

INTERACTION BETWEEN STUDENTS AND THE SUPPORTING ORGANIZATION

The importance of a kind of simulated communication and conversation-like approach has been stressed above in the discussion of the first of the two constituent elements of distance education: learning-matter presentation. For the second constituent element, real communication in the form of interaction between tutors and students, much of what was said on pp. 45-55 is relevant.

Empathy and rapport between tutors and students remain important guidelines. This applies to both contiguous (i.e. face-to-face) interaction and non-contiguous (i.e. mediated communication).

THE FUNCTIONS OF COMMUNICATION

The purposes of two-way communication in distance education are generally as follows:

- 1 To support students' motivation and interest by contact with an encouraging tutor and counsellor.
- 2 To support and facilitate student learning by students applying knowledge and skills acquired to tasks to be checked by and discussed with tutors as well as by tutors' comments, explanations and suggestions.
- 3 To give students opportunities to develop their thinking while benefiting from tutors' criticism.
- 4 To assess students' progress in order to provide them with an instrument by means of which they can judge their educational situation and needs, and by means of which marks can be awarded; the assessment of students' progress and the contact with them are also evaluation elements used more or less sys-

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tematically for the purposes of modifying courses on the basis of students' needs and wishes. This applies to assignments set for submission and then corrected and commented on as well as to unstructured communication.

That these are considered the most important tasks of mediated tutor-student interaction is borne out by a study by Bååth on the practices of thirty-four European distance-education institutions, including the British Open University, which were asked to rank fourteen functions in relation to their importance. By far the most important function of non-contiguous communication proved to be 'to give the students effective feedback - help them to correct their mistakes and control their progress' (Bååth 1980: 31). An educationally most important function is added by Perraton (1987: 5): 'to allow learner and teacher to take off in directions... not forecast'.

Let us first concentrate on the teaching-learning situation as such and then consider counselling, which is undoubtedly part of the educational endeavour, in a context of its own.

PROCEDURES AND MEDIA APPLIED TO STUDENT-TUTOR INTERACTION

In distance education there are three different types of tutoring to be considered, namely the one actually provided at a distance (by some kind of correspondence or over the telephone), the one offered in recurrent, more or less regular personal consultations or tutorials supplementing distance study, for instance in regional study centres, and finally tutoring at concentrated residential refresher courses.

The whole system of distance education is based on the insight that what is really important is the student activity, i.e. learning, and that tutoring distance students, rather than teaching them, implies paving the way for student activity. Distance education is concerned with attempts to develop autonomous learning. It is thus basically the task of tutors - as well as that of course developers, planners and administrators - to provide what Rothkopf and his school of thought call 'mathemagenic-positive' conditions, that is conditions, surroundings and measures that favour and facilitate learning. It may be worth our while looking

into the application of this way of thinking to the kinds of tutoring referred to.

Tutoring at a distance

Tutoring at a distance is by far the most important form of tutoring activity in distance education. It derives its particular importance from the fact that it is a basic component of the system of distance education whereas all kinds of contact with tutors physically present are contingent on special conditions. It is the only form of contact with tutors that all students can make use of and benefit from.

It is customary for courses to provide questions, problems, and other tasks, the replies and solutions to which, including essays, reports, and other independent papers, are to be submitted for comment, evaluation, and correction. It is possible, though seldom practised, to provide an extensive battery of assignments, from among which students are encouraged to select those that they find particularly interesting or that coincide with their specific study objectives. This could be one way to bring about student autonomy in a way useful to students who realize what they need. If students were to select their own study objectives and, on the basis of this selection, were able to concentrate on the corresponding parts of the course and were offered assignments related to the parts chosen, then they would be provided with more appropriate opportunities for autonomous study than distance education is normally capable of offering.

A less satisfactory but more common method of individualization is to make assignments for submission voluntary without providing the students with selection instruments related to individual study objectives.

As a rule, a number of students submit replies to the same questions, solve the same problems and write essays on the same subjects. This provides an excellent basis for judging the relative merits of the work of each student.

It has been found practical in some cases to use so-called objective tests, which only require the student to mark his reply in the right place. Their advantages are that they can be judged wholly objectively (it is perfectly possible to have the marking done by means of a computer), whereas essay-test marking must

be influenced by the tutor's subjective judgement. Objective tests can cover a great many items and save students' time.

The main types of objective tests which have been used with success in distance-study courses are as follows:

- 1 Multiple-choice tests in which the student marks which of several suggested answers is/are the correct one(s).
- 2 Re-arrangement tests in which the student numbers the various items of a series of events, a process of work, etc. to demonstrate the right order between the items.
- 3 Completion tests in which the student fills in gaps in sentences requiring figures, terms, or other indications of fact; or, in a sentence in a foreign language, words, phrases, missing endings, etc.

Tests of this kind are sometimes useful for checking factual knowledge, application, understanding, and even analysis. They may also serve instructional purposes, particularly if after the test the student receives model solutions with comments. Naturally, their limitation is that they do not encourage the students independently to express their insight into logical connections, etc. Normally, it is required that students should be able to express themselves verbally, and this is where objective tests are not appropriate. For that reason they can play only a limited part in education. However, they are entirely appropriate in all of the cases where an analysis of the desired result of a training programme shows that recognition (and not the ability to record something) is essential.

Communication initiated by students and based on the questions that they raise and want further comment on along with suggestions for further reading, implementation, and practice, would seem to be very desirable. However, few distance-study institutions have managed to inspire more than a minority of their students to make use of this facility, and others do not even offer it. Thus it occurs mainly as a supplementary form of communication, the normal procedure being based on assignments provided by the course. These assignments vary from bitty questions and answers to comprehensive project work leading to essays and theses (see p. 74).

Every student has a legitimate interest to know to what extent he is successful, if he meets recognized standards, what his strengths and weaknesses are. Also his school or university is

interested in this both in order to evaluate the teaching-learning system as a whole and to judge the progress of individual students. Though legitimate, this interest in grading the work of students endangers the 'mathemagenic' character of the interaction between students and tutors. Thus to be able to be just in assessing students' work, tutors may wish as often as at all possible to work with a reasonably representative number of papers, to go through the replies of all the students concerned to a particular question at a time and to judge the relative merits of the individual assignments against one another, in other words to apply something of the procedure appropriate in grading examination papers.

This has two consequences detrimental to learning: it causes delay and it removes the focus of attention from the learning activities as such to assessment. This is a problem particularly in the cases when distance education programmes are administered by degree-giving institutions. In the highly commendable attempts to attain something of a continuous assessment system, thus avoiding dramatic examination procedures, such institutions often wish to include the achievements of students on ordinary submission assignments in the assessment on which classes of degrees and marks are based. This makes it important to make sure that each paper submitted is an individual achievement, which in its turn induces those in charge of tuition and assessment to insist on uniform pacing, co-ordinated correction and other types of rigidity that are more concerned with examining than with tutoring.

If — as I think we should — we give priority to tutoring, then we are compelled in many cases largely to refrain from using assignment results as bases for continuous assessment of students' achievements in the sense of awarding marks. The assessment will then be coupled with and support the tutoring. The question arises how best to motivate students, how to help them to overcome difficulties, how succinctly and effectively to explain what they have misunderstood and how to stimulate critical and comparative study of various sources. Evidently most of this must be done by the pre-produced self-instructional course itself, which has to anticipate most problems, but where the course fails it is up to the distance tutor, the one first to notice the failure, to help the student by explanations, references, advice, encouragement and suggestions, all of which should induce him or her to reconsider what has been studied and review factual presentation

wherever necessary. Here we have little more than didactic intuition to guide us.

A quotation from Kenneth Mackenzie seems worth referring to in this context. He says that

there is a clear need to wean assignments and course tutors away from mere testing and passive marking, as if the written exercise is intended to be the perfect once-and-for-all-time safe 'answer'. Course teams might make increasingly plain in their supplementary material that the assignments (can the word be altered?) compose an educative sequence and that the individual assignment is thought of as a creatively incomplete essay, in the original sense of a tentative and provisional effort. Similarly, the course tutor may increasingly learn how to pass through the assignment, like Alice through the looking-glass, into the reverse world of the student beyond, engaging there with the student's struggle to sort out, inform and expound his thinking. The student in turn needs to see himself and his assignments in this way too, each as a phase, cumulative and not transient, in his personal development. So that, as in a symphony, themes he has touched on at the outset return finally at the close of the course enhanced and developed in significance. The course tutor's advice is relative to that development: 'this is what you most need to attend to now, here is the way you might develop, have you thought of this forgotten aspect....'

(Mackenzie 1974: 50)

A comment by Bruner is relevant here:

Instruction is a provisional state that has as its object to make the learner or problem solver self-sufficient. Any regimen of correction carries the danger that the learner may become permanently dependent upon the tutor's correction. The tutor must correct the learner in a fashion that eventually makes it possible for the learner to take over the corrective function himself. Otherwise the result of instruction is to create a form of mastery that is contingent upon the perpetual presence of a teacher.

(Bruner 1971: 53)

A difficulty most tutors come across is the question what to do

when a student answers that he/she does not know or does not understand how the problem in question ought to be solved. It occurs particularly in mathematics and kindred subjects when the student asks for a complete solution without submitting any work of his/her own. There seems to be general agreement that in such cases the tutor should tell the student to try to start working on the problem and to send in an attempt so that the tutor may help him/her with particular difficulties. As a rule some suggestions or references to a lesson can – and should – be made to start the student off as he may otherwise be quite helpless. The idea behind this is that the student, to learn something, must do the work actively himself/herself and that it is the tutor's task to help him/her to learn and not to deliver ready-made solutions of problems. It is thus vital in distance education that the scrutiny that applies to any kind of test and exercise should be played down in favour of helpful communication.

Frequently the submission of assignments, with their opportunities for expressing interpretations, suggested solutions, doubts, and queries, are the students' only means for communicating with the tutor. This makes it imperative that the tutor should encourage spontaneous viewpoints from the students on relevant topics and provide stimulating and informative comments.

It is the tutor's task to support the motivation of students by engaging them in thinking, reading, and other activities that make sense, and to try to motivate them for what comes later in the course. A pleasant atmosphere and feelings of friendly contact are important when the tutor contributes to his students' learning by explanations, examples, suggestions and references. Most of this work consists of personal contributions by individual tutors who write, or record on tape, their comments on individual students' work and/or talks with their students on the telephone. This work is challenging and time-consuming. As Elton says

If tutoring is done by correspondence, then experience indicates that it requires far more time, skill and application on the part of the tutor than may normally be found in 'essay marking' on campus. However, if this is provided, then it can be more effective than either campus essay marking or the traditional group tutoring'.
(Elton 1988: 12)

The support given to students in this way has several purposes.

Lebel (1989b) analyses this support as methodological, metacognitive (helping students to learn), motivational and administrative.

It is perfectly possible and often useful to pre-produce or programme text modules for use by the individual tutor. In subjects where the students are not expected to submit creative essays, most tutors find that certain misunderstandings occur so frequently that they have standardized comments ready for them, either in their minds, written (printed) on paper or stored in a computer.

Some schools of distance education have found it practical to work with a battery of carefully prepared explanatory comments that tutors can use either in the form of appendices to the student's paper when this is returned with handwritten tutor comments, or as sections of typed letters. These sections are sometimes programmed for automatic typing, whereas other sections of the same letter are typed following dictation from the tutor (see pp. 121–2). The experiences of pre-produced tutor comments are favourable. (Rekkedal and Jysø 1974 and Fritsch 1989).

Some distance-education organizations expect students to submit their assignments by dates prescribed and thus pace them in accordance with a timetable decided on by the teaching organization. This seems above all to apply to distance education within public education (such as many distance-teaching universities). Whether this is an acceptable procedure or not is a controversial question, see pp. 165–9. An international study of some 200 distance-teaching organizations (Graff and Holmberg 1988) showed that most of them refrain from pacing their students. Further, a correlation was found between success rates and approaches favouring student independence which included free pacing.

Students on the whole seem to appreciate student-tutor interaction highly (Beijer 1972; Kelly 1982). Open University studies indicate that project work in particular is regarded as helpful (Thorpe 1986: 41–5). So are tutor-marked assignments:

Open University tutors are required to comment extensively on a student's work, as well as to grade it. These comments provide the student with the most substantial, often the only, feedback they will have during their studies of how their understanding of the course is progressing.
(Thorpe 1986: 34)

For a discussion of project work, see p. 74.

An Open University survey of 1983 'provides conclusive evidence for the importance of correspondence tuition'. Thus

almost all respondents (over 90 per cent) felt assignment comments were important for explaining errors and making helpful criticism. Students were also asked what they usually did with marked assignments... fewer than 10 per cent are only interested in the grade. Seventy-two per cent read comments carefully and tried to use them in subsequent assignments.

(Thorpe 1988: 74)

Sometimes, however, distance educators have to contend with students' too respectful attitudes. Consider the following quotation:

The assumption behind much of our distance education materials of an independent and self-confident learner who is willing to ask, to question and to risk being wrong, may be entirely inappropriate in many cultural settings. Further, we must be more conscious that many learners have attitudes towards knowledge and towards 'educated' individuals which minimise the potentiality of dialogue. One of the most common statements from learners about their hesitancy in talking to tutors was that their problem was not worthy of their tutor's attention, and they were unwilling to take up their tutor's time.

(Haughey 1991: 20)

Difficulties of this kind illuminate the importance of the empathy approach leading to rapport between students and tutors.

Media for student-tutor and student-student interaction

Since, in the typical distance-education teaching-learning situation, tutors are not on the same premises as their students, non-contiguous communication is the type of interaction on which distance educators and students mainly have to rely. Correspondence in writing, by computer, telefax or electronic mail, and oral conversations on the telephone or on audio cassettes are the means that can be used to bring about this communication at a distance.

Face-to-face sessions

In many distance-education programmes there are also elements of face-to-face interaction between tutors and students. The second and third types of tutoring mentioned at the beginning of our discussion of teaching-learning communication belong here. The occurrence of such contiguous communication is dependent on the possibility, opportunity, and inclination of students to go to and take part in face-to-face meetings. Many distance-teaching organizations find meetings important either as a motivational device encouraging course completion or as a purely instructional element, or both. For that reason, regional and local study centres, offering tutorials, the use of technical equipment (computer terminals, recording apparatus, laboratory facilities), library service and other support, are set up. Students often appreciate measures of this kind; frequently, however, when attendance is not compulsory, most students seem to prefer or (for reasons of family, job, and social commitments) be/feel compelled to give priority to non-contiguous communication.

While there is often a case for supplementary communication in group and person-to-person meetings, there is no doubt that the use of face-to-face sessions is not exclusively based on rational decisions. It is also, to some extent, due to the power of tradition and to negative prejudices regarding the applicability of non-contiguous forms of study. As a basis for rational decisions in this respect, it would seem to be practical to consider the usefulness of distance study per se in the cognitive, psychomotor, and affective domains.

A number of studies have shown that both cognitive objectives in general and psychomotor objectives, which are aimed at skills in the fields of written achievement (in language and mathematics, for instance), are attained at least as well by distance study based on the written word as by conventional classes (Granholm 1971; Bajtelsmit 1990). There seem to be 'no studies of achievement which show that correspondence study students do less well than do classroom students, a number which show that they do as well, and a number which show that they do better' (Childs 1965: 81).

This, and the assumption that many psychomotor objectives and objectives in the affective domain, i.e. attitudes and emotions, are more effectively attained by personal contacts lead many

distance-study institutions and their students to use face-to-face sessions, if at all, less for subject-matter learning and more for the following purposes:

- practising psychomotor skills in laboratories and under similar conditions (Holmberg and Bakshi 1982; Kember 1982); also verbal skills belong here
- facilitating the understanding of the communication process and human behaviour
- encouraging attitudes and habits of relevance for the study
- mutual inspiration and stimulation of fellow students; training in co-operation.

Many students cannot or do not want to use their time for face-to-face sessions as long as they manage by means of non-contiguous communication. They prefer phoning (or writing to) their tutor to travelling, perhaps for an hour or more by car or train, to a tutorial. This is apparently the attitude of a majority of the students of the FernUniversität. Elsewhere, large groups of distance students seem to prefer working entirely at their own pace and privately and are not willing to adopt any time schedule or join any meeting or tutorial (Beijer 1972 and Wångdahl 1979). However, to others benefiting from the advantages of both distance-study and face-to-face sessions, tutoring in both forms is something found desirable. It is also in many cases practicable. (Frisch and Ströhlein 1988). Combining oral tuition with distance study causes some difficulties that have not, however, always been coped with successfully.

Efficient tutors in a class or group are apt to take command and teach, instead of guiding or advising, and thereby deprive students of the initiative by taking over part of the function of the self-instructional course. This often leads to the students being given too much instruction (the tutor doubles the course). The students are also to some extent put in conflict because of differences of approach between the course and the tutor, a confusion which is always time-consuming (but may be productive in academic study). Further, in this way the planned guidance and consultation are sometimes converted into a kind of more or less conventional classroom teaching which requires considerably more time than can reasonably be set aside for the guidance and counselling that is intended to support the individual study of a distance-education course. This may be harmful, as such a course

is meant to teach on its own, introducing new elements at the points where students are in a position to assimilate them, and consolidating newly acquired knowledge by means of illustrations, graphs, exercises of various kinds, summaries, etc.

Face-to-face interaction as a supplement to distance study can be applied in more profitable ways, however. Personal consultations along the lines of Oxbridge tutorials (i.e. periods of stimulating educational interchange between tutor and student) and discussions in groups, organized and formed spontaneously, appear to be the most valuable supporting functions of face-to-face sessions (apart from those that require special equipment, such as laboratories, machinery, computer terminals, etc.).

Another profitable way of integrating distance education with face-to-face sessions is running concentrated residential courses which support individual distance study. These can help students over previously insurmountable difficulties; they can introduce and thereby facilitate the study of new parts of the distance course; they can inspire co-operation with fellow students and provide a pleasant academic atmosphere with motivational potential. As they take place during concentrated periods, when an interruption is made in the individual distance study, they do not interfere with or disturb this.

A third successful combination of distance study and face-to-face sessions has been developed for 'supervised' distance study in schools and in companies and organizations, including military units. Students work in libraries or classrooms and have a teacher available there as a resource. The teacher is their individual adviser and helper rather than their instructor, and answers questions, explains when asked to, motivates, organizes group activities, and administers. The learning matter is presented throughout by the course, which may be based on several media, and the didactic communication with the distance-study school remains an essential element. See Chapter 8.

A general conclusion seems to be that certain principles must be observed when combinations of distance and face-to-face methods are introduced. It is not a teacher but a resource person and moderator that is needed as the leader of supplementary oral class. The actual teaching is done by the distance course and the non-contiguous communication. There is every reason to plan any combination of contiguous and non-contiguous study

with extreme care and then to respect the dearth of time available to most students.

Media for non-contiguous communication

The decisions to be made concerning media for two-way communication are still often limited to a choice between written, recorded, and telephone communication, though some use is made of radio for this purpose (McGuire 1973) and modern information technology offers new possibilities. Assignments may be given in a printed course, while the students are required to reply either in writing or, where oral achievements are a study objective, on audio-tape. Students may also listen to recordings and comment in writing; on tutor-student interaction by audio tape see, e.g., Valkyser (1981); Durbridge (1984); Evans (1984). Even phonetic discrimination exercises have been arranged in this way. The telephone is useful for direct and indirect communication; in the latter case, students dictate their questions on the telephone to a recording machine and receive phone calls from their tutors after the latter have listened to the questions and studied the problems raised.

Interesting studies of communication by telephone have been made by Flinck (1978), who also reports on content analysis of didactic telephone conversations, by Blom (1986); Moore (1981); Winders (1984); and others. The last two named examine telephone conferencing. Satellite communication can offer similar service (Williams and Gillard 1986).

A study by Torstein Rekkedal indicates student satisfaction with telephone communication although 'very few students actually phone their tutor(s)' (Rekkedal 1989: 35). Tutors were highly stimulated by telephone communication agreeing 'that the telephone conversations with the students had added a complete new dimension to their work as distance educators' (ibid., p. 38).

The use of the telephone for seminars has proved successful in a number of cases. This is what is usually called teleconferencing. It should perhaps be called audio teleconferencing, as it is possible to include video elements in the wider concept of teleconferencing. The cost of these does not always seem to correspond to the educational value added by them although visual cues are sometimes considered important in regulating discussion (Tuckey 1993: 601).

Teleconferencing makes discussions between students possible at the same time as it gives the tutor opportunities both to moderate the discussion and to make his/her own contributions. It can thus be a rewarding form of non-contiguous two-way communication.

Writing on Canadian conditions, Robertson reports that audio conferencing has a growing appeal to Canadian adult educators because

- many part-time adult students are widely scattered in communities that may be several hundred kilometres apart, with each centre having fewer than ten students in the same programme;
 - the costs for starting and operating an audio teleconferencing system can be relatively low;
 - the technology is readily available and is familiar to instructors and students;
 - most systems can be adjusted quickly to serve large or small groups;
 - the mode of instruction can be similar to that of an on-campus seminar with the instructor being in charge but able to stimulate multi-point interaction;
 - scheduling adjustments can be made almost as readily as for on-campus classes;
 - access to the instruction or programmes can be controlled through a limited number of centres;
 - the quality of the instructional materials is often increased because of the need for careful preparation several weeks before presentation;
 - properly organised, it has the potential for generating operating profits;
 - immediate cost benefits can be shown;
 - very useful working relationships can be developed with community groups having dispersed memberships.
- (Robertson 1987: 121-2)

There are various technical methods for bringing about non-contiguous conferencing as an element in distance education. Computer-based communication occurs in several forms.

The discussion about the character and potential of computer-mediated communication sometimes appears somewhat confusing as on the one hand exaggerated claims about its potential,

on the other hand misguided aversion to technology seem to obscure judgement. For that reason I begin this presentation of computer use in mediated communication by a lucid clarification of concepts written by Erling Ljoså and quoted here with his permission:

Computer-mediated communication (CMC) is a notion used to describe a system of two-way communication based on the transmission of electronically written information. Basically, there are two types of CMC system:

- 1) Electronic mail systems
- 2) Computer conferencing systems.

In an *electronic mail system* every user has his or her own mail box, and electronic letters are exchanged between these boxes. The physical communication takes place by forwarding the information from one computer to another until it reaches the mail boxes of the receivers.

The main function in an electronic mail system is to carry out a dialogue between two persons. Group communication may be conducted if the same letter is sent to a group of people engaged in the same conversation. But if several hosts and messages are involved, the sense of group communication may be lost. This is due to the fact that each of the participants has to save the letters in his or her personal mail box to review them later. And there is no function numbering the letters in a way that easily identifies them and relates them to each other. Therefore, to facilitate group communication, computer conferencing systems are preferable.

The notion *computer conferencing system (CCS)* is an internationally recognised metaphor used to describe a text database usually located on a central computer. This is in contrast to electronic mail systems, where the conversation is stored in individual mail boxes. When using a CCS, the sender transmits information from his personal computer (PC), terminal or whatever to the database, and the receiver gets the information when connecting to the database. The communication is asynchronous, that is, the messages are transmitted and received at different times.

A computer conferencing system may carry out three different forms of communication:

- 1) Dialogue or one-to-one communication: the electronic mail function.
- 2) One-to-many communication: the electronic bulletin board function.
- 3) Group discussion or many-to-many communication: the electronic meeting function.

The *electronic meeting function* is the essential element in a CCS, and it is mainly this function that makes it different from an electronic mail system. Electronic meetings or conferences are metaphors. They may also have different properties in different systems. But many systems on the market today offer the possibility of arranging both open and closed conferences. In an open or public conference, everyone with access to the system has the possibility of joining the conference and taking part in discussions. Closed conferences have restricted access.

(Ljoså 1992b: 44-5)

Use of the computer along these lines occurs to an increasing extent (Mason and Kaye 1989; Ortner 1992). Combinations of computer technology and telephone communication appear particularly promising, such as electronic mail, telefax systems and modern text processing of the type used by newspapers (when a contribution is typed by a correspondent at a distance from the printing-office to where it is transmitted electronically and where it may be changed or edited).

Computer networks play an important part. Cf. Mason 1989. Connecting students' personal computers (PCs) with a host computer in such a way that - as indicated by Ljoså - students can communicate asynchronously not only with tutors but also with fellow students is often seen as a great advantage and is being increasingly practised. On Deaking University work of this kind, see Casuro (1987). A valuable presentation of applications, potential and problems occurs in Rekkadal (1992).

An interesting type of non-contiguous conferencing heralding so-called telewriter systems was developed at an early stage at the British Open University under the name of CYCLOPS. This is an extremely versatile audio-visual teaching system based on

the conventional television set, standard audio cassettes, and microcomputer technology. In face-to-face teaching CYCLOPS can be used as an audio-visual aid, for displaying pre-prepared diagrams and other graphics which have been produced in the CYCLOPS studio at Walton Hall and stored on one channel of a stereo audio cassette. By synchronizing sequences of pictures with a spoken track, a self-instructional package can be produced for students' personal use.

However, it is when CYCLOPS is linked to telephones and used for distance tutoring that its versatility as a teaching tool becomes most apparent. The CYCLOPS television screen can be used for writing and drawing on by both tutor and students, the telephone lines being used to relay the writing between the various participants in the tutorial who each have a similar set of CYCLOPS equipment.

The writing is achieved by using either a light-sensitive pen to draw directly on to the television screen or a 'scribbled pad' which displays drawing on the screen.

(McConnell 1982: 21)

This and other telewriter systems implying audio-visual two-way communication have mainly served groups of students rather than individual tutoring (Shale and Garrison 1989; Tuckey 1993). There are interesting exceptions, however, as shown by Rekkedal and Vigander (1990).

We have reason to look forward to further useful developments of computer communication in distance education. Simple offline procedures, first developed in the early 1970s to serve individual learners are still being applied and appreciated. Fully developed systems of this kind, such as CADE (Hermods, Sweden), make use of a computer off line for the correction of and commenting on replies to multiple-choice questions with carefully selected distractors. In the CADE system, an optical reader 'corrects' the solution of the students, after which the computer selects relevant comments and explanations from among a great number of those programmed and stored for the purpose. The computer also checks and refers to the individual students' earlier achievements, when parallel or similar problems have been solved. A mistake or unsatisfactory solution of a problem is given different comments according to which of the incor-

rect distractors the student has chosen, i.e. in relation to the way in which he or she has misunderstood or wrongly combined items. The computer program sees to it that sometimes even correct replies are commented on to underline something important or to support the motivation of the students. Encouraging and counselling comments, based on the total result of students' papers, are also provided by the computer. All this is typed out by the computer on to a personal letter addressed to the individual student (Bååth and Månsson 1977). A similar system, LOTSE (FernUniversität), was developed in Germany (Wilmerdoerfer 1978; Kueffner 1979).

A computer system which allows the free rendering of replies in the form of numbers has been developed at the FernUniversität (CMA). The numbers are 'read' by the computer by means of markings in columns of numbers provided. Thus, there is no choice between different solutions suggested (Graff 1977; Möllers 1981). The students create their own answers (numbers).

These offline systems are usually regarded as very useful. In an empirical study, Bååth found strong indications that even offline computer-assisted versions functioned better 'as far as starting behaviour, completion and attitude toward the tutorial work was concerned' than tutor-marked versions of the same courses. These findings are, as stressed by Bååth, well in accordance with the results obtained from the evaluation of the CADE system' (Bååth 1980). Andrews and Strain (1985) offer further evidence supporting Bååth's conclusions. This may reflect unsatisfactory tutor work.

Whatever technological progress is made, however, two-way communication in writing, which leads to instructional comments, suggestions, and, at an advanced level, scholarly analysis, remains a core medium. Ordinary reading and writing remain the basic means of student-tutor instruction with audio recordings and telephone interaction as the most important supplementary media. Sensible use of the computer can be very helpful also in traditional written student-tutor interaction. As indicated above under *Tutoring at a distance*, text modules commenting on expected errors and misunderstandings can be programmed for use by individual tutors in their communications with individual students along with personal comments, notes, explanations and suggestions. For detailed reports on an application of such a

procedure see Hartmann-Anthes and Ebbecke (1991) and Fritsch 1989.

This kind of individual student-tutor interaction is also well served by telefax and electronic mail, which should perhaps be regarded less as products of media development than as means to speed up written communication.

The speed and frequency of communication

Speeding up communication is very important. A great weakness of distance education has in most cases been the slowness of the communication process caused by the correspondence method dominating this kind of education. For a student assignment to be sent by the student, received by the supporting organization, corrected, commented on and returned to the student so that he/she receives it within a week is considered remarkably quick and represents a turn-around time that many distance-education institutions (and post offices) seem unable to achieve. This weakness applies also to computerized correction of and comment on students' assignments, unless students can go to a terminal or use a home computer (Jones 1984).

Applications of electronic mail have a potential for solving this problem. The principle is that students submit assignments and papers of various kinds by typing the text into their personal computers (or terminals). By means of the telephone and a modem, these communications are tele-transmitted to the computers of the individual tutors or that of the supporting organization; there they are stored in the tutors' mailboxes (teleboxes) where the tutors pick them up to comment on and return them by telecommunication. With special equipment, so-called printers, both students and tutors can have the complete messages typed out on paper. This is usually necessary. Vicky Vivian reports on experiments with electronic mail in New South Wales, which among other things show that the 'turnaround time of lessons was dramatically reduced from 2-4 weeks to a matter of days, hours or occasionally even minutes' (Vivian 1986: 246).

Undelayed communication can also be brought about by the use of telefax when students fax their assignments to tutors and these also fax them back with their comments. Many tutors actually prefer telefax to electronic mail as it allows them to mark

and comment on papers by hand in the traditional way, writing notes in the margin and between lines etc.

Electronic mail and telefax are very important innovations as they remove the weakness inherent in normal correspondence, its slowness. That this is essential has been shown by empirical studies. There is evidence to show that while students seem to accept and profit from comments and corrections given within a week after an assignment has been completed, they are usually dissatisfied if the delay is of longer duration. Students expect full comments on their submitted work within a few days as possible. Completion rates have been shown to correlate with turn-around time (and also with encouraging, 'reminding' letters on the occasions when students have been passive for a period; Rekkedal 1983).

Some reservations as to the general validity of Rekkedal's findings have been expressed after cross-cultural studies carried out in Australia and other empirical research in the USA (Barker *et al.* 1986, Diehl 1989). When the value of short turn-around times is judged, it is important on the one hand to consider the diminished need of prompt mediated feedback in the cases when supplementary face-to-face tuition is also provided, which is relevant in the Barker study, and on the other hand to make clear what is meant by short turn-around times and delayed feedback, which must be taken into account in relation to Diehl's research, in which immediate scoring is studied, whereas Rekkedal's short turn-around times allow up to a week for a student's assignment to be returned with the tutor's comments. Rekkedal's conclusions no doubt apply to normal distance education.

Turn-around time is closely related to the question of how often students are made to submit assignments for correction and comments. Studies of current practices have shown that the frequency of student-tutor interaction varies to an apparently extreme extent. As in most cases, this interaction is brought about by assignments for submission that are placed at the end of each unit, the length of the units is usually decisive for the frequency of course-inspired communication (see P. 69).

Bååth reports from a comprehensive study of this that in Europe the size of course units varies between as little as eight pages and more than 100 pages. Students have declared their study time per unit to range from about half an hour to 117 hours. The number of study hours per unit is estimated by

representative European schools to range between 2 and 25 (Bååth 1980). In addition, an early FernUniversität study showed that for one particular unit the declared study time varied between 1 and 80 hours (Bartels and Wurster 1975: 4).

The frequency with which communication occurs would seem to be an important issue if it actually serves the supportive functions discussed on pp. 104-5. The relevant question is which frequency exerts the most favourable influence on students' success and satisfaction with their study. This area was first approached in a scholarly way by Ulla Rosberg-Johnson as early as 1966. She designed a plan for an empirical investigation which, however, was never undertaken (Rosberg 1966). A systematic study of the same problem was undertaken by Bååth, who made some interesting experiments (Bååth 1980). He examined three different groups studying the same course material, with a view to finding indications about what could be considered an ideal frequency of assignments ('submission density'). On the basis of the same instructional text one group was required to submit two assignments, a second group four assignments, and a third group eight assignments. (In one experiment, however, the number of submissions required of the three groups was three, six, and twelve respectively.) The total number of assignment questions was constant and the questions were identical.

One of Bååth's hypotheses was that frequent communication opportunities, i.e. what he called submission density, favour learning. While his study, which was carried out with great acumen, showed that more students who were in the groups offered a greater number of submission opportunities than in the low-frequency group started sending in assignment solutions and that higher submission density correlated with 'more positive attitudes to the assignments for submission' (Bååth 1980: 151), no consistent differences were found with regard to course completion or test results. A replicating study (Holmberg and Schuemer 1989) proved no more conclusive. There is thus no empirical evidence to show that the frequency of student-tutor interaction exerts any influence on the learning. This has been found surprising as contact with a tutor is assumed to be helpful. The question arises to what extent tutor contacts have been really helpful in the cases studied - and, of course, in distance education generally. It is probable that the surprising outcome of Bååth's study and the replication mentioned should be interpreted as an indication

that it is the quality of the student-tutor interaction rather than its frequency that is decisive for its effectiveness and/or that high interaction frequency can be expected to be helpful on condition that the interaction is of high quality. Revising the research done on this a decade after his original empirical study Bååth expressed himself as follows: 'If the work of the tutors in the postal two-way communication is of great value to the students, then it would seem highly probable that the density of postal contacts between students and tutor(s) is important' (Bååth 1989: 85). The impact of frequent student-tutor interaction and of the length of turn-round times has been studied by several scholars. For a collection of relevant papers, see Holmberg (1989b). An aspect to which so far little attention has been paid is the motivational value of assignment submission following the completion of a course unit.

Most educators probably agree that goals close at hand (i.e. goals that can be attained in a reasonably short time) are motivating, in that they demonstrate to the student that he or she is making progress. If motivation is taken to promote success, this would seem to indicate that a suitably high submission frequency should be expected to lead to greater success than low submission frequency, provided, of course, that the assignments and the units leading to them are felt to represent steps on the path to the desired competency. This proviso again directs our attention to the types of assignment tasks used and the quality of the interaction.

In advanced study it is on the other hand important to ensure that frequent two-way communication does not lead to a large collection of only small, bity pieces of work. Students at this level must be given tasks that train them to master, digest, and reorganize large quantities of facts, reading matter, rules, theories, etc. and to integrate and interpret them in a way that indicates learning in a scholarly manner.

Personal approaches to student-tutor interaction

Common sense as well as the empirical studies discussed above make it clear that student-tutor interaction to be useful has to be of such a character that students feel it is really helpful to them personally. This means, among other things, that tutors must comment on each individual student's approaches, understandings and misunderstandings, queries and mistakes, and relate

such comments to the overall picture emerging from the study. They can well be combined with pre-produced comments as described on pp. 111 and 121-2 above.

Distance education is unique in providing a one-to-one relationship between student and tutor throughout the teaching-learning process. This facilitates personal approaches. The feelings of personal rapport, which are likely to be brought about by the style of didactic conversation in learning-matter presentation, can be strongly promoted in tutor-student interaction by the personality and tone of the tutor and can have evidently favourable consequences for study achievements. This is borne out by many experiences, for example in a report by Stein on a course with originally low completion rates. After a change of tutors 'from a cold subject-oriented man to someone equally competent in the context who also liked people', the 'percentage of completers was... doubled'. Stein writes: 'A warm, friendly attitude by the instructor leads to higher completion rates and a stronger feeling of satisfaction by the learner; the reverse is also true' (Stein 1960: 165-6). The favourable impact of personal approaches is further demonstrated in research reports by Posz (1963) and Brady (1976).

An empirical study by Torstein Rekkedal is of particular interest in this context. Rekkedal based his investigation on such administrative arrangements as can be seen to promote impersonal approaches; the separation of tutoring from counselling belongs here and so does contact with several tutors rather than one.

Students studying a course composition will normally have to communicate with a number of different tutors, who all feel responsible mainly for their own subject(s). Lack of insight into the students' total situation and the total teaching system may be an obstacle to giving maximum support. (Rekkedal 1985: 9)

By comparing a (control) group taught in this more or less impersonal way with an experimental group given more personal service, Rekkedal tested the influence of the latter. The personal service included a personal tutor-counselor system including introductory letters in which the tutor-counselors introduce themselves to their students, short turn-around times for assignments, and frequent telephone contacts with students. 'The main difference between the treatment of the experimental group and

the control group was that the experimental students communicated with one personal tutor integrating administrative, teaching and counselling functions, which normally are separated' (*ibid.*). Statistically significant differences were found between the two groups. 'The students in the experimental group had a higher completion rate, they were more active in their studies and completed a larger number of study units and courses during the experimental period' (Rekkedal 1985: 13). Research at the Open University also indicates the importance of a personal approach to tutor-student interaction. Gibbs and Durbridge (1976), in a report on the use of audio cassettes, explicitly testify to the importance of a personal style.

Student feedback on Open University courses for example (Durbridge, 1982) suggests that tutors who adopt a friendly, personal approach in their cassette teaching are very highly regarded. Such a style appears to be educationally effective for the way it can evoke the sense of a one-to-one tutorial for many listeners, and appears to draw even the distant student towards active and participative work rather than passive and unthinking listening.

(Durbridge 1984: 99-100)

There is thus evidence testifying to the favourable influence of personal approaches not only to course presentation, as discussed above, but also to tutor-student interaction, whether in writing or recorded on audio cassettes. Undoubtedly the same applies to telephone conversations and other types of non-continuous interaction.

Whatever organization procedure is applied, there is always a risk that tutoring on the basis of assignments may degenerate into mere matter-of-fact correction and comment without any really personal element. This is a waste of valuable opportunities. It is important, indeed, to be fully 'aware of the potential depersonalization of the individual student and the danger of subordination of the real needs of students to the bureaucratic requirements of the institution' (Roberts 1986: 34) and to counteract this by personal approaches. If personal rapport is established, students are likely to enjoy the learning more and to be more successful than otherwise. Empathy remains a highly desirable distance-educator quality.

DISTANCE EDUCATION
COUNSELLING

Counselling has been described as a 'systematic exploration of self and/or environment by a client with the aid of a counsellor to clarify self-understanding and/or environmental alternatives so that behaviour modifications or decisions are made on the basis of greater cognitive and affective understanding' (Maslow, as quoted by Thornton and Mitchell 1978: 2-3).

From the counsellor's point of view, Sewart divides the counselling function into four different groups of tasks: referral (to the proper agency), vocational (career planning), information provision, and coping with students' personal study problems (Sewart 1984: 9-11). For the last-mentioned task, counsellors 'must be close enough to the student to have a thorough knowledge of the student's domestic, work and study circumstances' (ibid., p. 11). Students need support that helps them 'to address problems that are not only practical and organizational but also educational and intellectual' (Kirkwood 1989: 39).

There is much experience to show the importance of counselling services both of the types mentioned and frequently in the form of moral encouragement. Students need information about the paths of study that interest them, where they lead, and what they are like. In many cases they also wish to have access to personal advice both before their study decision and during their studies. The fact that distance students are usually on their own in their study, with the anxiety and problems that they encounter, makes it important for distance-teaching organizations to find ways to offer counselling service. As a rule, students are adults who have a job, social responsibilities, and often a family. A number of everyday circumstances influence their study. Many of them may need help to master difficulties that crop up as a result of their endeavours to combine study with their other commitments. Combinations of study difficulties and personal problems sometimes become so considerable that psychotherapeutic advice is necessary. Few distance-study organizations, unlike many conventional universities, are equipped to deal with difficulties of this kind. However, most try to help their students by counselling of a more general character.

Thus, while counselling in distance education is not immediately concerned with 'problems which are of a serious physical

STUDENTS AND SUPPORTING ORGANIZATION
or mental nature . . . , counsellors advise and support students' (rather than 'patients'; Sewart 1984: 8).

Supporting study skills

Helping students to develop effective study skills is one important counselling aim. A number of rules have been worded for what is sometimes called study technique. One rule of this kind tells students to read with pencils in their hands, to underline what seems important, to list key words, etc. This applies on condition that students are deep-level readers (see pp. 34-6); it is evident that it makes no sense to someone concentrating on the superficial characteristics of the text and on memorizing its words rather than understanding the message.

The general rules that are frequently given about hygienic conditions for learning, for example requirements for sufficient sleep and exercise, healthy food, and fresh air, as well as reasonably undisturbed study (not too much noise, say) are uncontroversial. This also applies to the well-known suggestions about planning self-checking procedures and short breaks during spells of study.

But what about repetition and over-learning? Have we reason to fear that stressing deep learning and problem-solving may lead to neglect of the learning of facts? As mentioned on p. 36 it has been argued that, when students' retention of facts is weak, the sacrifice should be considered small as long as they understand and can apply principles. This, as shown on pp. 60-1, is a questionable conclusion. The two approaches can well be combined with each other.

It is far from easy to lay down universally applicable principles for the teaching of learning strategies and study skills, particularly as these appear to depend to a considerable extent on personal idiosyncrasies. Nevertheless, it seems safe to include in counselling activities the following recommendations:

- 1 Inspire deep-learning strategies by suitable types of testing, as students' choice of learning strategy has been found to be influenced by what is expected of them in examinations.
- 2 Direct students' attention to both the subsumability of new concepts under wider concepts already known and to the

- interrelationships of concepts; cause students to practise subsuming and interrelating (see p. 33).
- 3 Use approaches conducive to problem-oriented learning (see pp. 23 and 35).
 - 4 Apply teaching methods that support individual study and students' own responsibility (see pp. 44 and 71-5).
 - 5 Present learning matter (see pp. 93-5) lucidly and in a thought-provoking way.
 - 6 Encourage activity including internalized conversations, interaction with study material and with tutors along the lines of guided didactic conversation (see pp. 47-50 and 125-7).

Organizing counselling

The British Open University and the Australian 'dual-mode' institutions, such as the University of New England, have, among others, well-known and evidently successful counselling services.

The Open University counselling is characterized by 'continuity of concern for students' (Sewart) and integrates counselling and tutoring in this concern. During the early stage of their degree studies, students benefit from the support of so-called tutor-counsellors who unite the roles of tutor and counsellor and look after a group of individual students assigned to them. Cf. Rekkedal (1985), as discussed on pp. 126-7.

These tutor-counsellors do not wait for students to ask for help but themselves approach those who seem to have difficulties or do not submit assignments for correction and comment. The importance of continuous support of this kind for students' satisfaction and for completion rates has been forcefully stressed by Sewart (1981). See also Sewart (1984); Coleman (1984); Paine (1984).

There are, however, different views of how counsellors should work. Simpson (1977) identifies two clearly recognizable approaches, the GP approach and the interventionist approach.

The 'GP' counsellor operates on the surgery principle. Having established initial contact... he or she assumes by and large that if problems arise the student will contact him or her. It is assumed that students do not wish to be contacted by the counsellor unless there is some very good

reason. The 'interventionist' tends to initiate rather more contact with students.

(Simpson 1977: 61)

Simpson's description applies to counselling at higher levels of university study at the Open University in the UK. The German tradition as represented by the FernUniversität favours the GP approach at all levels of university study (which in my opinion has contributed to very high German drop-out rates). See Thorpe (1988: 97) and on an underlying ideological issue p. 170 below.

Methods and media for counselling

Counselling is usually provided by correspondence, on the telephone and, where possible, face to face. The telephone plays a particularly important part in counselling at a distance. Proper advice must be based on knowledge not only of study paths and study methods but also of students' prerequisites, their formal and informal but real qualifications, and their hopes and wishes. Thus there is normally a written element in such counselling, even in the cases where students and counsellors communicate orally.

A very simple, frequently used form of counselling that has proved to be of great importance is sending encouraging letters to those students who have not submitted papers for a period or who have otherwise deviated from their plan of study (Rekkedal 1972b). Such letters both express concern and ask pertinent questions.

The computer is also used in counselling. An application of this kind is to be found in a pre-study advisory system developed at the FernUniversität in Germany. In connection with an informative booklet, a number of questions are asked. The foreseen replies to these, in their various configurations, are commented on by computer through the automatic selection and use of pre-programmed text modules (Fritsch, Küffner, and Schuch 1979).

In fact, counselling presentations in print, which inform would-be students (making them realize what their study situation, requirements, benefits, advantages, and problems are likely to be, if and when they register), have proved to be very valuable. There is much experience testifying to this in all parts of the world.

Based on the assumption that students will take responsibility for self-counselling', such a presentation 'provides "a structure, a technique which enables a student to engage in that process"' (Moran and Croker 1981)' (Coltman 1984: 47, commenting on the Deakin University counselling package). Counselling by correspondence based on printed materials has been subjected to an illuminating study by Gaskel, Gibbons and Simpson (1990).

Offering students facilities to contact fellow-students through membership of associations (Qvist-Eriksen 1986), students' journals, or in other ways may be part of counselling. On a student-operated support network, see Williams and Williams (1987).

Whichever medium is applied, counselling must evidently 'promote a sense of close rapport between the student and the counsellor'. The latter 'needs to demonstrate empathy' and 'be sensitive to the needs, spoken or unspoken, of the student' (Thornton and Mitchell 1978: 23). These requirements are fully compatible with the personal approaches advocated on the basis of theory and empirical evidence for course development (see pp. 45-55) and tutor-student interaction (see pp. 125-7). Thornton and Mitchell further stress that

the counsellor in his relation with the student should try to work himself out of, rather than into, a job, by promoting and encouraging student self-help. The student will become increasingly more confident about seeking and finding his own answers and solutions to problems and less dependent on the counsellor.

(ibid.)

The processes and outcomes of counselling in distance education have been studied in a way helpful to practitioners by Thorpe (1988), who looks into a number of case studies.

THE ORGANIZATION AND ADMINISTRATION OF DISTANCE EDUCATION

Distance education as a private arrangement between a student and a tutor is possible and occurs occasionally. In most cases known, however, there is an organization responsible for the teaching and a student body making use of its services. Following DeLling I have referred to the former as a supporting organization. This reflects a view of teaching as facilitating learning (see the synonym 'facilitating institute' used by Mitchell 1975). The facilitation includes a great number of tasks, such as information about study paths and study opportunities, pre-enrolment counselling, instructive and advisory interaction with students, provision of learning materials and other activities that help students to learn and reach their goals. Work of this kind requires an organization co-ordinating the work of various specialists and administration of the processes necessary and desirable.

SERVICES REQUIRED

The services that are required in practically all distance-teaching organizations are as follows:

- 1 The development and technical production (or, possibly, the selection and purchase) of printed courses for distance study and supplementary media; the development work requires special facilities for editing, visualizing, audio recording, and for the work of project leaders, editors etc.
- 2 Warehousing.