will ensure a transnational mobility and synergy. The different communication and teaching forms, electronic communication, electronic conferences, open teaching and open learning, will be used for the expansion of knowledge and methods across the borders, and to establish working contracts and connections between teaching and educational institutions.

B.2.
Pupils - parents - professionals

Work under Helios has to a particular degree highlighted the importance of a pupils' right to be included in the curriculum which should be implemented the pupil`s home area. For some pupils difficulties arise in following the curricula in their present form. Specialized curricula, however, have been shown to contribute to an increased segregation with regard to educational and social factors.

Using a European perspective, how can one solve the dilemma that all pupils have the right to be included in national and local curricula and at the same time are not able to follow them or their evaluation?

As an implemented part of the educational practice in the school, information technology will be able to increase the quality of teaching in several areas:

a) Retrieval of information: An increased access to information will expand the accessible teaching-material base. It will provide teachers with new possibilities in the preparation and carrying out of teaching.

b) Communication: The communication possibilities endow teaching with new dimensions when alternative groupings of pupils beyond the traditional classroom can cooperate with regard to concrete course programmes. The pupils can thereby become aware of more aspects and nuances in their own speculations and adjust their own work. This can lead to mutual exchange of information and quicker and more broadly-based feedback on the pupil's own work. The possibility of being able to communicate with other cultures will likewise endow teaching with new dimensions.

c) Flexible and goal-orientated organization of curricula: Information technology provides teachers with the possibility of a flexible and goal-orientated organization of curricula, on the one hand in relation to the individual pupil and on the other hand in relation to the new aspects and problem perspectives the new forms of teaching will provide.

d) Altered pupil activities: Grounds for an assumption that information technology can lead to increased and altered pupil activities can, on the one hand, be found in the renewed teaching methods and, on the other hand, an alternative organization of the curriculum which to a greater extent takes into consideration the needs of the individual pupil. Pupils' motivation will increase

when they experience greater opportunities for real differentiation in the curricula with regard to pace, breadth and content.

There will be freedom of choice and selection of the content of curricula, so that pupils at different levels will be given precisely the academic challenges and the feedback which is relevant for them. This will increase the pupils' interest; their learning will to a greater extent progress in step with their own efforts, while organization, guidance, inspiration and evaluation of the pupils' work will get to play a greater role in the teachers' work.

One perspective of this development is that curricula and syllabuses will have to be formulated in relation to the individual pupil and not any longer as broad median for average expected achievement.
Information technology will provide the possibility of making use of the pupils' own resources in the teaching process and involving them in their own learning processes.

The most important prerequisite for a successful implementation of ICT is that an overall coherence is created in the pupil's schooling, so that the information technology tools are incorporated as a natural ingredient in the curriculum and utilized optimally in order to promote work with school subjects, topics and methods.

It is important for the pupil that the technological equipment is functional in relation to the learning which is to take place. It is necessary for the teacher to organize the learning process and support and guide the pupil, so that the pupil arrives at the goals which are laid down in the curriculum.

Information technology does not necessarily support every detail in a syllabus, but it supports a curriculum which is organized according to central educational principles:

- differentiated teaching - adaptation of the curriculum to the circumstances, needs and developmental possibilities of the individual pupil;
- experientially based teaching, where the pupil's own experience is used as a starting point, and where the experiences of the pupil are incorporated to a high degree in the curriculum;
- problem-orientation - work is done in the curriculum with real-life problems and problem areas;
- cross-disciplinary or holistic orientation, where organization of the curriculum spans different subject areas, age groups and classes.

C.1.
Lifelong education

International studies indicate that an active education strengthens a person's self-esteem and increases the individual's quality of life. The biological need to have a say in one's own life and circumstances is a strong instinct in all people.

What initiatives should be taken in order to promote a national strategy for supporting the right of disabled people to have a lifelong education?

The explosion in the amount of information and the use of communication and information technology in the communication of information is a development which can promote possibilities for equal treatment and integration for adults with impaired functions (disabilities) in the field of education and in-service training.

Access to communication systems will alter the various forms of social interaction. The conjunction between time and place will be less important for social interaction and thereby make mobility into a more abstract and relative concept.

For people with special needs, use of new technology will mean the opportunity of participation in activities and the workings of the community, which physical barriers and mobility problems have previously prevented.

From this point of view, the meaning of the word disability will be altered. People with a disability lack, or have impaired use of, some of the functions which the majority of us possess. Reduced functions are a fact. The extent to which this results in a disability depends on the situation.

Communication and information technology make talk of categories of disability superfluous. The extent to which deaf and blind people can meet in virtual space is not a significant factor - it has no importance for their possibility of communicating together.

The decisive factor for the extent to which people with disabilities experience a handicap is the nature of the access to the possibilities of new technology. The starting point must therefore be solutions which take the most extreme case into account, as these will be good solutions for everybody.

One particular area on which a large effort will be focused in the coming years will be the description and execution of projects which can provide the basis for ways in which lifelong education and information and communication

technology can contribute to increasing integration in the educational sector, on the labour market and in society as a whole. The projects will encompass people with disabilities. The criterion for project participation will be that a reduction in functioning has resulted in exclusion from education, re-training or increasing one's skills in a desired area, or exclusion from communication with other people.

The projects will be formulated as a course (goal, content, method, period) and composed according to individual wishes and needs. The programmes can consist of a combination of modules from different adult educational areas or types of school - programmes which can also incorporate general and public awareness-raising elements.

In the project period a range of public awareness-raising, general and vocational courses will be developed.

The composition of adult modules must be possible both with and without formal competence as the end result. The need might exist for certification of modules and levels. Through the development of courses and cooperation with educational institutions and other types of school, possibilities will thus be provided so that new accredited courses can be put together to match the needs and interests of the individual (diploma courses).

The courses are expected to be in the following areas:

1) distance learning via data networks
2) telecommunication
3) information retrieval in databases
4) training in home-shopping
5) training in home-banking
6) participation in electronic conferences
7) establishment of electronic home-based working

In order to accommodate and test the desired activities the development or the establishment of already existing technical aids could become necessary. Here it is important that any technical aids are incorporated as an integrated part of the general requirements for being actively involved in self-directed lifelong learning. Here are a few examples of technical aids: speech machines for people unable to talk, transformation of text to speech or braille, control of the surrounding environment such as the steering of electric wheelchairs, individual customization of personal computers for application in teaching, communication or control of the surrounding environment.Ought the initiatives be incorporated in an ordinary set of provisions or in a set of special effects on integration?

What factors have a strengthening effect on integration?

There is a risk that information technology makes the strong people in society stronger and the weak even weaker: that modern society will be divided into an information technology A and B team. The information society must be for

everybody. Equal access to information for the citizenry is a fundamental requirement for a democratic society. Likewise, a prerequisite for an "equal access" is that everybody is ensured knowledge about and the opportunity to use information technology.

The technological development creates and solves difficulties at the same time. Here is one example: when technology leads to new graphic interfaces on the computer, this constitutes a considerable setback for a blind person but a considerable step forward for user-friendliness and thereby the expansion of information technology. Paradoxes of this kind do not solve themselves. They require an active effort from the state and the community.

Information technology's possibilities for strengthening the degree of integration in the educational system and in the community must be utilized optimally - and a special effort must be made to contain the disadvantages for parts of the population. Efforts in future must be put into a universal design which can be used by all citizens in all countries.
If these efforts are formulated clearly and are goal-orientated there will thus be no technological reasons for maintaining people with special needs in special institutions. Lifelong learning is everybody's democratic right.

C.2.
Transfer of knowledge from specialized systems to the mainstream networks

The HELIOS collaboration and the collaboration in several EU programmes and initiatives generally have indicated the necessity of being able to use experience gleaned in one system, in another system. Teaching of pupils with disability takes place in the EU according to different models, where both the mainstream system and the specialized system play different roles - often with different traditions and strengths.

Does a European strategy exist which promotes the transfer of knowledge from specialized contexts to mainstream contexts, and which promotes an educational integration?

Expertise in the field of special needs teaching encompasses both extensive experience in an area and knowledge and insight based on these experiences.

Experts, specialists and those with special knowledge can be said to be people with insight in a specific area, for example, special needs teaching.

In the Helios context this relation has given rise to much debate. Some people think that specialists and experts can be a hinderance in a development towards increased integration, because with their special needs teaching methods they focus on a disability and thereby contribute towards segregation and turning the person into a client. Other people hold the view that it is precisely through special measures that people with special needs achieve skills and competences which ensure their possibilities for becoming integrated in the community on the basis of their own situations.

Information and communication technology to an increasing extent make this debate superfluous: a debate which in its contrasting opinions forms the main barrier overshadowing the realization of a school-for-everybody.

On the one hand the new technology provides the possibility of using/developing innovative teaching methods and forms, as described earlier. On the other hand technology provides the possibilities for turning the tides of knowledge. There is no doubt that a valuable special knowledge which must be maintained as the basis for a continued development exists in the field of special needs teaching.

Special knowledge will in future not only exist in the shape of alternative curricula, but as a basis for continued educational development. Special knowledge must therefore exist as open and accessible technological systems. These open systems will give rise to cooperation, interaction and sometimes perhaps opposition between the various schools - within a regional, national and international area, and traversing the interlaying borders.

How is the strategy made operative?

This strategy can be made operative if the will exists. The fact that there is a will for inspiration, exchange of experiences, cooperation between schools traversing national borders and boundaries between different parent groups, courses and educational activities has been shown through Helios. This will has, in addition, contributed to the development of more clearly defined objectives, content and tools for quality control.

Experiences have also shown that the previously more specialized schools and educational institutions have only had a say in influencing the development, to the extent to which they have been willing to enter into a cooperation. As isolated units they have only had a limited importance for innovation and development.

D.1.
Administration

Integration of special needs pupils in the classroom places demands on all involved. Particular demands are, however, placed on the school administration, as experiences from work with Helios show that a school's administration holds the key to the "open" or "shut" doors.

How can we in our daily work contribute to clearing the way for a European strategy which develops a type of school administration, in which the pedagogical work entailed in educational integration is strengthened?

The various levels of administration and their routine procedures hold the key to the extent to which a desirable school development will be successful. In this context we are primarily thinking of the development of a school-for-everybody and the implementation of ICT in the school curricula. The school administration of the individual school here plays an unrivalled role.

In schools, where the tasks are complex and where norms and the structural and organizational framework for the work of the teachers are faced with changing, administration of the school's work based on educational principles is increasingly necessary. The administration of the school must, in future, first and foremost have competence in relation to the school's educational work. It has been said that "heads who fall back on formal leadership and allow themselves to be distracted into using most of their time on administrative tasks never really become leaders of the school's educational work." The extent to which this prophesy is correct must be tested against experience. However, the transnational cooperation in Helios 2 "has shown that the attitudes of the school administration towards a goal-orientated educational development is of decisive importance for such development to occur. Being an educational leader thus becomes a question of how, and on the basis of what set of values decisions are made.

On an EU and governmental level a picture has been drawn up in political terms of the teacher needing to solve tasks in relation to the pupils on the basis of a democratic and humanistic outlook. This is expressed, among other ways, in the requirement of cooperation, co-determination and taking variation into consideration as much as possible. This basis now seems to be an obvious one, but it is the individual head's responsibility that this basis is implemented in practice: that it is made visible in the work of the school.

As the objective is increased integration towards a school-for-everybody and the implementation of ICT, it is thus a prerequisite that the school administration

on the one hand has central backing, and on the other hand can, in cooperation with the teachers and parents, set out a concrete plan of action for their school. A factor of central importance for this plan of action is whether the parties involved, through the process of establishing and carrying out the plan, will develop a feeling of "ownership" with regard to the contents of the plan and identify themselves with its sense of values and the constituent points of action aimed at a school-for-everybody.

In the day-to-day work the adminstration, teachers and parents must therefore be able to: cooperate, choose and set goals, take the individual into consideration, strengthen the feeling of commonality, evaluate and guide.

What kinds of qualities should the school administration have?

The school administration must have qualifications like solid professional background, personal qualities and a readiness to act with regard to areas of administration, educational policy and staff.

These qualifications can be expressed in three competences:

1) Management personnel must have a practical competence in relation to planning, execution and evaluation of working and developmental processes which incorporate the development of competence in pupils, employees and the school administration.

2) Management personnel must have a didactic competence as a basis for entering into a critical dialogue on a qualified level with all the employees concerning educational tasks of a more general nature and those tasks which are current.

3) Mangement personnel must have the educational competence as a basis for being able to participate in discussions concerning tasks which are current for the school. The head must have a knowledge of educational theory and be able to analyze and evaluate the sets of values and the views of society and people which are contained in the legislation, regulations and curricula which determine the work of the school.

D.2.
Professional network

Integration in the EU of people with a disability highlights the need for support, advice and guidance. The present picture in the EU, however, portrays a field of guidance initiatives which is both mixed and difficult to grasp.

Is it possible to describe what "good guidance" within the field of educational integration is?

Throughout the conclusion of the HELIOS 1 programme it could quite clearly be seen that one of the prerequisites for successful integration was support or the role of the support systems. At every point professionals, administrators and parents felt they missed the necessary advice and professional support.
In many places support systems could be seen which were constructed in a manner that made it impossible for them to enter into an optimal, committed cooperation with regard to pupil and curriculum. The difficult concept of responsibility was lurking in the wings. Professionals might experience that the advisor came and took over responsibility for the person, that efforts became locked on one track, that the activity led to the person being made into a client in such a way that the integrative process became artificial elements detached from the whole entity in which the child had to function.

Becoming aware of these problems started a process going. Through study visits, seminars and conferences, HELIOS 2 focused on this important area: what shape should good advice have? Nobody questioned the necessity of having an advisory service in connection with the integrative processes, but many people worked on the type and the quality of the advice. And this process is far from finished. It will continue with undiminished force during the next phase in the HELIOS 2 programme, where it will become concretized and will hopefully be able to provide guidelines for a good and innovative model.

The optimal support service for the integrative processes, where pupils, classroom, the teachers, the parents and the curricula are in focus, places special demands on the advisory system paradigms.
A modern guidance and support service in the field of educational special needs practice is characterized by a high degree of involvement between the professional teacher and the professional advisor. The process indicates that the buildings and centres of the large institutions, where the specialist supplied advice on the basis of activities which put people in the role of clients, are being replaced by new open collaborative forms.

These activities use a joint-involvement problem-solving approach as a starting point, where teacher and advisor acknowledge each other's area of knowledge

and therefore see the tasks as supplements to the solution of the problem. Educational special needs advice is thus moving from the outside towards the inside.

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Tł ɔy parent groups that the child should have the po te in later life according to his or her own situation, has deɪ ds towards greater intergration.

The a ry and guidance services, which there seems to be a need for, can best terized by an interdisciplinary approach which makes it possible to see the pupil with a need for special needs education in a holistic way. As a guiding rule, it ought to be an educational and an educational special needs lines of approach which form the basis of the efforts which are to be made. The main work must use the individual child's special needs as a starting point, in such a way that the individual, later in life, can take part in the cultural skills and basic knowledge needed to function as a member of a democratic community on the basis of the individual's own circumstances.
This of course makes it necessary for the advisor to make use of new analyses and working methods in order that the integrative processes will be successful. Where a strong emphasis on analytical and control tests was seen previously, the future will see working methods which emphasize descriptive support initiatives produced in cooperation with the child and his/her parents. We will see a period where the advisors in special needs education will, to a high degree, develop evaluation methods with an emphasis on the internal side of the development in the child.

It will thus be necessary to move the focus from the "objective" matrices to the more subjective, dynamic and involving forms of activation, using the individual child's unique traits as a starting point.
This movement from external to internal working methods will place the advisor and guidance officer in a professional dilemma, because the strategies and working methods which are predominant often have the opposite starting point. Therefore in the years ahead there will, to a high degree, be a need to develop new and attractive in-service training models.
The HELIOS programme's possibilities for exchange of professionals is a good contribution towards getting this in-service training process going. Many good initiatives have seen the light of day when professionals from different national backgrounds get together, analyze the individual's situation, discuss issues, devise perspectives and incorporate the different backgrounds which form the constituent substance of a transnational meeting of professionals.
The collective value of the variation is much larger than the individual participants' sum of individual experiences.

The many experiences and knowledge-exchange activities in the HELIOS 2 programme have proved to be interesting and important in the integrative process. Through analyses of reports and minutes of meetings one can discover a very high level of commitment which is characteristic for the European work involving the integration of disabled people. The amount of knowledge which

exists today is unsurpassed, but the "correct model" has not yet been found. It most likely does not exist either, but by collating knowledge and experience from one area with knowledge and experience from another area, we become able to identify which factors are pushing in the desired direction.

In connection with integration, the following 4 factors seem to present themselves as the highest priorities:

New technology
Joint influence of the parents
Local involvement
Teacher Training

New technology enables us to traverse frontiers which we thought existed. It makes it possible for us to get hold of knowledge at the time of its very conception. It removes physical distances.
The joint influence of parents brings the individual into the centre as part of a whole entity. The active involvement of parents in the integration process can help to prevent a situation in which ideologies and technocratic constructions are allowed to shape the lives of some groups of citizens.

All work in connection with integration rests on local commitment. In this connection, nothing can be dictated by central rules and administrations. Rules in real-life are about the relationship between people who live side by side.

How can the European dimension be strengthened?

Synergy between EU programmes is a good example of transfer of knowledge between the specialized and the general system. The programmes and initiatives, as was seen in Helios, play a part in ensuring dialogue and cooperation between the countries.

Elements in a European strategy must be: exchange of experiences and knowledge, transfer of good practice and information.

An execution of the European strategy must build on professional networks. Professional networks represent knowledge and professional skills in the form of practising professionals and not bricks and mortar in the form of institutions and centres.
A concrete proposal as to how a professional network can function: The professional network must be built up as a computer network and utilize the facilities in such a network. Electronic conferences will be forums for discussion and the exchange of experience and new knowledge. Forums with different professional themes can be established. The decisive thing is that all the participants can read what everybody else is writing, and that everybody reads and writes independently of each other. Everybody can contribute with input for discussion and everybody can be active to an equal extent or according to needs.

Computer networks contain the possibility of incorporating inspirational actors

who are otherwise absent from the process. This could be people who live in other parts of the globe or move in other professional circles; and the initiative to incorporate new forces could lie both with the discussion participants or an appointed discussion mediator.

The key to the electronic conference form is then that everybody is active, that one works at one's own pace, that discussion forums are created across traditional boundaries, that no traditional control necessarily exists - and that new forces and materials can be incorporated at the point at which people recognize the necessity for this.

An electronic network will form the basis for a professional network. This has for instance been seen as a practical example through the work of Helios Thematic Group 4.

Key issue: Technology, open and distance learning, training and teachers at a European level

Information technology, communication and mobility between populations will, in the course of a few years, radically change the geographical apparance of Europe with regard to integration of the disabled.

What kind of tempo and goals should be employed in changing conditions, so that the integration of people with disability can continue to the benefit of the indivikual and the benefit of the communities as a whole?

"Seen in a global perspective the information society has become a reality which is here to stay: and things are moving rapidly", said European MP Lone Dybkjær at the HELIOS conference. Lone Dybkjær emphasized the fact this observation was not meant as a threat, but as a reminder of the fact that it is now that debates should be taking place, decisions should be taken and courses of action implemented to meet the desired goals.

The only way in which we can bring about the desired development is through a common dialogue between all parties in the community: politicians in the EU, governments, regional and local bodies, funding authorities, administrators, educational institutions, parents, pupils...

Some of the technical prerequisites for the realization of the proposals of the report are formulated in the White Paper: Growth, Competitiveness, Employment.

Objective:

1. Diffusion of best practice in the use of information and communication technologies and the development of European applications in this area.

Means:

2. Creation and implementation af legal, regulatory standards and political environment.

3. Development of basic trans-European telecommunications services.

4. Organizing specific training cycles linked to the extensive use of information.

5. Harnessing technologies and improving the performance of Europe's information and communications industries.