

4 The theory of distance education

On our way from the elucidation of the fundamental character of distance education and the students it serves to its further concerns it appears useful to pay some attention to the theoretical considerations on which it is based. There are different views of what is to be included in the theory concept, however.

The character and potential of a distance-education theory

If by theory we simply mean the systematic ordering of ideas about the phenomena of a field of inquiry (Gage, 1963, p. 102) much of what has been said above belongs to a presentation of a theory of distance education. We must look further into our subject, however, particularly if an understanding of the thinking and principles underlying these phenomena is meant. Examples of theoretical approaches to distance education aiming at understanding of this kind are Otto Peters' view of industrialisation as its basic characteristic, Michael Moore's (and Farhad Saba's) theory of transactional distance elucidating the roles of autonomy, dialogue and structure, Desmond Keegan's description of its main task as re-integrating the teaching acts (regarded as divided by the very nature of distance education) and mine of empathy as the optimal condition for the effective presentation of learning matter and helpful student-tutor interaction. These approaches are described in Peters (1973), Moore (1993), Moore & Kearsley (1996), Saba (1989), Keegan (1993b), Holmberg (1990c and 1995; in the last-mentioned work they are all looked into at some length), Holmberg (1997) and elsewhere. To what extent they also have explanatory power in Popper's sense (see below) is worth considering. They have all been much discussed (see Keegan, 1993a).

To the theoretical concerns belong considerations about the influence distance education can exert on society apart from the spreading of knowledge and making students aware of academic issues. Sumner (2000) summarises many of these concerns in contrasting its possibilities to serve either 'the system' or what, following Habermas' 'Lebenswelt' concept, she calls the lifeworld, i.e. the idea of a consensus of understanding brought about by communicative action. The latter is said to empower students to work together to solve community problems that threaten 'the basis of the lifeworld itself', whereas the former may 'serve the system, supporting multinational corporations, the military or administration, or simply maintaining the convenient isolation of distance students' (p. 282). This approach is well in line with other so-called progressive thinking presented by distance educators (cf. Evans & Nation (1993), Harris (1987) and Carr & Kemmis (1983), the last-mentioned one commented on by me in *Open Campus* 13).

However, theory may also be - and usually is - seen as providing for methodological application. A theory of this kind should generate testable hypotheses and thus make prediction possible, i.e. stating that if A, B or C is done this will cause D to happen. (Cf. Boyd, 1993, p. 239): 'Obviously, without some predictive power an educational theory is useless for designing distance education. Less obviously, even to criticize existing distance education projects we need a theory with causal relationships, otherwise the bad outcomes that we see, or foresee, might merely be due to chance, not to the features of the system...' Examples of predictive theories applicable to distance education are Perraton's of 1981, mine of 1982 and 1985, and Boyd's of 1993.

Predictive theories are no doubt desirable. Nevertheless strict epistemological thinkers have reservations. To Karl Popper, the great rationalist

philosopher, the aim of the theoretician is to find explanatory theories. While he recognises the value of testing theories, which to him means trying to find out whether they cannot be shown to be false, he insists that 'the theorist's interest in explanation - that is in discovering explanatory theories - is irreducible to the practical technological interest in the deduction of predictions' (Popper, 1980, p. 61).

Whether understanding, prediction or explanation is aimed at it is usually found practicable to express the assumptions made as logico-deductive hypotheses: If A, then B, the more (less) A, the more (less) B. Testing such hypotheses in Popper's spirit means finding out if they can be proved to be false; if not, they are accepted *ad hoc*, i.e. until better hypotheses have been found. However, few distance-education theories generating testable hypotheses have been presented and even fewer have *de facto* been tested in the sense that they have been subjected to falsification attempts. In 1970 Kurt Graff developed a decision model for distance education, but resignedly submitted that the great problems are 'beyond calculation' (Graff, 1970, p. 54).

Others are less pessimistic. Thus Hilary Perraton, although finding it 'naive to seek a single theory of distance education' and limiting the scope of possible theoretical statements to 'the teaching system' (Perraton, 1987, p. 11), in 1981 introduced a theory generating fourteen hypotheses or statements (cf. my *Theory and practice*, pp. 172 - 173), and in 1993 Boyd presented a falsifiable 'prescriptive theory for use by developers of, and researchers into, distance education supported by quasi-intelligent multi-modal computer-communications or "cyberspace"' (Boyd, 1993, p. 252). Simonsen, Schlosser, & Hanson (1999) discuss well-known approaches to distance-education theory and present an 'equivalency theory', said to be 'uniquely American' and 'based on core values held almost sacred in American education, such as the use of regular classroom teachers to

facilitate the teaching and learning process, local control, small class size, rapport between teacher and learner and personalized learning' (Simonsen, Schlosser, & Hanson, 1999, p. 73). The last-mentioned approach should be seen in relation to the quotations from Bates and Peters in Chapter 1 and 3 on differences between European and North American approaches to distance education.

The theory attempts that have been developed have, on the whole, met with a good deal of reservation or rejection, which, however, has not caused any recommendations about how better to develop and test theories relevant to distance education. A well-considered study of the problems arising from theorising on distance education has been carried out by Greville Rumble (1992), however.

As one who has again and again grappled with theory attempts and is prepared to face the negative reactions to be foreseen I suggest a comprehensive theory including a characterisation of distance education, an understanding of its underlying thinking, principles and tradition, a predictive part based on these prerequisites and an explanatory approach. It is from the conclusions of this theory that the methodology of practical work is derived. The following wording draws on *Theory and practice* (1995), an article in *Open Learning* of 1997 and other writings of mine.

The theory suggested

1. Distance education implies non-contiguous teaching and learning as students and teachers need not, and for the most part do not, meet face to face. In principle it is instrumental to individual study, but can be adapted to group learning. Distance education is well suited to the conditions of adults with jobs and social commitments who cannot - or do not want to - take part in classroom activities or keep to a prescribed time-table. It aims at benefiting from the expected maturity

of these students, usually assumes a certain amount of student independence and aims at promoting it further. If the full potential of distance education is exploited students are indeed independent of decisions made by others as to place and time of study (cf. Chapter 2 on extra-paradigmatic innovation and Chapter 7 below on independent learning).

2. Distance education includes teaching and learning in the form of (a) mediated presentation of subject matter (one-way traffic) and (b) mediated interaction between students and tutors (two-way traffic). This interaction implies a one-to-one relation between the individual student and his/her tutor. Learning is expected to ensue from the teaching thus provided through these applications of mediated one-way and two-way traffic. Distance education may also - and with the advent of computer technology usually does - include interaction between individual students, in groups and individually.
3. Distance education relies on technical media both for subject-matter presentation and for interaction. Its provision entails some kind of supporting organisation (usually a school or university) responsible for teaching, student support and logistics. Within this organisation subject specialists, educational designers, tutors, counsellors and administrative staff cooperate. The adequate term 'supporting organisation' for institutions providing distance education emanates from Delling (1966), who originally referred to responsible correspondence schools as 'helfende Organisationen'.
4. Central to the learning and teaching in distance education are personal relations between the parties involved, study pleasure, and empathy between students and those representing the supporting organisation. Expressions of and actions testifying to empathy are instigators of

motivation promotion and retention; they are thus likely to pave the way for success.

Feelings of empathy and belonging promoting students' motivation to learn and influencing the learning favourably can be developed in the learning process independently of any face-to-face contact with tutors. They are conveyed by students being engaged in decision making; by lucid, problem-oriented, conversation-like presentations of learning matter that may be anchored in existing knowledge; by friendly non-contiguous interaction between on the one hand students, on the other hand tutors, counsellors and other staff in the supporting organisation; and by liberal organisational-administrative structures and procedures.

Underpinning the theory

The four parts of the theory are related to the notions expressed in the following five statements:

1. The historical and social background of distance education is adult learning adapted to the conditions of people who because of work and family life cannot give first priority to their learning, find it difficult and/or disagreeable to take part in classes and follow time plans unrelated to their private circumstances, or even wish to keep their study entirely private as a confidential matter between them and the distance-teaching organisation.

Early studies illuminating this situation are, for example, Flinck (1980), Glatter & Wedell (1971), and Wedemeyer (1981). Cf. also my *Theory and practice* (1995, pp. 12 – 14). It should be mentioned that special applications of distance education adapted to children and school-age youngsters also occur. See *Theory and practice*, Chapter 8.

The particular relations between student independence and distance education have been investigated by, among others, Michael Moore (1976 and 1993) and Farhab Saba (1989). See below Chapter 7 and *Theory and practice* (1995, pp.165 - 172). Insights articulated by constructivist thinkers are relevant in this context. Cf. Boud (1990, p. 6): 'Knowledge does not exist independently of those who possess it...It always fits into the existing framework of understanding of the learner and is shaped by this framework...Learning for meaning and tight teacher control sit uneasily together'.

2. Distance education does not simply mean producing learning materials and possible facilities for interaction with a computer programme, but also necessarily includes communication between human beings.
3. The very fact that students and teachers either do not meet at all or meet only occasionally in the distance-education situation leads to media being required both for the presentation of subject matter and for the communication. This applied a hundred years ago and earlier and still applies. Modern information and communication technology has increased the impact of media and provides new possibilities for improving distance education (cf. Chapters 3 and 5).
4. To co-ordinate course development, student-tutor and any student-student interaction, counselling and administration, a school, university or other set-up is required. It is essential that this functions as a truly supporting organisation applying the empathy approach according to part 4 of the theory (see further Chapter 6 below).
5. Empathy is taken to be the recommended guiding principle for distance education. This is more than a vague desideratum as it influences all activities involved, course development, counselling, student-tutor interaction, administration etc. It is not difficult to see how this

guiding principle can be applied in all contacts between students and tutors, counsellors etc., whereas its application to the development of learning materials in print, on the net, in recordings etc. is less easily perceived. In 1960 I introduced a concept meant to identify this. Unfortunately I called it 'guided didactic conversation'. However, I operationalised the concept, developed a formal theory about its effects and had this theory empirically tested twenty years later (Holmberg, Schuemer, & Obermeier, 1982; Holmberg, 1983, 1999). The gist of this theory, which I now call a theory of teaching-learning conversations (the word didactic being very misleading as to many speakers of English it implies an authoritarian approach and student subordination, the opposite of what I have in mind), is that if a course consistently represents a communication process that is felt to have the character of a conversation, then the students will be more motivated and more successful than if it has an impersonal textbook character. Similar theories have been developed by Thomas & Harri-Augstein (1977), Pask (1976), Forsythe (1986), and Rowntree (1986). See my *Theory and practice* (1995, pp. 45 - 55.)

Hypotheses generated

In the theory presentation I gave in *Theory and practice* (1995), which is in principle identical with the one worded above but also includes references to behaviourist techniques and cognitivist thinking based on Ausubel (1968) and Marton & Säljö (1976), I listed ten hypotheses on learning, fourteen on teaching (in Rogers' sense interpreted as facilitation of learning) and seven on organisation and administration generated by my theory. They are - or can easily be translated into - *if...then* or *the...the* statements: If circumstances identified occur (the more they occur), then (the more)

learning will be promoted (teaching or administration respectively will facilitate learning).

Examples of statements expressing hypotheses immediately relevant to the above theory presentation are:

- (1) Warmth in human relations bearing on the study situation is conducive to emotional involvement.
- (2) Emotional involvement in the study promotes deep learning and goal attainment.
- (3) Prerequisites for emotional involvement can be brought about by a conversational style of presentation.
- (4) Consultation facilities (in writing, on the telephone, by e-mail etc.) constantly open to students for questions and exchanges of opinion with tutors and fellow-students accord with and facilitate learning.
- (5) Frequent, friendly and helpful mediated interaction between on the one hand students, on the other hand tutors, counsellors and administrators is conducive to learning.
- (6) Large-scale distance education with courses developed for hundreds or thousands of students by subject specialists and educational designers and with the student-support work divided among a large team of tutors is compatible with individual learning and the empathy approach.

Statement 5 based on part 4 of the theory in its turn leads to the hypotheses already tested in connection with my study of the conversational approach (Holmberg, Schuemer, & Obermeier, 1982; Holmberg, 1983).

They were:

The stronger the conversational characteristics, the stronger the students' feelings of personal relations between them and the supporting organisation.

The stronger the students' feelings that the supporting organisation is interested in making the learning matter relevant to them, the greater their personal involvement.

The stronger the students' feelings of personal relations with the supporting organisation and of being personally involved with the learning matter, the stronger the motivation and the more effective the learning.

The more independent and scholarly experienced the students, the less relevant the conversational characteristics for motivation and success.

The first three of these four hypotheses were subjected to empirical testing, *inter alia* rigorous falsification attempts in Popper's spirit by means of comparisons of experimental and control groups of students. While no consistent, statistically significant corroboration emerged, the tendency in three different studies favoured these hypotheses. The students who took part in these studies stated that they felt personally involved by the conversational presentations, their attitudes were favourable to them, and those who belonged to the experimental group, i. e. those who studied courses characterised by the conversational approach, did marginally better than those belonging to the control group.

The fourth hypothesis, the one on the relative irrelevance of the conversational approach to advanced students, has been queried by Mitchell (1992), who insists that the conversational style is relevant in 'all aspects of education' (Mitchell, 1992, p. 130).

Peters, on the other hand, is critical of the conversational style, apparently as he fears that students may be overprotected by being made to eschew complicated scholarly texts (Peters, 1998, pp. 20 - 23). It is my contention,

however, that in academic study the conversational approach should be applied to texts guiding students' reading of original scientific books and articles, not to rewriting them (cf. Holmberg, 1999).

Inferences

Whether my presentation above deserves to be called a theory is, to judge from comments made on earlier theorising attempts, not self-evident. However, I submit that

- it has internal consistency as a logical system, and claim with some confidence that it
- establishes functional relationships between the teaching and the outcomes of learning and that it
- generates specific hypotheses and predictions which are expressed in such a way that research data capable of possibly refuting (falsifying) the theory can be collected.

Whatever value it may have or not have I feel entitled to call it a theory as the requirements that it thus meets corresponds to those usually expected of an educational theory.

I also claim that empathy as an instigator of predictions also gives it a basis for understanding. It could, of course, be argued that empathy plays a similar role in all kinds of education. The decisive point here, however, is that the fact that distance education relies on mediated presentation of subject matter and mediated interaction with tutors and fellow-students and, on the whole, functions without face-to-face contacts, makes it necessary for empathy to be explicitly made evident, whereas in face-to-face situations a smile between two persons or the tone of a comment may be enough for empathy to be shown. I thus claim that regarding empathy as a typical basis of successful distance education contributes to an understanding of its character.

I further claim that my theory to some extent even meets the Popperian requirement of explanation. It has some explanatory power as it implies a consistent view of effective learning and teaching in distance education identifying a general approach on which various procedures can be based.

What above all characterises the theory and its hypotheses is their stress on individual relevance, human warmth, emotional involvement, personal approaches, ease of communication, frequent and undelayed interaction. The insistence on personal relevance causes attention to students fitting new subject matter and new problem solutions into their existing cognitive structures. The warmth and emotional involvement lead to emphasis on the development of *rapport* between students and representatives of the school, university or other body responsible for the teaching. That this body is regarded and described as a supporting organisation is in tune with the empathy approach.

The theory approach thus developed and tested is based on a conviction of mine, first expressed in a monograph of 1960, that conversation-like interaction between distance students and their supporting organisation promotes motivation, learning pleasure and study results.

To be worth its salt an educational theory must indicate accessible paths to useful practice. Apart from what has already been said the exposition of distance-education methods, media, and administration in the following chapters will illuminate the practical application of the theoretical discussion above

5 Methodology

General observations on teaching and learning in distance education

The first basic characteristic of distance-education methodology is, as indicated, that teaching, i.e. support of learning, is provided non-contiguously and is thus dependent on media of some kind (print, writing, recordings, tele and computer activities etc.). The second is that, as already stressed, it consists of two constituent elements, on the one hand the presentation of subject matter, which is primarily a kind of one-way traffic, on the other hand interaction between students and the supporting organisation (university, school) with its tutors, counsellors and administrators, and nowadays often also student-student interaction, i.e. two kinds of two-way traffic.

General educational theories have influenced distance education throughout its history. Bååth's classical study of different schools of thinking and their degrees of compatibility with distance education bears witness to this (Bååth, 1979). The behaviourists have taught distance educators the possible value of defining learning objectives in operational terms to the extent that their application is 'tempered with an understanding of its inherent deficiencies' (Macdonald-Ross, 1973, p. 47). The use of Bloom's and similar taxonomies of learning levels has left its mark on distance-education methodology and so has cognitivism, particularly through Ausubel's advance organisers and his plea for meaningful learning anchoring new learning matter in already existing cognitive structures. These theoretical approaches are dealt with in relation to distance education in my book *Theory and practice of distance education* (1995, pp. 32 - 44 and 56 - 67).

My theory of distance education as outlined in Chapter 4 above is practicable and testable in this methodological environment. It could be seen as to some extent serving what is called instructional design, which is itself a far from uncontroversial concept (cf. Richey, 1988; Barrow, 1986; Benkoe de Rotache, 1987). Instructional design is a concept understood as scholarly inquiry and verification of observations used to guide practice by validated recommendations for the structuring of teaching. There is little doubt that this can be useful although differences between students and learning situations make generalisable, detailed recommendations both extremely difficult and uncertain. Barrow (1986, p. 75) refers to 'our relative ignorance about cause and effect, and the likelihood that ... there are many good ways to kill a fox'. Nevertheless search for guiding principles of instructional design seems to be worth while. Thus Jung (2000, p. 229), reporting on the Korea National Open University, does not hesitate in stating that 'it is instructional design, not technology, that is at the centre of quality distance education'.

Today's variety of instructional design is strongly influenced by the school of thinking that goes under the name of constructivism. The main contribution of this thinking seems to be raising the awareness that each learner constructs his/her knowledge by individual interaction with subject matter and that thus different students learn different things from the same course. In its extreme form constructivism represents rejection of all 'objectivism' (Jonassen, 1991) and a belief that all knowledge is constructed socially (which would imply that even knowledge of anatomy guiding surgery, for example, could have no objective foundation). For criticism of this extreme interpretation see Holmberg (1998).

The rejection of belief in objective reality is, of course, a stand well known in philosophy and literature. Cf. Somerset Maugham's novel *The narrow corner*, published in 1932:

The world consists of me and my thoughts and my feelings; and everything else is mere fancy. Life is a dream in which I create the objects that come before me. Everything knowable, every object of experience, is an idea in my mind, and without my mind it does not exist. (This, quoted from the Penguin edition (1963), is said by Maugham's a-moral character Dr. Saunders).

In a study of practical applications of constructivist approaches to distance education Johansson (1999) has identified a series of criteria required for making constructivist learning milieus possible, among them activating students, contextualising theoretical content with experience, learning in the form of social experience, multiple perspectives of the learning content and metacognitive considerations (Johansson, 1999, pp. 123 - 124).

There can be little doubt that, interpreted and applied sensibly, constructivism 'can provide bases for unique and exciting distance learning environments. These environments should emerge from authentic tasks, engage the learners in meaningful, problem-based thinking, and require negotiation of meaning and reflection on what has been learned' (Jonassen et al., 1995, p. 21). Weidenfeld (1999, p. 237) argues that constructivist approaches favour experimentation and discovery learning.

It is in my view very important that learning should be regarded as something more than acquisition of factual knowledge and that therefore teaching, which following Rogers I describe as facilitation of learning, cannot mean simple transfer of knowledge. Learning includes such things as the capacity to abstract meaning from presentations of various kinds, to select what is relevant in a mass of information, to separate what is essential from what is less important, to relate concepts and arguments to others, to analyse concepts and to combine them in a meaningful way. This corresponds to what Marton and his school call deep learning

(Marton & Säljö, 1976). Cf. the desired generative effect advocated by Forsythe (1986) and quoted in the discussion of media choice below.

It is my contention that to serve learning in this sense the conversational approaches inherent in my theory (and in Sparkes' and Forsythe's recommendations, on which see below) are of decisive importance. They contribute to reasoning by argument, to directing students' attention to what is important and engaging them intellectually and often emotionally. What must not be neglected in any endeavour to favour deep learning is the type of examination, if any, that follows on the completion of study. If examinations can be passed simply as a consequence of learning a number of facts, then only surface learning is encouraged. To cater for deep learning as described examination tasks must require students to explain, combine and draw conclusions. The latter type of examination paves the way for students' active participation in the conversational illuminations of subject matter. (See further Morgan, Dingsdag, & Saenger, 1998).

Presentation of learning matter - one-way traffic

Choice of medium/media for subject-matter presentation

The media options open to today's distance educators for presentation of learning matter are considerable. Apart from print, audio and video recordings, films, radio, TV, and the simple presentation of texts on the net, data files with possibilities for animation of graphics and independent sound files offer new possibilities which are often attractive from the points of view of accessibility and effectiveness. There is a wealth of literature on modern information technology and its media. (See Bates, 1995, for example.) What medium or media are selected in individual cases depends on the specific needs and circumstances of the situation.

'There is no cookbook of recipes for media selection that can be applied automatically in every educational system' (Schramm, 1977, p. 263).

However, it is very important that no medium used should be of such a character that it stifles students' imagination or isolates students from conversation, which TV has been assumed to do in some cases. This would be what Forsythe (1986) calls a degenerative effect. She warns against 'feedback information in closed loops' (ibid. p. 24), which indicates reservations against so-called programmed learning and some types of computer technology. The importance of media facilitating conversation along the lines of my theory as described above is also stressed by Sparkes, who points to the effectiveness of TV in the affective domain but describes text as 'the natural channel for teaching complex ideas' (Neil, 1981, p. 113).

The distance-education course

There are basically two kinds of distance-education courses, the self-contained ones and those which are based on generally available handbooks and literature, recordings and/or computer programmes of various kinds. The former have proved particularly useful at elementary levels (courses in foreign languages, accountancy, e.g.) and in subjects with indisputably correct solutions of problems and little room for varying interpretations (mathematics and computer science may be seen as examples).

At the university level students should in many cases be made aware of different approaches, conflicting theories, needs of both analyses and syntheses. In these cases it is usually better to cause students to go to the sources, acquaint themselves with the origins of the contentious issues and try to reach conclusions of their own. These sources may be available in conventional libraries, on the net or in readers specially

prepared for the distance students. The distance-education courses will then consist of guides to the study of the presentations in question, clarifying and explaining, but preferably more asking for students' own understanding than providing 'correct' answers. Courses of this kind are usually referred to as study guides or commentary courses. (See Ljoså, 1975, du Plessis, 1987, and Holmberg, 1995, p. 71 ff).

Distance-education courses are almost invariably based on text. Text is, in fact, 'basic to all education' and 'the interactions students have with their texts are just as important as the interactions they have with people' (Juler, 1990, p. 28). In distance education this interaction with texts can - and in my view - should represent a kind of simulated communication while the real communication is brought about by various types of mediated interaction between students and tutors and students between them.

When I discuss text as the basis of learning I include not only print but all other forms of text reproduction for reading, thus also text presented on the computer screen. As already indicated I am very sceptical of text presentations on the net as they invariably lead to students making their own print-outs, which is time-consuming, causes costs for the students and often results in texts of lower quality than that of those printed. However, in individual teaching-learning situations it has proved useful to use the net for expanding and commenting on printed texts (and for correcting misprints and other errors) as well as for presenting short extracts from writings of relevance in specific situations. In this way texts can constantly be updated and experiences of students' difficulties can lead to explanatory additions and references.

For the development of instructional texts both the general theoretical considerations referred to and my theory of distance education are highly

relevant. A conversational presentation causes considerable redundancy, but is easier and - as a rule - less time-consuming to read than short handbook-type texts. It facilitates learning by pointing out difficulties, clarifying difficult points and making students aware of contexts, thus, e.g., in wordings like this: 'Once you have read through section x, refresh your memory of what was said in section y on the calculation of x, compare the two issues while making sure that you also see the differences. If you don't, check ...'. Students may then be asked to solve an exercise which should be followed not only by a model solution but also by detailed explanations of why one particular solution is correct or why specified alternative solutions are possible or unacceptable.

This approach means making students see contexts, consider options and generally think about the subject matter rather than merely assimilate facts, conditions and arguments reported on in the texts read.

A finding reported on by Mary Thorpe of the UK Open University throws light on this. Asked what they thought about questions inserted in instructional texts some students were negative or hesitant and one of them articulated what evidently not a few thought:

'Sometimes I feel they get in the way. They make me think. I don't want to think, I just want to get on.' (Thorpe, 1986, p. 39).

This is an easily understandable reaction on the part of students feeling the pressure of study requirements combined with those of their jobs and family life. By proper examinations students can be shown that the best way to get on is to think, not only to assimilate facts.

The readability of texts is evidently something of a problem not only at elementary levels but even, for instance, among graduates from American liberal arts colleges. A number of empirical studies have caused recommendations on how to write instructional texts. It has been suggested that

short sentences, the use of the active rather than the passive voice, the replacement of abstract nouns by verbs and frequent use of pronouns facilitate reading (cf. Miller, 1951; Langer et al., 1974, Taylor, 1977; Rowntree, 1986, and my discussion in *Theory and practice of distance education*, 1995, pp. 88 - 96, of the contributions these and other scholars have made).

It is sometimes found desirable that students studying printed courses should be given the opportunity to work really independently. This implies a free choice of learning objectives and possibilities to select items of learning matter as they seem interesting and relevant to the individual student. It is, in fact, possible, though seldom practised, to let students on their own select learning objectives in that they are given a choice between related course units, each provided with a detailed description of the objectives it meets, which makes this choice possible. Ljoså & Sandvold (1983) describe such a procedure. So-called contract learning goes far in this respect: on the basis of suggestions made by students individual curricula leading to degrees are agreed. On this see further Coughlan, 1980; Worth, 1982, and Weingartz, 1991.

There are also methods for allowing students to study in a non-linear way, i.e. finding their own way through subject matter. Hypermedia and hypertext systems, which let students browse and navigate freely in learning material, printed and/or on the net, are of great interest to anyone anxious to pave the way for independent learning and are to a limited extent being used, but have in many cases caused difficulties in that students, particularly those with faulty prior knowledge, have been hindered rather than helped by the non-sequential learning. The term hypermedia refers to the possible use of other elements than text (audio and video).

Bélisle (1999, p. 59) describes hypermedia systems as characterised by 'leur non-linéarité, leur interactivité, leur interconnexion et leur hétérogénéité'. What is indeed typical of hypertext is the explicit character of its interconnections. 'The interconnections are defined by the author (or even by the user) in the form of links between words or phrases or chunks of the document. They are made navigable by defining these chunks as "buttons", such that when the user interrogates that button (e.g. by clicking on it with a mouse) the connected word or phrase or chunk appears' (Laurillard, 1993, p. 268). Cf. the brief discussion of non-sequential learning above in Chapter 3. A more general presentation of the hypertext/ hypermedia issue occurs in Jonassen & Mandl (1996).

Hypertext/media may in future become valuable instruments for independent distance learning, but so far few wholly favourable experiences seem to have been made. It is the difficulties inherent in navigating in masses of information that cause negative or ambivalent views of their practicability. However, navigators helping students to master the situation have been developed. See Bélisle (1999) as already referred to.

Supplementary face-to-face sessions

In the cases when face-to-face sessions are offered these can to some extent be seen as bringing about knowledge-matter presentation, but usually their main role is creating possibilities for interaction with tutors and fellow students. It is important to realise that in distance education any face-to-face activity has to function as a supplement of the non-contiguous work. Doubling what is taught at a distance by providing a kind of parallel presentation orally has often been found to be confusing, whereas brush-up courses before examinations are usually regarded as useful.

Interaction - two-way traffic

To bring about distance education the presentation of learning matter, simulated communication brought about by interaction with texts and computer-programmed exercises are by no means enough. Interaction between human beings remains the other constituent element of distance education. It is possible to regard this as 'a technological system of interpersonal relations' and to see knowledge as a product of the contact between student and teacher. 'Meaning is given by mediation in dialogue' (Galliani, 2000, p. 46).

Choice of medium/media for interaction

The media used to bring about interaction between students and tutors and between individual students and groups of students are above all the written word communicated by the post, by telefax or by computer and the spoken word, usually communicated by oral recordings and telephone. Drawings and other illustrations, models, sometimes mobile, can be included.

Telephone conversations have proved to be very helpful when students consult their tutors and when tutors wish to supplement written explanations by oral dialogue. Voice mail and the exchange of audio recordings also occur. Satellite communication is practised in some countries. Thus, e.g., at the Open University of Israel satellite communication including two-way audio and one-way video is of common occurrence. See further Keegan (1995).

While it is difficult or even impossible for large groups of distance students to take part in classes or other face-to-face activities - this because of their job and family conditions, geographical situation, health and other personal circumstances - many, perhaps most distance students like to join such sessions. It gives them opportunities to listen to explanations

given orally by tutors, to discuss problems face to face with tutors and fellow-students. Some, but by no means all distance students, find this more personal and effective than interacting with tutors and other students non-contiguously, i.e. in writing, on the net and on the telephone although computer conferencing, synchronous ('real-time') and a-synchronous, attracts many students. (See below 'Student-student interaction'.) Several of the distance-teaching universities run special study centres in which face-to-face sessions and other possibilities for student-tutor and student-student interaction are provided. (On study centres in the age of information and communication technology see Mills (1996).)

The practice of student-tutor interaction

The traditional form of student-tutor interaction is based on assignments given in pre-produced learning materials, answered/solved by students who submit their solutions to the supporting organisation where a tutor reads, corrects and comments on them, after which they are returned to the students. The work done by the tutors implies checking on students' results, but this is only a minor concern. Basically commenting on students' assignments is a teaching task. Tutors correct misunderstandings, direct students' attention to profitable approaches, suggest ways to overcome difficulties, explain in detail why something is wrong or correct, acceptable or not acceptable, and invite students to react to the comments given. In the old correspondence schools as well as in modern distance-teaching organisations like the open universities this commenting has been developed into extremely valuable student support.

If, as regrettably sometimes occurs, students' assignments are merely ticked off and awarded marks, unique opportunities to teach at a distance are lost, students are deprived of support and the quality of the educational activity provided is low. When the full potential of interaction by means of

assignments is used, on the other hand, students are given valuable help. There is then a real one-to-one relation between each student and his/her tutor which facilitates the exchange of questions and answers, views and arguments.

There is much evidence of students' appreciation of this interaction between students and tutors (Beijer, 1972; Kelly, 1982; Thorpe, 1986 and 1988 etc.). It has proved impossible so far to find general principles for the desirable frequency of interaction opportunities, however. A careful empirical study by Bååth in 1980 showed that higher submission frequency correlated with 'more positive attitudes' to the interaction (Bååth, 1980, p. 151), but no consistent differences as to course completion or results were found. A replication study carried out by Rudolf Schuemer and myself two decades later proved no more conclusive (Holmberg & Schuemer, 1989). Future research may fill this gap.

The tutoring given at a distance is very often connected with the weakness that students have to wait too long for the comments of their tutors. Before the age of the computer this delay was usually excused as a necessary consequence of the use of the postal system. Today when assignments can be - and very often are - sent by e-mail or fax there is no such excuse. It is the availability of tutors that is decisive for quick and full commenting on students' assignments. To make the tutoring system function properly distance education organisations, schools and universities, have to provide constant tutorial service with tutors always available per subject, per course, per student with stand-ins for tutors out of function because of holidays, illness or other causes.

There is convincing research evidence to show that motivation suffers if students have to wait for their tutors' comments for more than a week.

Completion rates have also been shown to correlate with turn-round time (Rekkedal, 1983).

The expectations that students (with experiences of actual distance-education practice) have at the turn of the century are illuminated by Stevenson (2000), who reports from an inter-European study that, *inter alia*, most students expected contact about once a month and extensive feedback on their assignments (p. 124). Gaskell & Simpson (2000) have studied the expectations that Open University tutors have about students' wishes and compared these expectations with the wishes actually expressed by students themselves. They report in table form as follows:

Priority	Students want tutors who...	Tutors think students want them to...
1	Know the subject well	Give quality feedback on assignments
2	Be friendly and approachable	Be friendly and approachable
3	Run very good tutorials	Run very good tutorials
4	Give quality feedback on assignments	Know the subject well
5	Develop study skills	Mark promptly
6	Be easy to get hold of	Be easy to get hold of
7	Mark promptly	Understand problems
8	Understand problems	Develop study skills
9	Help with time management	Explain grades
10	Explain grades	Help with time management

Gaskell & Simpson (2000, p. 121)

In all these activities the empathy approach, discussed above in the theory chapter, remains important. Friendly and really helpful interaction between students and tutors should characterise the communication. Students should be regarded and treated as partners, not as clients.

There are indications that contacts with one tutor-counsellor rather than with several representatives of the supporting organisations contribute to the feelings of belonging and also to effectiveness (Rekkedal, 1985). This tutor-counsellor represents the whole of the teaching-supporting organisation and gets to know each of his/her students well, which is in many cases important. 'Lack of insight into the students' total situation and the total teaching system may be an obstacle to giving maximum support' (Rekkedal, 1985, p. 9).

Student-student interaction

Before the introduction of information and communication technology it was hardly possible for distance students actively to cooperate with one another unless they met in person, i.e. if they took part in face-to-face sessions. E-mail, the chat function on the net and computer conferencing have changed this radically: today distance students frequently keep in touch with other students, discuss problems and also interact socially. (On this see Chapter 2 above, *Distance education as innovation*.) This means that distance education relies on mediated subject-matter presentation, mediated student-tutor interaction *and* mediated student-student interaction.

Computer conferencing is flexible and can occur at fixed times so that students have immediate contact with one another. This synchronous, 'real-time' interaction is preferred by many, but is not always possible or practical as it compels participants to reserve certain days and hours for the interaction. These time constraints can be avoided by a-synchronous interaction, which makes it possible for students to take part in discussions at times that suit them, in the night, for instance. Instead of organising a two-hour seminar at a time when all students must participate the supporting organisation can invite students to make their contributions

and acquaint themselves with the contributions of other students at any time within a week or other period deemed suitable. This is a procedure well adapted to the conditions of working adults. As an academic I have personally very favourable experiences of such a-synchronous seminars in university distance education.

An interesting finding was made when a training of distance educators by means of text readings and a series of a-synchronous computer seminars was evaluated. Fritsch (1997) could identify what he calls witness learning showing that also students who make no contribution of their own benefit from following a computer seminar, which confirms an assumption of Laurillard's about the value of 'eavesdropping'. This should be compared with a more sophisticated study of the 'vicarious learner' by Lee et al. (1997). On the a-synchronous seminar referred to see further Bernath & Rubin (1999).

Counselling

A special type of interaction between students and their supporting organisation concerns counselling. For adults studying on their own, without meeting either tutors, administrators representing the university or school that is their supporting organisation or fellow students, mediated counselling is usually of prime importance both before the beginning of the study and during it. The counselling cannot be limited to information and advice about study paths and course offer, but must take the individual student's background, conditions, needs and possibilities into consideration. David Sewart, the director of the student-support of the British Open University, underlines that the counsellor 'must be close enough to the student to have a thorough knowledge of the student's domestic, work and study circumstances' (Sewart, 1984, p. 11). Counselling is a tricky task which is, however, competently handled in a number

of distance-teaching organisations. (See Tait, 1995; Thornton & Mitchell, 1978; Kirkwood, 1989; Mills & Tait, 1986, and Phillips, Scott, & Fage, 1998, e.g.)

In some academic circles the suitability of un-asked for intervention when students seem to get into difficulty or are not heard from has been queried. In some university systems students are regarded as so wholly autonomous that even offers of help in these situations are seen as encroaching on their integrity. If a student stops submitting assignments this is then interpreted as a decision on mature consideration to discontinue the study. Anyone who knows something about the conditions of adult study beside work and family commitments realises that this is an unrealistic conclusion. Failure to submit assignments or in other ways continue study usually means something entirely different: illness in the family, marriage problems, overburdening because of overtime work, much travel on duty or other claims typical of adult life. Reminders with offers of support have proved very effective in - as far as the study is concerned - helping students over problems of this kind (cf. Rekkedal, 1972, and Simpson, 1977).

For a more detailed discussion of the role of interaction see Chapter 6 of my book *Theory and practice of distance education* (1995).