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ABSTRACT

Sweden has a long tradition of using distance education, because its inhabitants are widely scattered, especially in rural areas. Before the 1960s, distance education was well organized and centralized. During the 1960s, however, other types of continuing education were subsidized, but distance education was not, leading to a decrease in the number of distance education students and the decentralization and fragmentation of the system. Today, technology is bringing about a resurgence of distance education, usually conducted by the universities. Computer access is almost universal throughout the school systems, and about 15 percent of the households now have computers. Telephones, cellular telephones, and faxes are widespread. Picture telephones are available but not yet widespread, and video conferencing has been in use and steadily increasing for the past 5 years. Even with the use of such technology, however, the most prevalent methods for teaching students remain meetings either on or off campus. As the number of people continuing education after high school increases, technology is expected to play an increasing role by facilitating more widespread and more comprehensive distance education. (KC)

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Policies, Technologies or Pedagogy.

Ways of developing the Distance Education Field in Sweden.

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For this conference you have selected an intriguing theme. The conference will focus its attention on possibilities of pedagogical research to foster renewal of education. In my paper I will try to demonstrate how these concepts are linked to each other. My example though will show lack of linkage and in that sence it will be negative. I will show how expectations of change were not met due to low awareness of the educational research fields and the findings to be found in them.

The case I will demonstrate arrives from the area of Distance Education and my point is that the decision makers have a deterministic belief in change. The mere advancements in technology are expected to be the source for change in the educational settings within Distance Education.

Policies concerning Distance Education up to the 80's

The compulsory school system has been in action for more than 150 years in Sweden and traditions in Distance Education (DE) emanate from the end of the last century.

Sweden is a vast country with a small population. Today approximately 9 million inhabitants are scattered over about 450 000 km^2. The majority of the Swedes are concentrated in the most southern part of the country which means that Sweden to a large extent still is parsely populated. The population has increased a lot during the last decades so not many years ago the demographic situation was even worse than today for politicians in charge of planning our school system. It is therefore easy to understand that Sweden has been and still is one of those countries where Distance Education gives practical solutions to some of a nation's educational dilemmas.

The problems I'm referring to are i.e. to give people in remote areas access to higher education, to give early school leavers a second chance and to give persons tied up with responsibilities for home and family or at work a possibility to study at times and in places they themselves select[1].

During the major part of this century, adult education, in various forms, has played an important role in the Swedish educational system. Up to the end of the 60's, a small number of large correspondence schools were among the most vital actors on this scene. In few other countries DE had, at that time, a position comparable to that in Sweden. Certificates from the leading correspondence schools had a high value on the labour market. Several leading Swedish scientists, authors, politicians and administrators had received their secondary education - or a major part of it - by means of correspondence study.

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1 Distance Education refers to studies on different educational levels, which are not under continious and direct guidance of a teacher present at the same time and place as the student. To meet the definition the studies also have to be planned by an educational organisation which also gives advices and guidance before the studies and is tutoring the students during the studies. Holmberg (1977 s.9) gave a definition with this content. It is widely accepted (i.e. Bååth 1981 and Keegan 1980). It takes into account both the student perspective - distance studies- and the perspective of the educational organisation - distance teaching (Backman 1991). The International Council for Distance Education (ICDE) focus' in its definition the tools for interaction within distance education.

> Distance education is a mode of education in which the student and the teacher are separated in time and/or space and where two way communication takes place through non traditional means for the most part.

Round the middle of the 60's, Sweden probably had the largest number of distant students in proportion to its total number of inhabitants. It is also likely that the largest correspondence institute, Hermods, was for some time one of the largest distance teaching institutions in the world, with about 150,000 new course applications a year.

However, in the late 60's, through a Parliament act, practically all forms of adult education in Sweden were made free of charge or highly subsidised - except studies at the correspondence colleges. Obviously this created a situation of competition on highly unequal terms, from which Swedish distance education has not yet fully recovered.

In many countries during that time one formed national DE institutes like the Open Universities in Britain and in the Netherlands. Although there had been discussions regarding a Swedish Open University, Sweden went another way. On the secondary and upper secondary levels two National institutes for DE were founded, one in the northern part of Sweden and one in the south

On the tertiary level Sweden during the 70's chose not to build a large-scale solution for DE . Instead an extremely decentralised system was created. The responsibility for carrying out distance education rested with the individual university departments, which at the same time organised traditional forms of University education.

Technological development and expectations on its consequences

Some of the forces behind the political development were closely linked to the technological development and the growth of technical equipment which could support educational activities. Expectations were high. Radio and television were looked upon as saviours from boring lessons and as tools having a potential to solve educational dilemmas especially in adult education and at the University level. Another belief underlying many of the decisions taken at that time was that teachers, educational planners, educational administrators easily should recognise all the advantages of the new tools and adapt them into their educational practise. Governmental Committees active in the work and discussions around i.e. the Open University issue in Sweden demonstrated that type of thinking. We all know by now that those expectations were wrong!

The technological growth in these areas has continued or more correctly escalated to a storm wind. If we take a brief look into the

situation in Sweden today you can see that anyhow the gadgets, the technical tools are there.

The overall technical standard in schools is very high[2] but access to computers varies a lot between schools. On the whole there are 38 students per computer on the primary and secondary levels. On the upper secondary level there are 10 students per computer. In rural areas the amount of computers is higher than in the major cities.

There are no reliable statistics on the use of computers in Swedish higher education. It probably varies to a large extent between disciplines and sites. At some of the institutions for higher education 100% of the teachers/researchers and the students have access to these facilities. Lund University (34 000 students) a couple of weeks ago decided that all students and teachers should have access to a computer.

The total number of personal computers in the whole country can be estimated to 1.25 millions. During 1993 roughly 200 000 households bought a computer and 15% (600 000) of the households now have one. Telephones, mobile telephones, faxes are wide spread(IT-kommissionen 1994).

The telematic infrastructure is, compared to other European countries, well developed. The telematic sphere is open for competition. As a consequence of that, foreign telematic infrastructure providers and Swedish companies and organisations now are co-operating. Competition is also visible in the domestic area by different physical networks. An example of that is the co-operation between the company Tele2 and "Banverket" (the national authority dealing with the railway infrastructure). Optical fibres are put in the railway embankment. Another example is the area of mobile/cellular telephones where three different companies compete in the market bringing down the prices and increasing the number of phones and available services.

ISDN-connections[3] are available at most places in the country but has not yet received a major breakthrough in number of installations.

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2 Almost all classrooms are equiped with a television, taperecorder, radio, overhead device and slide projector.

3 ISDN gives you a possibility to transmit both images and sound very cheeply which means that you i.e. can have direct contact between teacher and distant students.

The institutions for higher education in Sweden use a powerful backbone between universities with leased lines operating at 32MB. That co-operation is called SUNET (Swedish University Network) and it is a part of the international co-operation on educational communication.

Video conferencing in special studios has been in regular use for more than five years and the number of studios is steadily increasing. From the beginning, the studios were connected to the international video conferencing system, operated by the national PTT, but studios of today normally use ISDN-connections.

Distance Education at the Swedish Universities

As a concequence of the political decisions the Universities started to act as distant educators. First as trials during the 60's and from the mid 70's more regularly. The course supply has been growing strongly so the last years you have found 700 -800 courses yearly arranged by the different universities or university colleges.

What impact has the development of the technologies had on the courses given?

To answer that question we decided to survey the Swedish DE courses at university level (Holmberg 1994a, 1994b). To get reliable data we used proof methods for sampling and design and we repeated the survey after two and a half years. Number of courses given, courses in our samples and respons rates are illustrated in table 1.

Tabel 1: *Categories of Distance Education Courses and number of elements in the samples 1990 and 1993.*

Categories of DE courses	Number of courses 1990/91	Courses in samples 1990	Respons rates 1990	Courses in samples 1993	Respons rates 1993
Science	149 (22%)	50	36 (72%)	51	33 (65%)
Social Sc	160 (24%)	53	43 (81%)	44	34 (77%)
Law	21 (3%)	10	7 (70%)	8	5 (63%)
Medicine	96 (14%)	32	25 (78%)	26	26 (100%)
Humanities	161 (24%)	54	39 (72%)	50	41 (82%)
Teacher ed	86 (13%)	29	20 (69%)	31	21 (68%)
Total	673 (100%)	228	170 (75%)	210	160 (71%)

The respons rates varied but were on the whole in the first survey 75% and in the second 71%. The representativity in the two samples is a lot better though than those figures indicate. Some of the courses we had in our samples were listed as Distance Education courses in National catalogues but obviously they were not. We could make that judgment from the responses we had on our enquet. A guess is that the respondants represent 85-90% of the DE courses.

To what extent was different technical devices used to solve the communication dilemmas between teachers and students.

Different types of meetings like lectures and seminars are the traditional form for conveying information in academic teaching. It is the instructional part of education. Table 2 illustrates how information was carried out in the distance education courses.

Tabel 2: *Use of technical support in the DE courses at universities 1990 and1993. (How do you communicate when you need to give overviews of literature? How do you communicate when you need to give working instructions?*

Form	Overviews of literature %		Working instructions %	
	1990	1993	1990	1993
Meetings on campus	73	91	80	88
Meetings off campus	32	24	28	20
Letters	47	60	73	73
Telephone	34	35	45	26
TV	0	1	0	0
Radio	0	0	0	0
Video	4	9	0	4
Audiocassette	3	10	2	3
Facsimile	4	14	4	12
Computer	1	4	2	4

The most common form to give information as in lectures and seminars was to use meetings at the university campus. Letters and telephone were also quite common. The new possibilities you could have with i. e. video, audiocassettes and computers were rarely used.

Another aspect of education is the communication around the topics to be learnt and understood, the interaction between students and between teachers and students. In the traditional course you meet for tutorials. Table 3 reviews how that type of communication was solved within the distance education courses.

Tabel 3: *Use of technical support in the DE courses at universities 1990 and 1993. Forms for tutoring groups and individuals.*

Form	Tutoring in groups %		Individual tutoring %	
	ht 1990	vt 1993	ht 1990	vt 1993
Meetings on campus	32	48	44	19
Meetings off campus	14	16	22	6
Letters	-	-	35	9
Telephone	6	5	41	7
Facsimile	0	2	-	-
Computer	0	1	2	1
Voicemail	0	0	0	0

The most common way to tutor the students was when teachers and students met during traditional face-to-face meetings. The use of computers in tutoring was almost non existing.

There are small differences between the academic year 1990/91 and 1992/93. To a large extent the instructions are given and the interaction takes place in traditional meetings between teachers and students. When tools are used to bridge the gap in time and space between the teachers and the students they are rather conventional like letters and telephones.

Policies, Technologies and Pedagogy

Political desicions has led to a markedly small-scale type of DE with, as a rule, a maximum of 30 students in each course. During the 90's 700 to 800 courses were arranged, labelled "DE courses". However, a majority of these courses had either no DE at all, but were just a combination of pure self-study and compressed face-to-face lectures etc., most often on weekends, or were courses of this kind with some DE elements - e g, a rudimentary study guide and a few contacts at a distance via post/fax and/or telephone.

No doubt, this confusion is - to a great extent - due to the extremely decentralised and small-scale organisation of Swedish university DE. It is also a demonstration of the concequences of a deterministic way of thinking. The politicians and other persons in charge of educational planning on a macro level most probably expected that the wonderful modern equipment would take roles on the educational arena. The computers, faxes, video machines were supposed to be the actors, they should develop the teaching practice. What was not taken into account was that the academic teachers are highly autonomous and that they actually were the persons in charge. The academic teachers were the ones who could give the different devices tasks in the teaching and learning processes. In essence one has to approach this problem in a more functionalistic way. The problem arising is that you as a teacher in this situation needs models and theories for how to use the computers, faxes etc. in your educational practice. The need of Pedagogy is most apparent.

In the late 80's the Government made a first attempt to concentrate the efforts in tertiary level DE by supporting a spectacular DE development programme at the University of Umeå, with the overarching purpose of contributing to the rural development in the northern area of the country. In a way this was a concentration of resources and a test of the large scale idea. With one large exception though. At the Open Universities there are supporting organisations with educational expertise helping the producers with updates on pedagogical models and theories.

In addition, the Swedish Government has now made resources available to stimulate co-operation on DE between the universities. This has brought about the establishment of a number of university consortia with the purpose of developing DE in joint projects, where departments of different universities co-operate. One of the key issues still is the links to pedagogy, to educational research.

Policies, Technologies and Pedagogy - a look into the near future

Approximately 95% of the students today continue from the secondary to the upper secondary level. During the 50's around 4% of the students graduating from upper secondary schools went to the universities. Those numbers have of course increased dramatically. The different programmes and courses in higher education now has a numerus clausus. During 1992/93 there were around 243 000 students in higher education. That was an increase of 9% compared with the year before.

The ambitions from the Ministry of Education are that the increase in student uptake between 1991 and 1995 will be 30% and that in the near future 50% of all Swedes before the age of 28 shall have entered some kind of higher education. Before year 2000 the number of doctorates per year shall increase with 100%. Consequently the expectations of the Minister of Education are very high. Distance Education and Information Technology are pointed at as major routes to fulfil his expectations. I know it is possible - but not without the support of Pedagogy.

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