ABSTRACT
                An investigation of the phenomenon of open education
(OE) was based on three questions. To answer why OE has received so
much attention, researchers surveyed and analyzed arguments that
influenced thinking about OE and establishment of OE institutes. To
answer the question concerning the defining characteristics of OE,
researchers took the following steps: investigated how the concept of
OE was defined in publications that laid the foundation for the
establishment of the Open University of the Netherlands (OU);
analyzed publications about institutes of OE and about OE in general
with regard to the manner in which the concept is used; and conducted
a survey among personnel at the OU. Results showed very little
agreement concerning the precise implications of the concept.
Researchers developed an integrated model and instrument for
analyzing OE. To answer the question concerning how open the OU is,
researchers applied the integrated model and instrument. A second
part of the study defined basic concepts of a general didactic
nature. General didactic and educational literature and the didactic
models used were investigated. Since existing models and definitions
were not sufficiently comprehensive, central concepts were defined so
that they applied to open higher education for adults. A didactic
model was developed that placed emphasis on the didactic functions
that must be fulfilled in education and on the manner in which these
functions must be embodied by the education and the student.
(Contains 98 references.) (YLB)

The Didactics of Open
Education - background,
analysis and approaches

W.J.G. van den Boom

K.H.L.A. Schlusmans

OTIC RESEARCH REPORTS

The Open University of the Netherland is responsible for developing and offering
open, higher distance education in which special attention is paid to innovations in
educational technology. The research in this field is concentrated in "OTIC", that is
the Centre for Educational Technologocal Innovation (Onderwijs Technologisch
Innovatie Centrum).
OTIC is also engaged in running projects for other institutes. Here the Centre makes
use of OTIC's knowledge and experience acquired in research and development.
The series of OTIC Research Reports consists of publications of the OTIC research
projects and aims mainly at the audience of fellow researchers.

OPEN HIGHER EDUCATION RESEARCH PROJECT

An investigation into the didactics of open higher education: theory and practice

In the last three decades a great deal of attention has been paid to the phenomenon
of open education although there is very little agreement concerning the precise
implications of the concept "open education". The Open Higher Education Research
Project sets out to analyze the background and the concept of open education and goes
on to develop an integrated model and an instrument of analysis for open education.
Subsequently the integrated model and the instrument of analysis are applied to the
educational system of the Open University of the Netherlands.
On the basis of this it appears that the Dutch Open University may be described as an
institution which is open on the dimensions of admission and educational setting but
is closed as far as the educational process is concerned.
The central aim of the project is to investigate whether the Open University of the
Netherlands can also be made open on the dimension of educational process without
threatening the openness of the other two dimensions, and if so, how.

THE DIDACTICS OF OPEN EDUCATION - BACKGROUND, ANALYSIS AND APPROACHES

OTIC research report 9

W.J.G. van den Boom
K.H.L.A. Schlusmans

CONTENTS

PART I   OPEN EDUCATION

case for open education on the grounds that adults learn in different ways, and have a different relationship to their teachers, than young people do.

The various factors put forward in support of open education have been presented in the following diagram, which illustrates the dichotomy between political, social and economic factors on the one hand, and educational factors on the other.

POLITICAL, SOCIAL
AND ECONOMIC FACTORS
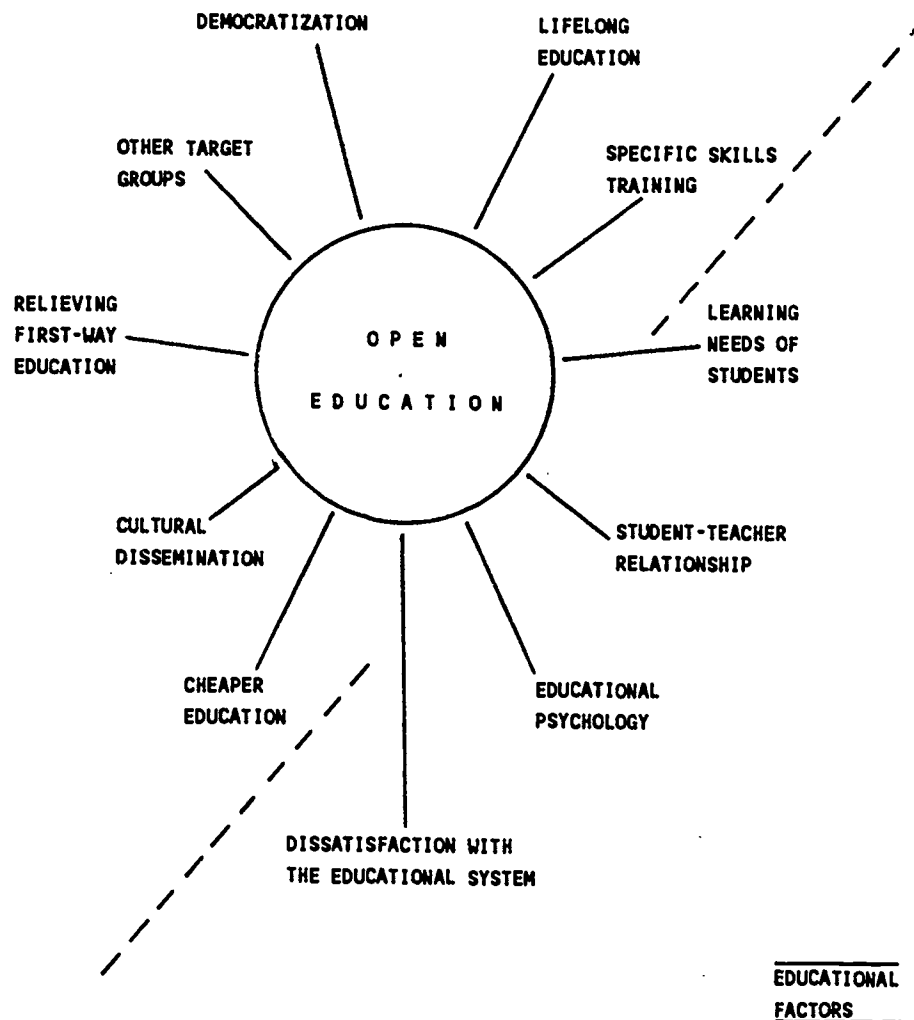
2.2 Political, social and economic factors

In the case of the political, social and economic factors, we deal with the following points: democratization, lifelong education, relieving of first-way education, the search for

1 INTRODUCTION

In "An investigation into the didactics of open higher education: theory and practice", we concern ourselves with the nature of open education.

The importance that has been attached to open education in the last three decades is reflected in the establishment of institutions such as the Open University and Open College in Great Britain, the Open University in the Netherlands, and the Study Centre for Open Higher Education (Studiecentrum voor Open Hoger Onderwijs) in Flanders (Belgium). The interest in open education is also encountered in the educational literature of the eighties, where we find publications bearing titles such as "Beyond Distance Education - towards Open Learning", "Openness and closure in Distance Education" and "How to win as an Open Learner", and where we find the journal "Teaching at a Distance" changing its name to "Open Learning" in 1985. As Grugeon puts it in his editorial note in the second issue of "Open Learning": "Open learning is the fastest growing area in education."

Soon after we started our research into the didactics of open higher education it became evident that there is no concensus with regard to the term "open education". "The Directory of Learning Opportunities in Scotland" (Shaw, 1988 p.VI) states that: "There is no universally agreed definition of open learning." This is also to be seen in a study by Marshall (1981, p.181) who writes that "...different educators seem to place emphasis on somewhat different components of the concept. Because of these differences in the salient features of openness, confusion persists in research studies (as well as in practice)". Accordingly, an important aspect of our research has been to set out by investigating the definitions of the term "open education".

As a result of open education's being such an imprecise concept, the problem arises that statements and theories concerning open education tend to employ different terminology. In Anglo-Saxon literature open education is discussed under the banner of: Open Education, Open Learning, Adult Education, Adult Learning, Independent Learning, Independent Study, Autonomous Learning, Self Study, Self Instruction, Distance Learning and Self Managed Learning. The Dutch literature also contains a plethora of different appellations. This was taken into account in our literature survey, in which we did not restrict ourselves to "open education" or "open learning".

In this paper we should like to investigate the phenomenon of open education in more depth. In so doing, the following three questions occupy a central position:
- Why has open education received so much attention in the last three decades?

- What are the defining characteristics of open education and how can they be operationalized?
- How open is the Dutch Open University?

In order to answer the first question we carried out a survey and an analysis of the various arguments which have influenced thinking about open education and the establishment of institutes of open education. A theoretical consideration of this material may be found in Section 2.

With regard to the second question, we began by investigating how the concept of open education was defined in a number of publications which laid the foundation for the establishment of the Dutch Open University. Subsequently we analyzed a number of publications about institutes of open education and about open education in general with regard to the manner in which the concept "open education" is used. In addition, with the aid of a questionnaire we conducted a small survey among a number of educationalists employed at the Dutch Open University. As we have already indicated, the result of our investigations showed that there is very little agreement concerning the precise implications of the concept "open education". The significance of the literature survey and the questionnaire may be found in Section 3.

On the basis of these results we went on to develop an integrated model and an instrument for analyzing open education in our research. These are presented in Sections 4 and 5 respectively.

In answering the third question, we applied the integrated model and the instrument of analysis to the Dutch Open University. This leads in Sections 6 and 7 to a number of remarks about the openness of the Dutch Open University and to a plea for further research.

2 THE INTEREST IN OPEN EDUCATION

2.1 Introduction

As has already been mentioned, in the last three decades a great deal of attention has been paid to the phenomenon of open education. This has resulted in a large number of publications about open education and the establishment of various institutions for open education. In this section we survey and analyze the arguments connected with open education for adults.

With this purpose in mind, we began at our own front door. In the paper "Open Hoger Onderwijs" (1977) which lays the foundation for the establishment of the Dutch Open University, a number of reasons are cited for the increasing attention bestowed on open higher education for adults. These factors include:
- equal opportunity;
- lifelong learning and recurrent education;
- the necessity for second-way education with a view to the efficient organization of higher education; and
- financial considerations.

Thorpe and Grugeon (1987) report the following aspects as characterizing certain forms of open learning:
- reaching a larger target group;
- education can more flexibly relate to changes in society: the questions with which people find themselves confronted cannot be answered using their present state of knowledge alone;
- education can be made accessible to people who would otherwise not receive it; and
- the needs of the individual student can be taken into account and education designed to meet those needs.

At a conference on the occasion of the tenth anniversary of the British Open University, Neil (1973) sums up the answers to some questions about the essence of "Distance Learning Systems" by referring to three sorts of factors:
- factors relating specifically to the educational system, such as shortcomings in the present educational system or the difficulty of the present educational system in serving new target groups;
- social factors such as high unemployment, a greater demand for opportunities for self-development and a growing need for citizens to participate actively in social affairs; and
- economic factors such as a deficiency of adequately trained employees and a growing need for in-service, day-release and on-the-job training.

In the literature in the fields of educational psychology and the philosophy of education, Knowles (1975, 1984), Tough (1974) and Cunningham (1986) are among those who argue the

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new target groups, specific skills training for adults, the search for cheaper education and the attempt to disseminate culture more widely. We do not draw a distinction between political reasons on the one hand, and social and economic reasons on the other, on the grounds that political reasons are generally based upon social and economic considerations.

Democratization

The first important argument in favour of open education is the democratic notion to the effect that everyone who is capable of benefitting from (higher) education should have the opportunity to participate in it. This argument played an important part in the establishment of the Open Universities in Great Britain and the Netherlands. In both cases the establishment of an Open University was strongly supported by the then ministers of education, both socialists, namely Wilson in Great Britain and Van Kemenade in the Netherlands.

Rumble (1982, p.10) offers the following summary of the objectives of the British Open University as formulated by the Planning Committee (1969): "...to provide opportunities at both undergraduate and postgraduate levels of higher education to all those who, for any reason, have been or are being excluded from achieving their aims through an existing institution of higher education."

Second chance education is a central concept of the process of democratization. From its conception the Dutch Open University has had the objective of offering second chance education. In the paper "Open Hoger Onderwijs" (1977, p.20), second chance education is spelled out as follows: "...the participants, having been unable to make use of their first chance at education, are offered a second chance. When we refer to second chance education, it is generally people from the lower social classe, who performed poorly at school in their youth, who are the ones who come to mind. However, it is also relevant in the case of those people who had inadequate educational provision as a result of socio-cultural factors (women are a particularly clear example in this regard), or who had limited opportunities in their youth, or whose education was impeded by various other circumstances, such as family problems, poor health or financial difficulties."

In an analysis of Open Learning Systems in the United States, MacKenzie et al. (1975) point out that open education is a response to the fact that in the United States, 76 million adults never completed high school. This point mainly concerns ethnic minorities and the lower social classes, who frequently fail to find their feet in conventional education.

The importance of democratization in the United States is
also reflected in the words of the 1976 Lifelong Learning
Act: "American society should have as a goal the
availability of appropriate opportunities for lifelong
learning for all its citizens without regard to restrictions
of previous education or training, sex, age, handicapping
condition, social or ethnic background or economic
circumstance." (See Cross and McCartan, 1984, p.32)
The notion of democratization has led in the first instance
to opening higher education with regard to admission. For
the first time, higher education has become available to
those people who do not possess the formal entrance
qualifications. Moreover, the notion of democratization
also has striven to remove the cultural and financial
obstacles that can impede access to education.

Lifelong education

The increasing attention bestowed upon open education was
also explained by the growing importance of lifelong
education and adult education which commenced in the early
sixties.(See Houtkoop, 1982.) Cross (1978, p.1) starts her
book on adult education with the words: "It is quite
possible that lifelong learning now outranks motherhood,
apple pie and the flag as a universal good." Terms such as
"lifelong education" and "recurrent education" indicate that
formal learning can no longer be restricted to young people.

In 1960, a UNESCO conference resolved to accept the
principle of lifelong learning and in 1967, at an
educational conference of the Council of Europe in Marly le
Roi, the principle of lifelong education was introduced into
Europe. To quote Houtkoop (1982, p.15): "Despite
differences in areas of expertise, all the delegates agreed
to strive to achieve a system of open education for adults
which was open in three respects, namely:
- Open participation: the programme of study is accessible
to all individuals and groups in society without any
restriction whatsoever and is designed to meet the
participants' individual requirements.
- Open choice of objectives: a broad-based curriculum in
which as many areas of human interest as possible are dealt
with and in which personal preferences can be included
wherever possible.
- Open learning processes: teaching approach, method,
materials and so on are adapted to and derive from the
participants' interests and experience.
Finally, lifelong education also receives a prominent
position as an argument for open education in the paper
"Open Hoger Onderwijs" (1977).

Relieving first-way education

In the sixties and seventies, the number of students in
higher education increased dramatically. The existing

institutions were unprepared and were unable to cope with
the steadily increasing stream of students. Open education,
particularly in the form of distance education, was able to
provide a solution. (See Holmberg, 1977 and Kaye and
Rumble, 1981.) The aspect of relieving first-way education
also played an important part in the implementation of open
education in third world countries. (See Chaudhri, 1979.)

Other target groups

The complexity of the phenomenon of open education is
evident from the fact that the very converse of the
arguments cited also have a contribution to make in
explaining the attention it has received. Bradley (1978)
writes that the interest in open education arises mainly
from the need of traditional educational institutions to
attract new target groups. He maintains that the numbers of
students in conventional education are either stable or
decreasing, with the result that education has become more
concerned with adults and mature students. These mature
students generally have a job or a household and it is
necessary to offer them education that complies with their
circumstances and requirements. Open education is able to
do so.

It also appears from a report of the South Limburg Open
Learning Centre (Open Leercentrum Zuidlimburg) (1988) that
the implementation of open education may be supported by the
fact that demographic developments will reduce the intake of
students entering higher education from the school system.
Accordingly, the education they offer is obliged to turn to
new target groups and to older students.

Specific skills training for adults

As the knowledge and skills which people acquire become
outdated more quickly today as a result of social and
technological change, modern society can no longer confine
itself to a period of continuing day education up to an age
of about 24. Several institutions of open higher education
have been established in the first instance to meet the
demand for in-service training and re-training for teachers
or skilled technical staff. (See "Open Hoger Onderwijs",
1977.)

MacKenzie et al. (1975) p.24) maintain that Open Learning
Systems are in the first place a response to the
"...challenges which arise from the general and continuing
effect of technology on society as a whole, on its economic,
civil and social life, and partly from the demands for new
and changed educational services which they generate". Kolb
(1984) points out that Americans change jobs on average
approximately seven times, and careers three times, in the
course of their lives, making both in-service training and
re-training indispensible professionally. As a result of

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its flexibility, open education is able to meet the needs of adults in search of specific training. Concerning this training it is necessary to depart from traditional curricula and to replace them with training which is directly and exclusively related to the learning needs and job requirements of the participants.

Cheaper education

Another argument for open education which is frequently encountered refers to the need for a cheaper form of education. Open education in the form of extensive education independent of the teacher offers a solution by decreasing educational expenditure. As students generally study at home they do not need expensive lecture theatres and can make use of existing facilities (libraries, laboratories, etc). Thus open education in the form of distance education is cheaper than face to face education when large groups of students are involved. The savings are mainly in the area of infrastructure and personnel costs. (See Henry and Kaye, 1985 and Snowden and Daniel, 1979.)

Contribution to the dissemination of culture

Education transmits values and ideas about culture and places people in a position to benefit from the attainments of their culture. Hence, education functions as a custodian of cultural heritage, which it transmits to each new generation. As a result of its easy accessibility to large numbers of people, it is clear that open education has a significant contribution to make in helping to realize such aims. (See "Open Hoger Onderwijs", 1977.)

2.3 Educational factors

In addition to political, social and economic factors, a number of educational factors supporting the introduction of open education should also be mentioned. These factors can be divided into four aspects, which are all interconnected, although we will deal with them separately in our analysis. The four aspects are: increasing dissatisfaction with the existing educational system; new learning needs of students; principles of educational psychology; and the relationship between students and teachers.

Increasing dissatisfaction with the existing educational system

MacKenzie et al. (1975, p.25) maintain that open educational systems do not only arise in response to social and economic change, but that "...they reflect also the prevalent concern and disillusion about education". Students feel alienated from the traditional curriculum and express serious doubts about its relevance. This frequently

leads to situations in which "...large numbers of adults have closed their minds to any further educational experience". Moreover, Kolb (1984, p.5-6) points out that many students experience that what they have learned in their classes has very little practical application on the employment market, although this has begun to some extent to lead to a "... marked trend toward vocationalism in higher education".

Students' learning needs

Once students' learning needs have been established, open education is in a position to meet them. In a study on learning projects, Tough (1971) came to the conclusion that a typical adult devotes an average of 700 hours per year to learning. Only a fraction of this time is spent in a teaching context. On the contrary, most learning projects are carried out on an individual basis. Nevertheless, it appears that many of these adults do need assistance in doing their projects. This assistance is not available in conventional education, whereas an open educational context is ideally suited to meet this need.

Another aspect with regard to learning needs is the fact that, in an ever-changing society, adults have a continual need for re-training or in-service training. This kind of training also frequently means that adults study in their leisure time or that companies and other organizations have to make time available for training during working hours. This raises the question of training effectiveness. Nobody wants to spend time on learning aspects of a subject which are not directly job-related. The "Directory of Open Learning Opportunities" (Shaw, 1988, p.xi) maintains that open learning systems are of particular importance with regard to "...the belief that organizations and individuals will take up training only when it relates to their own specific needs". Training is required to meet highly specific needs and open education is in a position to offer far more possibilities than conventional education.

Brundage and MacKeracher (1980, p.36) conclude that: "Adults tend to experience a need to learn quickly and get on with living. They are often reluctant to engage in learning activities or content which does not appear to have immediate and pragmatic application within their life."

Principles of educational psychology

Moore (1983) announces a Copernican revolution in education as interest has shifted from teaching to learning and studying, and from teacher controlled learning to to autonomous learning. In the ideas about adult learning that lie at the very foundation of open education we find a central notion which states that the quality of the learning process increases in proportion to the degree to which

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learning originates from the direct, real needs of the student and has an immediate connection with the student's purposes, motivation, interests and ability. In other words, the quality of learning increases to the extent that the student receives the opportunity to learn what he or she desires to learn and is capable of learning. (Aarts and Van der Linden, 1979.)

As early as 1926 we find Lindeman writing: "In adult education the curriculum is built around the student's needs and interests. Every adult person finds himself in specific situations with regard to his work, his recreation, his family-life, and his community-life, etcetera - situations which call for adjustment. Adult education begins at this point. Subject matter is brought into the situation, is put to work when needed..." and "...the resource of highest value in adult education is the learner's experience". (See Knowles, 1984, p.29.)

The belief that adult learning differs fundamentally from that of young people, and that as a result adult education requires a different approach was stressed and discussed at length in the seventies. Knowles (1975, p.18) assumes that adult learning is primarily "self-directed learning": "In its broadest meaning, "self-directed learning" describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, choosing and implementing appropriate learning strategies and evaluating learning outcomes".

These ideas about the distinctive character of adult learning have been further elaborated and resulted in the following principles and assumptions lying at the foundation of the various forms of open education (see Knowles, 1975; Knowles, 1984; Brundage and MacKeracher, 1980; Kolb, 1984; Brookfield, 1983; Cross, 1978; Wedemeyer, 1978; Alman, 1983; Moore, 1977; Moore, 1983; Lawson, 1979; Cunningham, 1986; Boud, 1988; Shuell, 1988; and Granger, 1988):
- Adults draw heavily on their personal knowledge and experience in the teaching situation. This has both a positive and a negative influence on the manner in which they learn and on their learning needs.
- Adults are more motivated to learn and learn more effectively when they discover that the content of what they are required to learn corresponds with their needs and interests.
- Adults have a greater need to shape their own lives and therefore also their learning.
- Adults do not only learn in a formal teaching context. They also learn extremely effectively by means of experiential learning. "Significant learning may be obtained outside formal educational settings - at work, at home, in community activities, through travel and from

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individual reading and study." (See MacKenzie et al., 1975, p.377.)
- Individual differences become greater as people grow older and adults display considerable differences in the circumstances surrounding their studies, the time they require and their learning style as a result.

The notions that adults wish to shape their learning, and that this is indeed desirable, have sparked off a great deal of controversy. (See Davenport, 1987; Podeschi, 1987; and Caffarella and Caffarella, 1986.) Candy's position is that it is open to question whether it really is the case that adult learning should be self-directed. (See Candy, 1987.) Concerning this point he refers to several studies from which it appears that students frequently exhibit extremely dependent learning styles. (See also Vermunt, 1987, in an investigation concerning students at the Dutch Open University.) Candy states that even Rogers (1969) points out that only one third, perhaps as few as one quarter, of the student population is genuinely self-directed. Candy raises the question as to whether the students can really be self-directed if they are not acquainted with the subject. He goes on to argue that there is a danger that self-directed learning can lead students to retain their own bad learning habits, concentrating only on their strong points. How is education to react to this? What requirements must education itself insist on? Candy's final point is to draw attention to the danger that students who feel ill at ease in a self-directed learning situation may become demoralized and unsure of themselves. He concludes that: " ...although it may be true that adult learners have the capacity to direct their own learning, and many also to direct their own instruction, they also have a right to avoid what one author has dubbed 'the tyranny of self-direction'". (See p.173-174.)

Similarly, Kidd (1983, p.74) states that one of the misconceptions concerning self-directed learning is the assumption that students have sufficient experience to know what their learning needs are or precisely where their interests may lead. He continues as follows: "One way to help people discover an interest is to expose them to a range of experiences. As William Hocking once said, 'There is many a horse which does not know it is thirsty and which, when led to water, finds that it wants to drink'."

On the other hand, the notion of self-directed learning has been favourably received in the field of developmental psychology. Recent studies in developmental psychology into the learning and thinking processes of adults show that there is a clear difference between an adult and an eighteen year old. It is not the case that the development of thinking and learning simply ceases on one's coming of age. Development moves in the direction of "gaining

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ever-increasing amounts of control over our thinking and therefore our lives". (See Allman, 1983, p.119.)

The point at issue with regard to self-directedness is this: Is open education necessary because adults are generally capable of directing their learning themselves? Or is it because the ultimate goal of adult education is to form autonomous learners? In other words, is self-directed learning a basic assumption or a goal of adult education? The above mentioned critics approach self-directed learning as an assumption. Elton (1988, p.216) has this to say about learner autonomy: "An accomplished autonomous learner is one who has the capabilities for learning in an independent manner, but who can recognize the advantages of choosing alternative models of learning where these are considered more appropriate to the learning goals in question." He maintains that we should not assume that all adult students are already autonomous learners. Autonomous learning ought rather to be seen as a process which should occupy a central position in education. The central argument in favour of open education is thus not so much the fact that adult students are meant to be already capable of self-directed learning, but rather that adult education should set out to create autonomous learners in the first place. The view that self-direction is a process rather than an assumption is shared by Mossman and Stewart (1987), Oddi (1978) and Burge (1988, p.19) who writes: "We need not so much admire the independence of learners as we need to facilitate the interdependence of learners and the collaboration of educators." Another author, Mezirow (1983), draws on the philosophy of Jürgen Habermas to form a theory of adult learning. He maintains that the concept of self-directedness should be both a goal of and an approach to adult education.

Both the view holding that self-directed learning should be regarded as an important goal of adult education, and that in which it is argued that adults are essentially autonomous learners, can be cited as decisive arguments for turning to open education.

The relationship between teacher and student

Changing attitudes towards the relationship between teacher and student also provide arguments for open education. Knowles (1984) draws attention to the fact that the student-teacher relationship in adult education and traditional education for young people differ considerably. In this regard he distinguishes between pedagogy on the one hand, and what he calls "andragogy" on the other. In the case of pedagogy, the student is in a dependent relationship to the teacher. This relationship is characterized by the teacher's superiority and authority. However, in andragogy there is a relationship of equality which is characterized by mutual respect, cooperation and informality. In a

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pedagogical relationship all decisions concerning education are made by the teacher, whereas in andragogical relationships decisions are made and negotiated jointly.

Tough (1971, p.150) writes that: "Educational institutions should encourage the instructor to feel equal to the students. He will not be an effective helper if he feels superior or inferior in person."

Equality in the relationship between teacher and student is also placed in a central position in humanistic psychology The student-teacher relationship is a close, human, communicative relationship between authentic persons. (See Rogers, 1984, p.166.) Erkamp reports an attitude to adult education in which it is regarded as a joint encounter in which student and teacher continuously negotiate learning activities and the priorities associated with them. The teacher is a partner, a companion, and not someone standing a rung or two above the student on the hierarchical ladder.

This view, in which teacher and student function as equal partners in the educational process, is at the very foundation of thought about open education.

2.4 Conclusion.

The arguments put forward in favour of open education differ widely. Some support each other, while others diametrically contradict each other. For example, we have seen that both the relief of first-way education and the need of traditional education to attract new target groups are presented as arguments for open education. It is also interesting to note that the economic argument regarding cheaper, more efficient education and the ideological belief concerning the manner in which adults (should) learn support each other in the case of open education.

It is clear from our discussion of the above-mentioned arguments that these various different arguments give rise to different emphases, which in turn lead to different forms of open education. These forms will be considered in the following sections.

3 DESCRIPTION OF THE PHENOMENON OF OPEN EDUCATION

3.1 General attitudes and definitions

A great deal has been written about the concept of "open" with respect to education. However, as we have already said, there is little concensus regarding the definitions employed. In this section, we shall present open education according to some definitions and descriptions which we have borrowed from theoretical considerations and from details of institutes and projects claiming to be "open". In addition, we present the results of a small survey within the Dutch Open University. Thus, by providing an overview of definitions we begin at our own front door.

The concept of "open education" at the Open University of the Netherlands

The Open university of the Netherlands (Dutch Open University) offers her students open higher distance education. In the paper "Open hoger onderwijs, advies tot oprichting van een open universiteit" ("Open higher education: thoughts on establishing an open university") (1977, p.15), the following statement may be found: "We define open higher education as education which:
(1) Concerning level assumes a basic education of at least eleven years conventional day education or a similar level of knowledge and skills attained through social experience.
(2) Is designed for adult students who wish to combine their studies with a profession or with responsibilities in the home; and,
(3) in addition, as the result of a liberal admissions policy, is accessible to students who are not in a position to benefit to the full from conventional higher education for one reason or another."

Thus we see that this definition includes elements which are connected with the possibility of unrestricted admission and the characteristics of the intended target groups.

The paper "Nota open universiteiten in Nederland" (1979) has another, more detailed answer to the question "What is open higher education?" According to this paper, the following elements should be distinguished in talking about open education:
- Open admission. Admission does not depend on the student's being in possession of a particular certificate.
- Open programming. Here we are concerned with the possibility for the students to make up their own programme of studies and to interrupt these studies for longer or shorter periods of time. This latter point means that there are no fixed curricula to be completed in a given time span.
- Free pace of study. This element of openness is to do with the extent to which students are free to determine

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their own pace of study.
- Distance education. This element of openness deals with
educational forms and educational materials. It concerns
the chosen form of education as opposed to face to face
education. Distance education is to do with providing
education as far as possible in the location where the
student wants it.

In a word, the Dutch Open University claims to be open in
the following sense: Without possessing any formal entrance
qualification, students can study courses in whatever
sequence they prefer. This process of study may occur at
the students' own pace, wherever and whenever they wish.
Later on we shall return to the question of whether this is
indeed possible in practice. The point we wish to consider
first is whether "open" might possibly have other meanings
with reference to education. In order to obtain a reliable
answer to this question we looked at the literature and
conducted a small survey of our own. We should like to
begin by presenting our findings.

A survey within the Dutch Open University

The Dutch Open University has a special department
responsible for the development and implementation of the
didactics of open higher distance education. This
department, which is known as the "Centre for Educational
Technology and Innovation", is staffed mainly by
educationalists and educational technologists. Our
investigation commenced by presenting our colleagues in this
department with the questions: "When you talk about open
education, what exactly do you mean? In what senses do you
use the term "open" in this connection?

We found that the answers may be grouped under four
headings, namely Admission, Organizational Aspects, Key
Educational Processes, and Miscellaneous. We should now
like to present some of the reactions we received under each
of these headings in order to provide an overview of the
field covered by our survey.

Admission
- admission without formal restriction
- free education
- absence of restrictions with regard to age, previous
  knowledge or nationality
- other entrance requirements than those demanded in
  traditional education

Organization
- designed to be independent of place, time and pace
- no fixed period within which studies are required to be
  completed
- absence of fixed groups

Key Processes
- freedom to determine objectives, form of instruction and didactic approach
- the student determines what he or she wishes to learn
- the students have a wide choice in making up their study programmes
- individually tailored didactic approach
- education according to demand
- education without authority: an even contribution from both teacher and student - outside existing learning paths

Miscellaneous
- open education is that form of education which makes use of any instrument that is favourable for achieving the objectives
- the student does not have to conform to that which is being offered by the educational institution; on the contrary, the institution takes the wishes of individual students into account, at least within certain limits
- open education is open-ended and is never completed
- open education is by definition unstructured in the sense that in the development stage, as few assumptions as possible are made with regard to students' prior knowledge, learning styles and learning needs.

This selection of reactions to our questions shows quite clearly that the notion of open education is interpreted quite diversely even within a single department of one institute of open education.

The concept open education at the British Open University and the Empire State College

We intend to continue our investigation of the interpretations of open education by referring to a number of definitions of the concept as they are presented by other institutes of open education. Several of the aspects of openness mentioned above in connection with the Dutch Open University are also to be found in the systems of the British Open University and the Empire State College in Saratoga Springs, New York.

In a speech in 1969, the first Chancellor of the British Open University, Lord Crowther, described the openness of that institution as follows: "We are open, first as to people... We are open as to places... We are open as to methods... We are open, finally to ideas..." (See Ferguson, 1975, p.19-20.) It is evident that several aspects of openness were of primary importance in the establishment of the British Open University: open admission, freedom of place of study, the use of television and radio for transmitting the material to the students and openness with respect to the subject matter and the objectives.

Nevertheless, the precise interpretation of the concept of open education has always been a point of controversy at the British Open University, as may be seen in the collection of papers "Open Learning for Adults". Thorpe and Grugeon, the editors of the collection, put it like this: "Open learning is an umbrella term which refers to a whole series of varied educational initiatives and provisions. (...) We do not see "open learning" as an academic concept, something developed out of research and educational theory which we should expect to carry precise definition - at least not in this early stage of its development." (See Thorpe and Grugeon, 1987, p.2.) Thorpe and Grugeon also refer to the definition drawn up by the Council of Education and Technology in 1980: "An open learning system is one which enables individuals to take part in programmes of study of their choice, no matter where they live or whatever their circumstances." They add that open learning is not an absolute, "all or none" phenomenon. We should rather think in terms of a continuum on which degrees of openness can be recorded. (See also Lewis, 1986.)

In the same collection of papers, Webberley and Haffenden (1987, p.138) point out that: "There exists no universally agreed, adequate and comprehensive definition of open learning." They conceive of open learning as a system enabling participants: to study in the most convenient location; to be admitted without having to fulfil any entrance requirements; to study at their own pace; to leave the system according to their own requirements; to be free to appeal for supervision at their own discretion." This interpretation allows various forms of education to be seen as "open learning".

The Empire State College was established in 1971 as part of the State University of New York (SUNY) with the express purpose of meeting "...the educational needs of those persons who require alternatives to traditional time, place, content and form of higher education. (...) To provide a clear and effective alternative, Empire State College developed its instructional program based on three principles: (1) Effective learning derives from the purposes and needs important to the individual; (2) Learning occurs in varied ways and places; (3) Styles of learning and teaching may differ significantly from person to person and from one setting to another." (See Granger, 1988, p.2.)

These assumptions are also evident from other publications of the Empire State College, for example: "Empire State College is committed to the idea that effective learning is based on purposes and needs that are important to the individual; that learning occurs in varied ways and places; and that different people learn in different ways." (See Empire State College, 1982, p.5.) In order to achieve these aspects of openness, the Empire State College makes use of learning contracts which lay down what each student

will study, how they will study it, and what support they will receive from the College.

The fact that the Empire State College attempts to keep the aspects of time, place and pace open in the instructional process is explicitly referred to when they say that: "The learning contract system allows students to study at convenient times and places and at a pace suited to their needs..." and "They are based on the student's degree program and describe in detail sets of learning activities, including: the topics of study; the means the students will use to achieve the study goals; the resources to be used; what the student will do and produce; how long it will take; how much credit will be granted for successful completion; on what basis and by whom the work will be evaluated." (See Empire State College, 1984, p.4 and p.32.)

Granger (1988) describes how the Center for Distance Learning was set up at the Empire State College in order to create an efficient approach to individualized, student-centered education in which it would not be necessary to start from scratch each time a study contract is drawn up. The Center develops courses in the form of prefabricated, structured units which can be included in each student's individual program by means of a study contract.

Thus alongside the aspects of openness pursued by the Dutch Open University, in the case of the Empire State College we also find the attempt to take an open approach to what students study and how they study it. (Cf. also for example Harry and Raggatt, 1984; Empire State College, 1985; and Empire State College, 1986.)

The concept of open education in the literature

Only a few studies concerning open education have been written in Dutch. Hinnekint (1984) devotes a separate chapter to it in his "Perspectieven voor Volwasseneneducatie? - een bundel concepten en modellen voor de uitbouw van de volwassenenvorming in de toekomst" ("Perspectives for adult education - a collection of concepts and models for the extension of adult education in the future"). He strongly supports the findings of Van Enckevort (1980). Hinnekint comes to the conclusion that "...openness in adult education is represented by three aspects: (a) open access, in other words the attempt to reach more people by making education freely accessible; (b) the attempt to design education to meet the needs and abilities of the individual and society by means of more open curricula and study programmes; (c) purposeful employment of a variety of means in supporting the learning process in order to make education both better and cheaper.

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This is a rather broadly conceived view which starts from
the political, social and economic arguments and assumptions
and lends itself to a wide range of different
intepretations. We should like to approach the topic more
specifically. The term "open education" has also received
attention in recent Anglo-Saxon publications. We shall now
discuss a number of the definitions and analyses to be found
there.

We begin with Race (1986), who describes what he understands
by an "open learning programme" as follows: "Imagine there
were such a thing as a 100% open programme. The learner
would have control - complete control - over all sorts of
decisions. Where to learn? When to learn? What to learn?
How fast to learn it? How much to learn? Whether to have
your learning tested? How to have your learning tested?
Whether to use the help of a tutor? Whether to work with
fellow learners? Whether to do any practical or hands-on
work? Whether to decide to give up learning?" (See Race,
1986, p.9-10.) On the basis of the above questions, Race
defines openness as the extent to which students are at
liberty to make decisions about different aspects of their
studies. The more the students may decide independently,
the more open the educational system.

In a comparative study of a number of institutes of adult
education, Spencer (1980) investigated how open these
institutes were in relation to the students' freedom to
determine their own course of study. He states that:
"Openness does not lend itself readily to precise
measurement and it has been suggested that the only way to
get at the extent of the openness is to assess the extent to
which a system is closed. In our case, closure corresponds
to limitations on the student's freedom of action." (See
p.28.) He distinguishes six factors of importance in
determining the openness of a system of education:
- who the objectives are set by;
- freedom of study approach;
- freedom of pace of study;
- freedom of place of study;
- how and by whom the results are evaluated; and
- the selection and supervision of students.
With regard to these six factors, Spencer draws a
distinction in assessing openness in so far as we are
concerned with large-scale educational programmes, specific
courses, and parts of courses. According to Spencer, the
degree of openness will depend on the level of analysis.

Marshall (1981), who we have previously referred to, offers
a definition of open education drawing on Horwitz's 1979
approach. He states: "Horwitz has synopsized this concept
as a style of teaching involving flexibility of space,
student choice of activity, richness of learning materials,
integration of curriculum areas, and more individual or
small-group than large group instruction." (See p.183.)

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This definition interprets open education within the context of face to face education. Here flexibility is seen as essential, both concerning the content and the didactic aspects of instruction.

De Silva maintains that to be open, education should allow students to work independently with preprogrammed materials which are made available by resource centres or libraries. The students' work should be controlled and coordinated by the institute of education, with the result that a great deal of what the student studies is laid down by the institute, although the student does study as indepentently as possible. Thus De Silva equates open education with self-study. (See De Silva, 1987.)

Kwiatkowski (1988) introduces the concept of "open pedagogy", by which she means: starting with the students and their "...background, motivation, past academic histories, and perceptions of and attitudes to the course they have chosen to follow." (See p.59.) In her view, neither the courses of study nor their organization are of central importance. The essence of "open pedagogy" is concern for the student.

Garner (1988, p.55) relates how open learning was introduced at Lucas Industries: "No one really knew very much about it or what it could achieve." In practice it emerged that the company was actually in search of a system of study that could function independently of a trainer. The trainer's roles were analyzed and then transfered to the media of instruction. The underlying philosophy was that "...the learning process needs to be well-managed to ensure that the student progresses through the material in the way the course designer intended." Hence, Garner's view disregards the importance of flexibility and of student responsibility for the objectives to be achieved and concerning the materials and strategies to be used. He interprets open education as independence from a trainer.

Lewis (1986, p.6-7) suggests that the openness of educational systems should be considered with regard to the extent to which there are barriers which either hinder, or actually prevent the students from using educational facilities. He cites four areas in which such barriers arise and presents some examples of each of them:

Barrier	Example
Physical/Time	- location of course
	- times of classes
	- times of exam
Educational	- content of course
	- sequencing of content
	- method of delivery
	- inappropriate objectives

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Individual	- lack of awareness of what is available
	- lack of confidence
	- entry requirements
Financial	- cost of travel and fees
	- cost of release from employment
	- cost of course materials

Openness can be assessed by analyzing educational systems with regard to the existence of barriers. Lewis presents an instrument, "The open-closed learning continuum", which may be used to carry out such analysis. He adds that "...an open learning scheme can then be analysed according to what choices are given to the learner and what degree of choice is allowed..." and "In a completely open system, learners can learn whatever they wish, for whatever reasons, wherever they choose, however they choose. But schemes are never totally open in all these ways."

Michael Moore (1983) regards open education as a multi-dimensional concept and uses the term "independent study" to describe it. Moore analyzes independent study with reference to distance education. To characterize distance teaching programmes he applies two variables to what he calls the "transactional distance". The first of these variables is "dialogue", which refers to the degree of direct communication between the student and the educator. The second variable is "structure", which concerns the extent to which a given educational programme is responsive to the learners' individual needs.

	Type	Programme Types	Examples
Most Distance	—D—S	1. Programmes with no dialogue and no structure	Independent reading study programmes of the 'self directed' kind
	—D+S	2. Programmes with no dialogue but with structure	Programmes such as those in which the communication method is radio or television
	+D+S	3. Programmes with dialogue and structure	Typically programmes using the correspondence method
Least Distance	+D—S	4. Programmes with dialogue and no structure	E.g., a tutorial programme

"Learner autonomy" is another dimension according to which independent study may be considered. Here we can establish to what extent a student is personally competent to make decisions about objectives, study processes and assessment. This dimension enables us to establish the extent to which an educational programme is capable of implementation as independent study.

	Goal setting	Implementation	Evaluation
A — Learner determined	A	A	A
('Autonomous')	A	A	N
	A	N	A
	A	N	N
N — Teacher determined	N	A	A
('Non-autonomous')	N	N	A
	N	A	N
	N	N	N

On the basis of these two dichotomies (high-low distance and high-low autonomy), Moore suggests including institutes of education or educational projects in a typology in which their individual approach may be assessed.
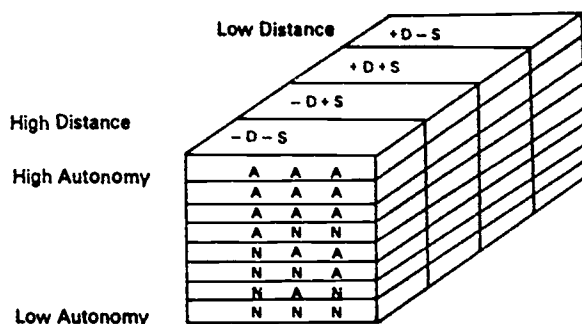
(See Moore, 1983, p.157, 164 and 166 for the source of these diagrams.)

To conclude our series of interpretations of the concept of open education, we should like to report on the educational approach to a management training project in the field of "Self-Managed Learning". Self-Managed learning is viewed as: "a process in which learners work out what they want to learn and how they want to learn, in conjunction with others" (See NELP, 1987, p.3.) An important presupposition is that it is necessary to have open access to a wide range of resources. (See p.27.) Each participant enters into an individual learning agreement in which the following points are taken into account: the participant's "starting point", in other words prior knowledge and present situation; what the participant seeks to achieve; the manner in which he or she wishes to achieve the objectives set; and, finally, the means of assessment. From this description it is evident that the Self-Managed Learning Project is open in its key

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educational processes. However, concerning its educational
form, the project is not open in many of the senses we have
considered above. For example, there are fixed groups,
strict attendance regulations and high entry requirements.
(See NELP, 1987 and Mossman and Stewart, 1987.)

3.2 Supply and demand education

Boot and Hodgson (1987, p.5) answer the question of what
open learning is as follows: "Various attempts at definition
seem to revolve around the notion of freedom from
constraints on the learning process. Typically, such
constraints are grouped as administrative (time, space,
duration, cost, etc.) and educational (objectives, methods,
sequencing, entry qualifications, assessment, etc.).
Removing the former might be with the intention of
increasing logistical independence, while removing the
latter might be with the intention of encouraging
independence of mind."

It is clear from this quotation that they present a
classification of education based on two differing
educational philosophies. In the first case, knowledge is
regarded as a valuable commodity existing independently of
human beings, a commodity which can be disseminated or
"sold". Learning is then primarily the process by which
knowledge and skills are acquired. The aim of education in
this view is the "...dissemination of stored knowledge, to
make it available to those who lack it". (See Boot and
Hodgson, 1987, p.5)

The second educational philosophy regards knowledge or
knowing rather as a process "...of engaging with and
attributing meaning to the world, including self in it" In
this view, learning is primarily elaboration and "...change
of meaning-making processes and the enhancement of personal
competence". Thus the aim of education is the promotion of
the development of the "whole person, especially the
continuing capacity to make sense of oneself and of the
world in which one lives". (See, p.6)

What are the implications of these two views for open
education? Boot and Hodgson distinguish between open
education which is "dissemination orientated" and that which
is "development orientated". In the first case, the
emphasis is placed on preprogrammed courses which the
students can select and which they can generally study in
their own time. The educators judge the students and set
the criteria. The most important aspect in the second case,
however, is the personal development of the student. Here
it is the process of study, not the dissemination of
knowledge, that occupies the focus of attention. Students
themselves decide what they want to learn and how it is to
be assessed.

The following table presents a summary of the differences.
(See Boot and Hodgson, 1987, p.8.)

	Dissemination	Development
ASSUMPTIONS ABOUT KNOWLEDGE	Knowledge as *valuable commodity* existing independently of people. Can be stored and transmitted	Knowing as *process* of engaging with and attributing meaning to the world, including self in it
ASSUMPTIONS ABOUT LEARNING	*Acquisition and addition* of facts, concepts and skills	*Elaboration and change* of the meaning-making processes. Enhancement of personal competence .
PURPOSE OF EDUCATION	*Dissemination* of stored knowledge	*Development* of the whole person
MEANING OF INDEPENDENCE	*Individualization*	*Autonomy*
BASIS OF LEARNER CHOICE	*Cafeteria* Selection from a set range of carefully prepared dishes	*Self-catering* Planning menus, deciding raw materials required and experimenting with ways of preparing
COURSE STRUCTURE	*Based on syllabus* The organization and sequencing of course materials	*Based on processes* of planning, deciding and experimenting
CONCERNS FOR RELEVANCE	Consideration given to problems of *application and transfer*	Participants' *own working lives* regarded as prime source of *learning material*
TO ENGAGE SUCCESSFULLY WITH COURSE	Students encouraged to improve *study skills*	Participants encouraged to *learn to learn*
THE SOCIAL ELEMENT	Other people seen as source of *moral support*, encouragement and comparison for individualized learning task	Other people seen as *inherent part of learning* venture, providing challenge and collaboration in construction of personal meaning
TUTOR'S ROLE	*Subject expert* Guardian of knowledge. Responsible for teaching or instructing. May delegate to course media and materials	*Facilitator*, resource person and co-learner. Meanings he/she attributes to events no more valid than anyone else's
ASSESSMENT	Measure of proficiency against *externally recognized standard*. Tutor as subject expert best person to judge quality of work	Part of learning process. Based on *collaborative* assessment against *mutually agreed criteria*

The distinction between dissemination orientated and
development orientated is interpreted by Cross (1978) as a
distinction between "adult education" and "adult learning".
Learning is contrasted with education in this view.
Programmes are developed and offered to the student in adult
education, whereas in adult learning education has a
facilitating function on the learning process. In so doing,
adult learning sets out from the adults' learning needs. In
order to really be open, education has to make the
transition from "...the traditional focus: providing
education or instruction to the emerging focus: facilitating

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relevant learning". (See Cross, 1978, p.2.) In addition, another similar dichotomy is presented by Strang (1987), who refers to "teacher-centered models versus person-centered models".

In marketing terminology, the two aspects of open education which have been touched on above raise the question of whether there is a "pull-approach" and a "push-approach" in education. In the first case, the individual students make the first move by expressing a need for education. This takes place in a situation in which they expect to obtain a response to their needs and demands. In a manner of speaking, the students pull the education they need towards themselves. In a push-approach, on the other hand, the initiative is taken by the educator. An educational institution has a supply of courses which it is keen to sell to the students. The supply may be based on tradition, social needs or even on chance.

In applying the notions of pull and push to education we can derive the two concepts "demand education" and "supply education". In the former, the initiative comes from the student; in the latter, from the educational institution, which we prefer to call the educator. The differences between supply and demand education play an important part in our subsequent discussion of open education.

3.3 Conclusion

To sum up, we have seen that the literature contains a large number of elements upon which a view of open education may be based. We have presented a description of the attitudes and definitions which are to be found. Unfortunately these attitudes and definitions do not provide as consistent a picture as one would like. It is still not possible to present a clear, empirical foundation for open education. All of them seem to work, all of them can be used under certain conditions, all of them are defensible. Despite the terminological difficulties and a not altogether consistent theory concerning open education, we shall attempt nevertheless to develop a comprehensive theoretical model which can assist us to describe and investigate open education. This model, which is based on the above-mentioned elements, is presented in Section 4, where we shall see that the distinction between the two categories of supply and demand education is extremely useful in characterizing open education according to the various dimensions which have been applied to it.

4 DIMENSIONS OF OPEN EDUCATION: AN INTEGRATED MODEL

Section 3 shows clearly that there is little agreement about
open education. There are a large number of different
attitudes and definitions. The way in which open education
is realized in practice also varies considerably. "The
essential idea, however, is that of opening up new
opportunities for people to learn. Different open learning
schemes may do this in different ways - e.g. by dropping
all entry requirements; by enabling learners to study what
they like, when and where they find most convenient, using
whatever teaching media best suit them, and at their own
individual pace; by providing special tutorial help; by
allowing learners to decide their own learning objectives
and how (if at all) they are to be assessed." (See Shaw,
19-8, p. vi.)

When we closely consider the question of openness and the
many opinions associated with it, we find that openness may
be characterized according to eleven aspects, which may then
be reduced to three dimensions. We find arguments in
support of such aspects and dimensions in many writers.
Sometimes all the elements of openness are gathered into one
large heap, as in the above quotation. At other times a
single attitude, or one or two aspects are elaborated. We
do not wish to concern ourselves with approaches to
realizing only one or two dimensions of openness in
practice. We regard the openness of education as a
theoretical concept which may be approached from different
points of view. By relating their different aspects to each
other, uniting them, and combining them into dimensions, we
wish to indicate that we intend to consider them in relation
to each other.

In our integrated model we postulate openness on the
following three dimensions:
1 admission;
2 educational setting, and
3 educational process.

The education offered by an educational institute may be
open or closed on each of these dimensions. It should be
noted that there are a number of intermediary positions
between the outer limits. Accordingly, education may be
open on the admissions dimension, but closed on the other
two dimensions. It is also possible to find education which
is only open on the educational process dimension.

In scoring an educational institution for its degree of
openness, negotiability is an important factor. Education
is more open to the extent that the different aspects
referred to involve negotiation between the educator and the
student.

We now wish to present these points, namely the aspects, dimensions, supply and demand, and negotiability as elements of an integrated model.

4.1 Admission

The openness dimension of admission refers to the extent to which a person is free to make the decision to study and is free to choose the institution at which he or she wants to study. What barriers to admission may the student encounter? (Cf. Nota open universiteiten in Nederland, 1979; Lewis, 1986; Empire State College, 1982 and 1987; Granger, 1988; and Harris, 1987.) The question of admission touches on academic, social and economic factors. Moreover, political decisions may make admission formally open or otherwise and may influence the extent to which openness may really be achieved in practice.

Freedom of admission may be restricted in a number of respects. The more restrictions placed between the student and instruction, the less open is education on this dimension.

The degree of openness of admission may be considered in relation to three aspects and may be established by asking the questions:
1. Are there formal entrance requirements?
2. What requirements are there with regard to personal characteristics?
3. To what extent do financial considerations present a barrier to participation in education?

The first aspect refers to the formal entrance or previous training requirements which must be satisfied in order to start studying. An educational institution is closed if specific qualifications are required or if entrance examinations have to be taken.

The second aspect of this dimension is personal characteristics. Here we are thinking of exclusion from instruction when admission is withheld on grounds of race, sex, or political or religious conviction. We cannot speak of open education if admission to instruction may be refused on any of these grounds.

The question of age occupies a special position in this regard. For example, admission to a particular educational institution may only be available to members of a particular age group. The Dutch Open University requires students to be eighteen years of age before they may commence their studies. (It should be noted that the question of age is to some extent governed by social norms. It is common sense that although children are not generally permitted to enrol in higher educational institutions this does not significantly affect the openness of those institutions.)

The third aspect concerns the costs of education. While
this can clearly only be judged in relative terms, the price
of instruction may literally make education more accessible
to certain social groups than others. Putting it in a
nutshell, education is open to the extent that people can
afford it. More specifically, we may say that open
education takes the students' financial resources into
account. Students of different means may be charged
different fees. For example, a student living on social
security may be admitted free of charge or may recieve an
adequate supplementary study grant, whereas better off
students or students whose studies are being paid for by
their employers are required to pay more than the cost
price. In cases where this aspect is connected with
assumptions concerning second-chance and second-way
education, this aspect is an important factor in
establishing educational openness.

4.2 The educational setting

Educators and students carry out a number of activities with
regard to study and education. We refer to all the
organizational aspects of these activities under the term
"educational setting". Described in more or less similar
terminology, these aspects are also to be found in the works
of authors we have already referred to. (See Nota open
universiteiten in Nederland, 1979; Marshall, 1981; Empire
State College, 1982 and 1987; Granger, 1988; Lewis, 1986;
Race, 1986; NELP, 1987; De Silva, 1987; Garner, 1988.)

The openness of the four aspects of this dimension may be
established by means of the following four questions:

4. What is the size of the smallest compulsory unit?
5. To what extent may individual students themselves
determine their pace of study?
6. To what extent may individual students themselves
determine the place in which they study?
7. To what extent may individual students themselves
determine the times at which they study?

We consider the educational setting dimension to be open
when it appears that students have a say in determining the
form this setting will take. This is so of all four
questions, but is particularly important in the case of the
last two. Variations in the degree of openness may arise as
a result of the student's not having full freedom of choice
or wide powers of negotiation on one or more of these
aspects. This situation may arise, for example, where
instruction is organized according to an academic year,
where the students are obliged to present projects they have
carried out by fixed dates, or if frequent use is required

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of facilities such as telephone conferencing or tutorial supervision.

We shall now consider these aspects one by one. The first aspect of the educational setting concerns the freedom individual students have in determining the scope of their studies. We use the term smallest compulsory unit (SCU) in this connection. Here we assume that education is flexible in proportion to the size of the SCU's - the smaller the units, the more flexible and hence also the more open. This means that the individual students have the possibility in principle of varying the scope of their studies between the smallest unit and the sum of all the units.

This aspect can be realized in modularized study packages which can vary in scope (number of connected modules) according to the student's wishes. Education tends to be open rather than closed to the extent to which the educational setting is characterized by a flexible supply of modules. However, by connecting modules to form officially recognized diplomas or certificates, external norms and the construction of the programme place limits on the flexibility.

The second aspect of this dimension, freedom of pace, requires that students be permitted to study at a pace that takes their other activities and circumstances into account. Bearing this in mind, education is not organized on the basis of an academic year and the registration period is not bound by restrictions. Examinations are so designed that successful results will retain their validity indefinitely.

The third aspect concerns the place of study. Freedom of place of study is traditionally to be found in institutes of distance education. "The essence of distance-teaching is that student and teacher are geographically separated." (See Willén, 1988, p.77. Cf. also Holmberg, 1977 and Keegan and Rumble, 1982.) Freedom of place means that as much as possible is done to provide students with the opportunity to study in the location of their choice. It also means that institutes for distance education are frequently characterized by the absence of classrooms and lecture theatres and could almost be seen as educational mail order companies. In some institutes of distance education central or regional support points or study centres have been set up. Two instances of this are the British Open University and the Dutch Open University.

The fourth aspect, freedom of time, means that students can study at times that suit them. Here education is characterized by an absence of activities scheduled to take place at fixed times. There are no regular lectures. There is no academic year. Registration and examinations may take place in principle at any time. There are no television

programmes which are broadcast at fixed times and are
required viewing for the students.

These three freedoms, of place, of time and of pace are of
great importance for those people who either wish to, or are
forced to combine study with other activities such as having
a full-time job or a household. Institutes which are in a
position to realize these dimensions of openness are
acquainted with a very specific target group when it comes
to the educational setting.

4.3 The educational process

The third dimension of openness that we distinguish concerns
the key processes of teaching and study. Here we are
concerned with openness which goes further than free
admission or a flexible form of organization. Farrell and
Haughey (1986) regard the opening up of education primarily
in terms of closer connection with the students' real needs
and the credit given for previously acquired knowledge and
skills.

We should now like to analyze and apply this dimension of
openness with regard to the question of the opening up of
the educational process. We have been able to find elements
of some aspects of this dimension in several different
authors. (See Marshall, 1981; Empire State College, 1982;
Lewis, 1986; Race, 1986; Kwiatkowski, 1988; Mossman and
Stewart, 1987 and Cunningham, 1985.)

"Influence" and "negotiability" are the key words on this
dimension. In this connection it is well worth sticking for
the moment to what Erkamp views as the conditions of what he
terms "independent learning". He issues an implicit warning
against the unrestricted opening up of education. "Those
people who can learn independently are people who possess
self-confidence, have study skills, are in a position if
necessary to develop a programme in cooperation with others,
and have a capacity for critical judgement." (See Erkamp,
1987, p.13.) It is simply not the case that everybody is in
possession of the above qualities.

The educational process dimension provides us with insight
into the extent to which we can talk of openness in the key
processes of education and of study. Four aspects may be
distinguished on this dimension. Openness on the
educational process dimension may be established with the
aid of the following questions:

8. To what extent may the individual student have a say in
determining the objectives?
9. To what extent may the individual student influence the
composition of the subject matter and the materials?
10. To what extent may the individual student influence the

manner in which he or she wishes to study?
11. To what extent may the individual student influence the
manner in which results are assessed?

We may determine who has the last word for each of these
aspects. The first aspect of the educational process to be
assessed for openness is the setting of the objectives.
That this aspect is absolutely essential is evident in so
far as the objectives determine what is to be studied and
for a great part too how a student is to study and to be
assessed.

This aspect may be considered on two levels. Firstly, we
can establish whether the student has a say within a course
or other unit of education. Secondly, we can investigate
the extent to which the student can influence the
composition of a total programme of study.

The second aspect also raises the question of the extent to
which the student has a say in determining the subject
matter. The subject matter of a particular subject is set
out in various media, sources etc. Nevertheless, it is
certainly possible for students themselves to choose which
materials they wish to use in order to achieve their
objectives. In education where there is a free choice of
subject matter, the objectives occupy an increasingly
central position. In the course of negotiating the
objectives, the student and the educator can also reach
agreement about the subject matter. However, the aspect of
"choice of subject matter" may be restricted by the
existence of standard works in a particular subject, works
which are so important that they may not be by-passed under
any circumstances.

The third aspect refers to the manner of study. This may be
decided by the educational institution, although the student
may also have a say. There are two aspects to consider
concerning the manner of study. In the first place, we can
investigate the extent to which the study activities are
pre-programmed so that the direction the students have to
follow has been mapped out in advance. In addition we can
investigate the extent to which the educational institution
obliges the student to perform various study activities such
as compulsory attendance at lectures and practicals or
having to run a computer program. We speak of closedness
when the manner of study is laid down in a rigid
pre-programmed package and when a number of study activities
are formally prescribed. We speak of openness when the
student can choose from a range of activities, when the
activities may be negotiated and when they are not
prescribed.

Finally, the educational process dimension is reflected in
decisions concerning the manner in which the student is
assessed to have achieved the objectives or not. The

question of how the testing will be carried out may be negotiated. We can speak of openness on this point when the student and the educator both have a say. To avoid any misunderstanding, we do not maintain that students who assess themselves enjoy the greatest measure of freedom. It is rather a question of their influence on the manner in which the assessment takes place.

One of the most important factors which has an influence on this dimension is the student's prior knowledge. Both prior knowledge in a subject specific sense (cf. Dochy et al., 1988) and more general knowledge and experience are meant here. It is of great importance for education which is open on this third dimension that it can start with and build on the student's prior knowledge immediately. For adults in open higher education it is clear that it is not necessary to study anew what is already known. Thus it is important in setting the objectives and deciding on the manner of study that the student is in a position to influence the arrangements that are made.

4.4 Two key concepts: negotiability and flexibility

It is easy to misunderstand the evaluation that may be made of an educational institution on the basis of the three dimensions of openness. We should like to explain this with the aid of an example. We shall use aspect number 10 for this purpose: To what extent can the individual student influence the manner in which he or she wishes to study?

Let us assume that the Institute for Open Education (IFOE) uses interviews as part of its admissions policy. Part of such an interview is that the student is offered the choice of three different ways of studying for the same examination. The options are as follows:
a. A compulsory weekly tutorial in which various tasks are discussed and questions are answered.
b. All previous examination papers are made available, but there is no further supervision.
c. The student is provided with a self-study package which includes all sorts of tasks and exercises for preparing the examination.

When student A registers, he chooses option c. at the interview. He has had a say in the manner of study by making a choice. On the other hand, when student B arrives at the same institute she indicates at the interview that none of the three options is really what she wants. Previous experience has taught her that it is all too easy to become slack when selecting option c., the option which is best suited to her personal circumstances. She rejects option b. for similar reasons (among others), and rules out option a. on the grounds that attendance at a weekly session is out of the question for her. At the interview she

requests a combination of options a. and c. She wants to follow the self-study option, but in addition she would like to meet once a month in a group to discuss some questions and unresolved problems that have arisen in her studies. However, the IFOE refuses to accept this. There are only three options to choose from and there is no chance of further flexibility.

Student B now turns to another institute, namely Better Individual Study (BIS), where she presents the authorities with her desired manner of study. After a short period of deliberation, her request is granted: she is permitted to start work on a self-study package and can have monthly meetings with a member of the teaching staff to discuss any difficulties. Whether these meetings will be as part of a group is not yet clear, and depends on the wishes of other students.

Student C also approaches BIS. He is interested in a strictly structured form of study in which the institute directly controls his progress. BIS initially attempts to interest C in a system of education in which supervision plays a less important part. Despite this, the result of the negotiations is that a carefully conceived plan of study offering considerable scope for feedback is to be worked out. Thus the student receives an offer corresponding closely with what he desires. In other words the student has indeed been able to exercise his influence on the way in which he wishes to study.

If we analyze the above, we see that with reference to Student A's experience, IFOE would appear to be open with respect to aspect 10. He may choose between three different approaches. Student B's experience, however, shows that the freedom of choice is restricted. It is not possile to negotiate the desired manner of study. The IFOE does not adopt a very flexible position.

BIS, on the other hand, is clearly more open. Both parties obtain a satisfactory solution on the basis of negotiation between the student and the institution. The institution assumes a flexible approach but expects a degree of flexibility from the student in return. If no other students are interested in the monthly discussion session with student B, she will take part alone.

BIS would also appear to be an open institution regarding aspect 10 for student C. Although the result of the negotiation does indeed present us with a closed form of education, this is precisely the form which is requested by the student.

If we consider these three cases with respect to the supply and demand distinction, it is clear that IFOE is an institution for supply education. The students are free to

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register their wishes, but the relationship between student
and institution rests firmly on the basis of the supply and
the possibilities offered by the institution. BIS, by way
of contrast, while also having a supply on offer, is
primarily concerned to meet the students' demands. Thus we
should like to characterize BIS as offering demand
education.

We can draw the following provisional conclusions from the
discussion of these aspects and the above examples:
- Education is open in a particular aspect if the student
has a choice.
- However, if the student is not limited to making this
choice from a restricted supply, but is also free to
negotiate certain other aspects, we may then speak of even
greater openness.
- In general, and particularly with regard to dimensions 2
and 3, we see that demand education is more open than supply
education.
- The negotiability of the aspects is to a great extent
determined by the flexibility of the educator and the
student.
- Negotiability presupposes that both the educator and the
student can influence the decision on equal terms. Under no
circumstances should educators misuse their power by
attempting to manipulate the students.

5 PROFILE OF OPENNESS

5.1 The profile of openness and the scoring system

It is possible to outline a profile of openness for each educational institution by using the above dimensions and aspects. Each form of education can be scored on the three dimensions so that a profile of openness can be drawn up for that educational form. An educational institution may describe itself as open while only in fact being scored as open on one or two dimensions of the profile. In an internal paper, "The limits to openness", De Wolf (1987) writes that although many educational institutions claim to be open, they are more often than not actually closed and prescriptive when it comes down to aspects such as compulsory parts of degree programmes, set courses, "canned instruction", levels and financial restrictions. By means of a profile of openness we can clearly represent on which dimensions and to what extent this is the case. Our profile of openness is set out below.

Dimension	Aspect		Closed				Open
			1	2	3	4	5
Admission	1	Previous training	-O-------O-------O-				
	2	Personal characteristics	-O--------------O-				
	3	Financial considerations	-O-------O-------O-				
Educational setting	4	Smallest compulsory unit	-O---O---O---O---O-				
	5	Pace	-O---O---O---O---O-				
	6	Place	-O---O---O---O---O-				
	7	Time	-O---O---C---O---O-				
Educational process	8	Objectives					
		I Of separate courses	-O---O---O---O---O-				
		II Of degree programmes	-O---O---O---O---O-				
	9	Subject matter and materials	-O---O---O---O---O-				
	10	Manner of study					
		I Formal obligations	-O---O---O---O---O-				
		II Pre-programming	-O---O---O---O---O-				
	11	Assessment	-O---O---O---O---O-				

An institution may be scored for openness on each aspect. The scores range from 1 (closed) to 5 (open). For most aspects it is possible to use a five point scale, although it is not always feasible to employ such a fine analysis. The way in which institutions should be scored on the profile is set out below. The scoring system we present has not yet been validated. We intend to go into the question of validity in subsequent research. For the moment we are only concerned with face validity.

Dimension 1: Admission

1 Are there formal entrance requirements?

Three scores are possible in answering this question:
(1) Admission is dependent on possession of a particular
certificate or diploma or is tied to passing an entrance
examination.
(3) The student and the institution decide together whether
admission is possible and advisable.
(5) There are no entrance requirements.

A score of (1) indicates closedness, (5) indicates openness
and (3) indicates a certain measure of openness. The
student is involved in the decision-making process and does
actually have a say in influencing the decision.
Nevertheless, in cases of disagreement the educational
institution can independently refuse to admit a student,
which does indicate an element of closedness.

**2 What requirements are there with regard to personal
characteristics?**

We suggest approaching this question by means of a
dichotomy. As soon as an individual may be excluded from
the institution by virtue of some personal characteristic we
score it as (1). Special attention should be paid to age in
this regard. If age restrictions are applied in such a way
as to exclude people from participating in education
although they are otherwise able to, we speak of closed
education. However, if wide age limits are set down we may
speak of openness despite this formal restriction. We
recognize the following scores connected with the question
of personal characteristics:
(1) Personal characteristics are taken into account.
(5) Personal characteristics are not taken into account.

**3 To what extent do financial considerations present a
barrier to participation in education?**

Three scores are possible here. In evaluating each specific
situation we have to ask whether financial considerations
present a barrier.
(1) Financial considerations do present a barrier. Some
people are prevented from participating in education as a
result of the costs it incurs.
(3) It cannot be clearly established whether costs present a
significant barrier or not. This may for example be the
case when it is unclear how financial provision is made in
an institution where the costs are rather high. It may also
occur that sufficient details may not be available to make a
judgement concerning financial considerations.
(5) The costs are low with the result that nobody is
excluded from education for financial considerations.

Education may be cheap or even free of charge. Financial assistance is available or there is a graded system of fee assessment.

Dimension 2: Educational setting

4 What is the size of the smallest compulsory unit?

The flexibility of instruction is significantly affected by the size of the smallest compulsory unit. We use the following scores in determining the mean study time required for the smallest compulsory units:
(1) More than 500 hours
(2) 351 - 500 hours
(3) 201 - 350 hours
(4) 50 - 200 hours
(5) Less than 50 hours

Here too the principle holds that the higher the score, the greater the degree of openness.

5 To what extent may individual students themselves determine their pace of study?

This aspect concerns the extent to which the individual students are themselves free to determine the pace at which they wish to study. We use five scores in answering this question:
(1) The pace of study is prescribed by the educator.
(2) The student has two options only.
(3) The student has a choice of several different options.
(4) The individual student may determine the pace within reasonable limits or may negotiate this with the educator. (The limits should be fairly wide in relation to the study time.)
(5) The individual students determine their pace of study for themselves without needing to consult the educator or being subject to other restrictions.

Note:
In assessing the openness of aspects 6 and 7 of dimension 2 and of all aspects of dimension 3, a distinction should be made between the analysis level and the scoring level. In scoring an aspect of an institution or a project for openness, it is necessary first to analyze the separate instructional units or courses. Once this has been done, a total score may be determined for the institution. These two levels may be seen in all the aspects we deal with below.
It is also important to note that although we talk about courses below, we are nevertheless referring to all forms of instructional units, even if they are not in the form of traditional courses.

6 To what extent may individual students themselves determine the place in which they study?

In order to score this aspect we have to investigate what percentage of the study time a student has to spend studying in a place which is prescribed by the educator. In this connection we are thinking of activities which are tied to particular locations, such as lectures, working with interactive video programmes, group work and so on. The percentage of study time which is tied to fixed locations may readily be determined for any particular course. We consider a course closed if more than 20% of the study time is tied to a fixed location.

In order to determine the openness of the institution, we consider the entire range of courses and then calculate the mean percentage of the study time which is tied to a fixed location. Once we have established the mean, we can score it as follows:
Considered collectively, the mean percentage of the study time which is tied to a fixed location is:
(1) 21% and above
(2) Between 16 and 20%
(3) Between 11 and 15%
(4) Between 6 and 10%
(5) 5% and below

7 To what extent can individual students themselves determine the times at which they study?

Our arguments here resemble those we put forward in answer to question 6, although in this case our criterion is not to do with place, but with time. Time is a factor for example in the case of lectures, television programmes or supervision initiated by the educator over the telephone.

Once again we look at separate courses and deem a course closed with regard to this aspect if more than 20% of the study times are prescribed.

In order to determine the openness of the institution, we again consider the entire range of courses and then calculate the mean percentage of the study times which are prescribed. Once we have established the mean, we can score it as follows:

Considered collectively, the mean percentage of the study times which are prescribed is:
(1) 21% and above
(2) Between 16 and 20%
(3) Between 11 and 15%
(4) Between 6 and 10%
(5) 5% and below

Dimension 3: Educational process

8 To what extent may the individual student have a say in determining the objectives?

In scoring this question we have to distinguish between separate courses offered by an institution on the one hand and combinations of courses such as degree programmes on the other.

I Separate courses
In looking at independent courses we can determine or at least estimate the percentage of objectives which are laid down by the educator for each course. At the institutional level, we can then determine the mean percentage of these objectives and score them as follows:
The mean percentage of fixed objectives per course is:
(1) 96% and above
(2) Between 76 and 95%
(3) Between 51 and 75%
(4) Between 26 and 50%
(5) 25% and below

II Degree programmes
One can also establish the extent to which students have a say in determining their objectives at the level of degree programmes. Here we are not concerned with separate courses but investigate the extent to which a student has a say in the composition of a degree. One can establish the percentage of compulsory courses required for each degree offered by an institution.

In scoring an institution for openness we look at the total number of degree programmes and calculate the mean percentage of compulsory courses.
Using this mean we may then score this aspect as follows:
The mean percentage of compulsory courses per degree programme is:
(1) 96% and above
(2) Between 76 and 95%
(3) Between 51 and 75%
(4) Between 26 and 50%
(5) 25% and below

9 To what extent may the individual student influence the composition of the subject matter and materials?

Once again we have to investigate the extent to which the student has a say when it comes to the subject matter and materials of each separate course. We can determine the percentage of the subject matter and materials prescribed for each course and the percentage in which the students have a say, that is where they are presented with options or are in a position to negotiate.

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At the institutional level one can determine the mean
percentage of the subject matter and materials which are
prescribed. This aspect may then be scored as follows:
The mean percentage of the subject matter and materials
which are prescribed per course is:
(1) 96% and above
(2) Between 76 and 95%
(3) Between 51 and 75%
(4) Between 26 and 50%
(5) 25% and below

10 To what extent may the individual student influence the
manner in which he or she wishes to study?

If we consider openness with regard to the manner of study
we have to distinguish between two different aspects. We
should then add two sub-points to the profile of openness.

I Formal obligations
The first point in determining the openness of this aspect
is to investigate the extent to which there are compulsory
activities such as computer assisted instruction,
assignments, practicals and tutorials.
In this regard we may establish or estimate the percentage
of study time required for these formal activities. We can
then calculate the mean percentage of all the courses at the
institutional level. In so doing we use the following
scores:

Of the total number of courses offered by the institution,
compulsory parts of these courses account for on average:
(1) 21% and above
(2) Between 16 and 20%
(3) Between 11 and 15%
(4) Between 6 and 10%
(5) 5% and below

II Pre-programming
The second point is that we can determine the degree of
openness by investigating the extent to which the manner of
study is pre-programmed or dictated by the materials. If
the manner of study is pre-programmed, the student has
little choice or scope for negotiation. He or she is
nevertheless not always required to follow the path which is
presented. One can estimate what percentage of the study
time is pre-programmed and for what percentage of the study
time the student has a say in the course activities.

In awarding a score for openness, we have to look at all the
courses offered by an institution and then determine the
mean percentage of study time which is pre-programmed.
This may be done as follows:

Mean percentage of pre-programmed study time per course:
(1) 96% and above
(2) Between 76 and 95%
(3) Between 51 and 75%
(4) Between 26 and 50%
(5) 25% and below

11 To what extent may the individual student influence the manner in which the results are assessed?

Here too we first look at separate courses and then award a score to the whole institution.
In practice this means that we can investigate the extent to which individual students are (not) free to choose the manner in which they are assessed. We can then estimate the extent to which the institution prescribes the manner of assessment as a percentage.

Once again we can award the following scores at the institutional level:
The mean percentage of assessment which is prescribed is:
(1) 96% and above
(2) Between 76 and 95%
(3) Between 51 and 75%
(4) Between 26 and 50%
(5) 25% and below

The profile of openness

An institution may be awarded a score which may then be recorded on the table representing the dimensions and the aspects. The pattern on the table which is made by the scores provides us with the profile of openness of the educational institution. The more the pattern lies to the left of the table, the more closed the institution.

Such a profile may be drawn up for any educational institution and may then be used as a diagnostic instrument. It may then be used for example to set up a process of change or to influence decisions on policy. Profiles may also be used to compare different educational institutions and projects.

5.2 The openness of educational institutions

In order to compare educational institutions, it is possible to reduce the rather complex profile of openness to one single score. Once it has been established by means of the profile just which dimensions of an institution are open or closed, we can situate the institution on one single position on the following diagram. In so doing it is important to realize that for the interpretation which is necessary for classification in the diagram the details used for scoring the various aspects of each dimension have to be

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combined into a general statement at the dimension level.
We use a summary statement for each dimension which may
result in a slight misrepresentation of the actual content.
We have done this for the sake of the comparison because the
comparison allows us to draw up a typology in which the
institutions may be characterized according to their most
significant aspects.

We have used a number of rules in reaching a general
statement of openness for each dimension. These rules are
as follows:
- None of the aspects may be awarded the score of (1) on the
admissions dimension if the institution is to be regarded as
open.
- On the educational setting dimension, aspects 6 and 7
(place and time) are the primary determinants of an
institution's being open or closed. These two aspects must
receive a score of (4) or (5), (It should be noted that
although aspects 4 and 5 (smallest compulsory unit and pace)
add more nuances, they are not of decisive importance.)
- On the educational process dimension we may talk of
openness if at least three of the four aspects have been
given a score of (3), (4) or (5) If both parts (I and II) of
aspects 8 and 10 can be scored, we apply the rule that for
four of the six a score of (3), (4) or (5) must be awarded
if we want to conclude that the dimension is open.

In the following diagram the three dimensions of openness
are each presented by a circle. The three circles overlap
in such a way that there are seven separate areas.
Educational institutions may be placed within these areas.
Each project or institution can be classified according to
one of these seven types, each of which is represented by a
Roman numeral (I-VII). By using the three dimensions, all
possible theoretical combinations may be made. (An
institution which is closed on all three dimensions would
receive a score of zero and be represented outside the
circles.)
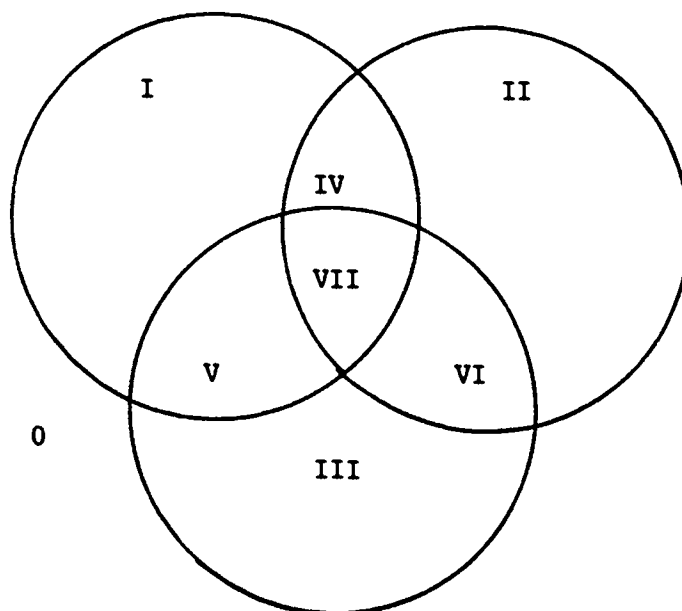
The following matrix elucidates the significance of the figures in the diagram:

	0	I	II	III	IV	V	VI	VII
Dimension 1	-	+	-	-	+	+	-	+
Dimension 2	-	-	+	-	+	-	+	+
Dimension 3	-	-	-	+	-	+	+	+

+ = open on the relevant dimension
- = closed on the relevant dimension

In Section 6 we shall analyze the profile of the Dutch Open University and then locate the profile in the above diagram.

6 OPEN EDUCATION AND THE DUTCH OPEN UNIVERSITY

To what extent is the education offered by the Dutch Open University open? We should like to answer this question with reference to the dimensions and aspects we discussed above in order to draw up a profile of openness for the education offered by the Dutch Open University. We shall base our analysis on the "Studiegids", that is the "Student's Handbook" for 1989-1990. (For the sake of convenience we shall at times refer to the "Student's Handbook" as "SH" and the Dutch Open University as "Ou" in the following pages.)

6.1 The various aspects of openness

<u>Admission</u>

(1) Are there formal entrance requirements?

According to the "Student's Handbook", "No diploma is required for admission to the Open University; nor is there an entrance examination or similar entrance requirement." (See SH p.18.) Thus there are no formal entrance requirements and the Ou scores (5) on this aspect.

(2) What requirements are there with regard to personal characteristics?

The "Student's Handbook" contains a clear statement that: "Registration at the Open University is open to all persons who are at least eighteen years of age." "Neither domicile nor nationality constitute a hindrance to studying at the Open University." (See SH p.51.) In principle the Ou does not take personal characteristics into account in its admissions policy, although there is the requirement that students should be at least eighteen years old. However, such a condition cannot reasonably be held to restrict the admissions policy of an institution of open higher education. Thus the Ou again scores (5) on this aspect.

(3) To what extent do financial considerations present a barrier to participation in education?

The price of courses at Dutch Open University is based on the cost of study in conventional institutions of higher education in the Netherlands. According to the "Student's Handbook", this amounts to 220 Dutch guilders (approximately 110 U.S. dollars or 65 pounds sterling - summer 1989 rates) per module. Each module has an estimated study time of 100 hours. As a result of a law which recently came into force, students who have completed six or more years of full-time higher education are required to pay a fee of 275 guilders per module. The law governing the financing of studies for part-time students applies to students at the Ou.

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However, it is unclear to what extent the costs can be considered a barrier to participation in higher education for significant Ou target groups such as second-chance students and women. As a result, the Ou only scores (3) on this aspect.

Educational setting

(4) What is the size of the smallest compulsory unit (SCU)?

Each course at the Dutch Open University is self-contained and may be followed independently of any other Ou courses "Completion of a course is therefore the smallest unit of study possible at the Open University." (See SH, p.44.)

Students are required to take complete courses. Courses may consist of one or two modules, although some are only half a module and one or two actually contain three modules. As a module is reckoned as 100 study hours, we can see that the scope of the courses varies from 50 to 300 hours. The Student's Handbook" contains details of 87 courses. The distribution of the study time is as follows:
300 hours: 2
250 hours: 1
200 hours: 25
150 hours: 2
100 hours: 48
50 hours: 9

Thus the mean scope of a course at the Dutch Open University is 131 hours which gives the Ou a score of (4) on this aspect.

(5) To what extent may individual students themselves determine their pace of study?

The "Student's Handbook" informs us that "The registration period for a course is two years. Students may choose from a number of dates decided by the Open University when they wish to sit their examinations." (See SH p.21.)

Moreover, "During the registration period for a course (two years) the examinations may be taken up to three times if necessary without incurring any additional charges. In other words, the course fees include three chances to take the examination. Should a student be unsuccessful in an examination he or she may re-sit the examination twice at no extra charge. If the candidate is still unsuccessful after three attempts, the examination may be taken again for a fee of 50 guilders provided the two year registration period has not elapsed. The examination may be taken again for a fee within a three year period following the end of the registration period provided that the course is still being offered by the Open University." (See SH, p.47.)

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A further relevant point for this aspect is that marks awarded in examinations remain valid for an indefinite period." (See SH p.47.)

Thus we see that the individual students can themselves determine the pace at which they study within certain rather flexible limits and we award the Dutch Open University a score of (4) for this aspect.

(6) To what extent may individual students themselves determine the place in which they study?

If we analyze the percentage of study time required in fixed locations by the 87 courses contained in the "Student's Handbook", we find the following distribution.
Number of courses requiring:
More than 20% of the study time
to be in a fixed location   5
Between 16% and 20%   1
Between 11% and 15%   1
Between 6% and 10%   5
5% or less   75

Thus we see that there are only 5 courses in which more than 20% of the study time is required to be spent in fixed locations. All these courses are in natural or technical science subjects in which practicals are essential.

In most of the other courses there are a few activities which have to be carried out in fixed locations, such as running a computer programme or viewing a video-disc in one of the study centres. However, activities of this kind generally take up less than 5% of the study time.

It should also be noted that there is a tendency to make more and more audio-visual and computer materials available for the student to borrow or buy so that they are increasingly less tied to fixed locations.

Taking the Dutch Open University as a whole, a mean of only 3% of the study time is required to be spent in a fixed location. Accordingly, the Ou scores (5) for this aspect.

(7) To what extent may individual students themselves determine the time at which they study?

In analyzing the 87 courses in the "Student's Handbook" we can also establish the percentage of activities which are required to be done at fixed times, for example when practicals or tutorials are organized on specific dates or times of day. We have not included optional tutorials in our analysis although they may well occur at fixed times on the grounds that "...attendance at tutorials is voluntary". (See SH, p.24.)

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The distribution is as follows.
Number of courses requiring:
More than 20% of the activities to
take place at a fixed time   1
Between 16% and 20%   2
Between 11% and 15%   0
Between 6%   and 10%   4
5% or less   80

Only one course requires more than 20% of the activities to
be at fixed times. This is once again for a practical in
natural science. Most of the courses have no fixed time
activities whatsoever.

The fact that the percentage of study time for study at a
fixed time is smaller than that required for study in a
fixed place is due to the fact that the Ou attempts to offer
practicals wherever possible via computers or interactive
video. As a result the students are free to do these
activities whenever they wish.

The mean percentage of fixed time activities at the Dutch
Open University is less than 1% per course. Here the Ou
scores another (5).

Educational process

(8) To what extent may the individual student have a say
in determining the objectives?

I Separate courses
As far as separate courses are concerned, we see that the
students only have a say in five courses. In one case the
students may select one out of four options. In the other
four courses there is a so-called bonus point system in
which the students may choose various tasks such as report
writing or practicals on which they are then assessed.
These tasks are not compulsory, but if the students do them
well they receive a higher mark in their examinations. The
bonus point system provides the students with the
opportunity of pursuing alternative objectives.

If we cast a glance at the courses offered by the Dutch Open
University, we see that over 95% of their objectives are
fixed, which means that the Ou can only receive a (1) for
this aspect.

II Degree programmes
The Dutch Open University offers various different sorts of
degree programmes.
a. The first of these is known as "Short Higher Education"
(SHE). This is a new form of higher education which is
shorter than the traditional 4 year programme and is mainly
directed at in-service vocational training and retraining.

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b. Standard degree programmes (SDP's).   These programmes
are intended for several different forms of higher academic
or vocational training and are to various extents equivalent
to similar programmes offered by other institutions of
higher education.
c. So-called "Liberal Degree Programmes". Here students
will be able to make up their own degree programmes within
certain limits.   The Open University Examinations Commission
will then decide what type of degree may be awarded for the
programme.   These liberal degree programmes reflect a high
degree of openness although we have no experience of them as
there are still insufficient courses available to make them
a feasible option in practice.

We have analyzed the "Short Higher Education" programmes and
the standard degree programmes and have investigated what
percentage of courses on these programmes are compulsory.
We have not counted dissertations, internships etc as
compulsory because students most certainly can have some
influence in these cases.

Percentage of courses required in degree programmes	SHE	SDP	Total
96% and above	26	0	26
Between 76% and 95%	1	2	3
Between 51% and 75%	1	15	16
Between 26% and 50%	0	1	1
25% and below	0	0	0

The SHE programmes and SDP programmes are clearly quite
different.   SHE programmes are almost all strictly
controlled with the students having hardly any say at all.
In the case of SDP degree programmes on the other hand, the
students can exert a substantial amount of influence.

The mean of set courses in all degree programmes at the Open
University is 85%, so the Ou scores (2) for this aspect.   If
we only consider the standard degree programmes, the mean
of set courses is only 64% which allows us to award the Ou a
score of (3) for this aspect.

(9) To what extent may the individual student influence the
composition of the subject matter and the materials?

We investigated the extent to which students following
various Dutch Open University courses could achieve the same
objectives by using different materials.   Most Ou courses
display no openness whatsoever here.   In the majority of
cases the subject matter and materials are set by the Ou.
Only two courses offer the students more than one approach
or permit them to choose between studying a variety of
different examples.   The mean of set subject matter and
materials is above 95% giving the Ou a score of (1) here.

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(10) To what extent may the individual student influence the manner in which he or she wishes to study?

I Formal obligations

Only 12 of the 87 courses contain a formal obligation to carry out various study activities. The obligations concern activities such as carrying out a practical, running a computer program, writing a report or attendance at a tutorial. In the case of five courses such compulsory activities amount to 25% of the study time, while in four courses compulsory activities make up a negligible part of the total study time. The mean here comes to only 2% and the Ou as a whole scores (5) for this aspect.

II Pre-programming

From the analysis of the 87 courses we can see that there are two didactic forms, namely the integrated course variant and the textbook/study guide variant. The manner of study is prescribed to a great extent in the former, with the students being practically forced to follow the set paths with no deviation at all. In the textbook/study guide variant, however, the manner of study is rather less prescribed. As a result of the fact that the textbook and study guide are two separate entities, the students are somewhat less "spoonfed" and have the option of first using the textbook and then the study guide or vice versa. In certain cases they are even free to omit certain sections of the study guide.

Both variants permit a certain measure of openness as far as the organization of supervision is concerned. Students may choose to attend group tutorials or to receive a limited amount of individual assistance. The exact form of supervision can frequently be discussed with the tutors.

From the analysis we can see that it is extremely difficult to calculate the percentage of pre-programmed study activities for each course. A more detailed analysis of each separate course would be required, which is beyond the scope of this research. For our present purposes, we estimate that in a course in the form of the integrated course variant, 90% of the activities are pre-programmed and that 75% of the activities are pre-programmed in the case of the textbook/study guide variant.

When we look at the 87 courses ofered by the Ou, we find the following disribution:

Integrated course variant   55
Textbook/study guide variant   32

In terms of the estimate the mean of pre-programmed study activities is 84% and the Ou scores (2) here.

(11) To what extent may the individual student influence the manner in which the results are assessed?

At the Dutch Open University, the student has a say in the manner of assessment in only 4 of the 87 courses. These are the courses with the bonus point system we referred to above, in which students can opt to undertake a number of additional tasks. Completing these tasks successfully improves the examination result.

Nevertheless, for prescribed forms of assessment, the mean is more than 95%. The Open University scores only (1) for this aspect.

## 6.2 The profile of openness of the Dutch Open University

Dimension		Aspect	Closed				Open
			1	2	3	4	5
Admission	1	Previous training	-O-------O-------X-				
	2	Personal characteristics	-O---------------X-				
	3	Financial considerations	-O-------X-------O-				
Educational setting	4	Smallest compulsory unit	-O---O---O---X---O-				
	5	Pace	-O---O---O---X---O-				
	6	Place	-O---O---O---O---X-				
	7	Time	-O---O---O---O---X-				
Educational process	8	Objectives					
		I Of separate courses	-X---O---O---O---O-				
		II Of degree programmes	-O---X---X---O---O-				
	9	Subject matter and materials	-X---O---O---O---O-				
	10	Manner of study					
		I Formal obligations	-O---O---O---O---X-				
		II Pre-programming	-O---X---O---O---O-				
	11	Assessment	-X---O---O---O---O-				

Following the scoring system we described above, we can see from this profile that the Dutch Open University is open on the admissions dimension, where all the scores are above (1), and on the educational setting dimension, in which aspects 6 and 7 each receive a score of (5). However, the Ou is closed on the educational process dimension as three of the six scores are (1)'s.

As we have seen, when it comes to setting the objectives of separate courses, in establishing course subject matter and materials, and in deciding how results should be assessed the Ou is completely closed.

Concerning the manner of study, while only a few aspects of
the courses are prescribed, the courses remain preprogrammed
to a large extent, so that the students are frequently
compelled to study as prescribed by the Ou.

Accordingly, we may say that in terms of the diagram we
discussed above, the Dutch Open University should be classed
as an institution of type IV, that is one which is open
concerning admissions and educational setting, but closed
concerning educational process.

I   II   Ou   IV   VII   V   VI   0   III
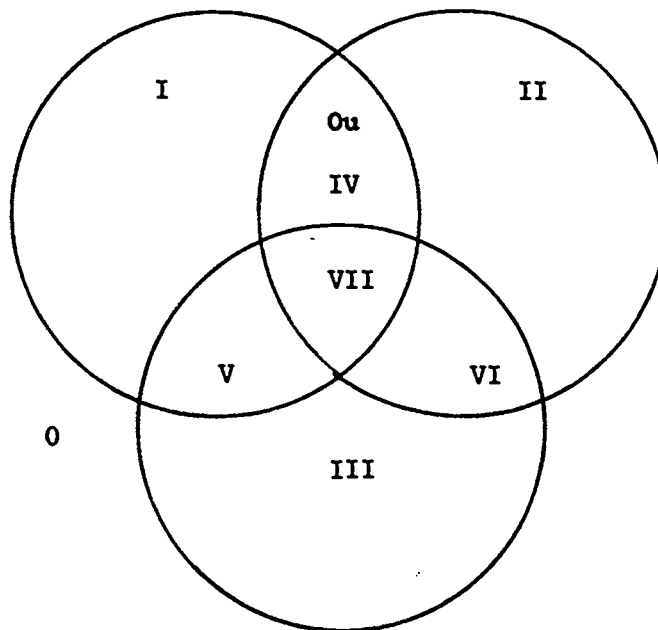
7   PROSPECTS

On the basis of our analysis it appears that the Dutch Open
University may be described as an institution which is open
on the dimensions of admission and educational setting but
is closed as far as the educational process is concerned.
Moreover, that it is an institution mainly offering supply
education, with the result that the students have very
little scope for negotiating solutions to their learning
needs.

The aim of the research project on open higher education is
to investigate whether the Dutch Open University can also be
made open on the dimension of educational process without
threatening the openness of the other two dimensions, and if
so, how.

There are a number of arguments in favour of attempting to
make the instruction offered by the Dutch Open University
more open on the third dimension. Once again, just as in
Section 2, we maintain that it is necessary to distinguish
political, social and economic arguments on the one hand,
from educational arguments on the other. It is interesting
to note that despite their radical differences, all the
arguments nevertheless point the way towards making
education more open on the third dimension.

We should like to begin with the educational arguments. The
Dutch Open University provides education for adults. We
agree strongly with Knowles (1984) and Granger (1988) that
adults study better and more effectively when the subject
matter is connected with their experience, their prior
knowledge and their learning needs. Our own experience in
developing courses has shown us that the supply education of
the Dutch Open University does not enable us to create
courses in which there is an optimal connection between the
course content and the students' learning needs.

In addition, Joosten (1986) shows that the students enrolled
at the Dutch Open University form a rather heterogenous
group. Courses are being written today which are required to
be suitable both for the family man who has insufficient
qualifications to attend a conventional institute of higher
education as well as for retired professors. The
development of a standard course, which is the result of
supply education on a large scale (cf. Willén, 1984),
results in only one single group of students being able to
really identify with that course. More attention should be
paid to tailor-made education in order to do justice to the
learning needs of heterogenous groups.

Vermunt's research on learning styles (1986) shows that
Dutch Open University students use many different learning
strategies. It is not sufficient to merely make students
aware of their learning strategies. An educational

institution such as the Dutch Open University should rather take the students' learning strategies into account in the design of the instruction provided. This is not restricted to taking the students' current learning strategies into account; it can also mean that learning strategies can be changed in many different ways through negotiation.

Examinations have been found to present a host of difficulties for students and staff alike at the Dutch Open University. There is a considerable discrepancy between the courses being followed and the objectives the students have set themselves on the one hand and the forms of assessment on the other. We believe that a greater measure of openness in the area of assessment is desirable in order to involve the students more closely in their own study processes.

Finally, we believe that in education, and certainly in adult education, one of the primary objectives should be the pursuit of autonomous study. Autonomous study is a process which should take place gradually and which can only be realized in practice in an educational situation which permits and encourages the students to make decisions affecting their studies autonomously (cf. Elton, 1988).

In addition to these educational arguments, there are also a number of political, social and economic arguments which have led us to investigate the possibility of openness on the third dimension at the Dutch Open University.

In the first place, the Dutch Open University is expressly charged with the task of providing second chance education, with particular reference to the weaker groups in society. This goal tends to fade into the background when in the educational process not only the objectives, but also the subject matter and the manner of study are to a large extent laid down by the institution so that there is no optimal connection between the experience and prior knowledge of the students. Students in second chance education have frequently not followed the standard educational paths with the result that it is particularly important to take their learning needs and problems into account.

Secondly, an important economic factor has a part to play. Closed supply education is not cost effective for small groups of students. If the Dutch Open University genuinely wishes to offer opportunities to study up to degree level, including the option of specializing, the only feasible alternative is education which is open on the third dimension. In this way open education can enable small groups to follow specialized instruction.

The final point is that there is a desire within the Dutch Open University to enlarge the market for the courses. The present closed supply of courses is frequently not flexible enough to offer externally. By making the supply of courses

more flexible, that is to say more open, instruction can be
adapted to individual students' needs or can be made to meet
the demands of other educators such as other educational
institutions or industrial training programmes.

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PART II   DIDACTICS

1 INTRODUCTION

In the first part of this paper we have analyzed several
aspects of the concept of "open education". Now we want to
define a number of basic concepts of a general didactic
nature in the second part. We further intend to represent
the relations between them in a didactic model that will
form the framework for the analysis and description of open
educational systems.

We first investigated general didactic and educational
literature and the didactic models employed there. (See
inter alia Van Gelder and Van der Velde, 1968; Blankertz
1973; De Corte et al 1976; De Klerk, 1983; Knoers, 1980;
Standaert and Troch, 1980; De Block, 1982; and Tillema,
1978.) However, a shortcoming of the vast majority of
models is that they are imprecise in the terminology they
use. Moreover, the relationship between the various elements
of each model is frequently only to be found in them
implicitly. In addition, there is the further problem that
most models take face to face education in schools as their
frame of reference. Our research, on the other hand, refers
to open education for adults. The existing models and
definitions are not sufficiently comprehensive. We have
therefore defined the central concepts of our research in
such a way that they do apply to open higher education for
adults. Our model combines these concepts in a manner which
also takes these aspects into account.

2 DIDACTICS

One of the central concepts at the basis of our research is
the term "didactics" ("didaktiek"). Many different
definitions of the concept "didactics" may be found in the
literature. In this paper we present an operational
definition which we have formulated on the basis of the
various definitions to be found in the literature. This
operational definition is the one we ourselves use in our
research.

The term "didactics" is primarily used in connection with
education in schools in which teachers and students are
physically present. Thus De Block defines "didactics" as
the theory concerning that which one attempts to achieve in
the process of education, which teaching and learning
processes are applied for this purpose and how it should be
evaluated. (See De Block, 1982, p.27.) For De Block, the
term "process of education" refers primarily to 10 to 18
year-olds. This process takes place in schools through face
to face instruction in the main. (See 1982, p.32.) De Corte
(1972, p.2) restricts himself to the school context when he
describes "didactics" as "...a science, that is to say a
whole cluster of beliefs about and rules of thumb for
practical action in the school situation." Westerhof (1984)
too seems to have the school in mind when he maintains that
didactics should be defined as "...the science that studies
didactic behaviour". This behaviour can be defined as the
preparation of, actual teaching, and evaluation of the
process of teaching and learning. Peters et al. (1985,
p.2) extend the area of "didactics" to include the
curriculum and organization of the school, but remain
nevertheless strictly within the school context.

As we have shown above, in Dutch the term "didactics"
("didactiek") is used chiefly with reference to what takes
place in schools. In Anglo-Saxon countries, "didactics" is
a far narrower concept which refers only to teaching
methods. The English equivalent of the Dutch concept
"didaktiek" is usually expressed by the terms "educational
psychology", "theory of instruction" and even "philosophy of
education". These terms appear to restrict themselves to the
school situation somewhat less.

Patterson (1977, p.5) says with regard to the necessity for
a "theory of instruction": "Teaching or instruction needs a
theory to organize and integrate what is known about
teaching as a systematic foundation for teaching. A theory
provides a framework for the organization of principles.
It provides a rationale for specific practices." A term
such as "educational psychology" places the student or
learner in a central position. Good and Brophy (1977, p.5)
define "educational psychology" as: "a framework for looking
at the learner, the learning process and the learning
situation."

In our research on the didactics of open higher education we
found it difficult to adopt any of these definitions. None
of them is fully appropriate. They are all too restricted.
We wish to define the term "didactics" broadly enough to
include non-traditional education, distance education, adult
education and even self-instruction. For this reason we
have used the following operational definition: "Didactics"
refers to the interconnected whole of insights, beliefs,
guidelines and rules of thumb for the organization, practice
and evaluation of education and self- instruction. This
interconnected whole should be regarded as a theory, or at
least a theoretical framework.

3 EDUCATION

The term "education" occupies a central position in the definition of "didactics". In talking about education we do not mean the process of teaching (cf. for example Knoers 1980, p.15) but rather education as a system. We conceive of a system as an organized whole of reciprocal relations. Within this framework we propose to define education as the interaction between students, educators and the body of knowledge with the intention of achieving learning results. Thus education is always an intentional process which is directed towards the attainment of learning results.

When it comes to education, three components are always involved. The oldest didactic model, the so-called didactic triangle including the subject matter, the teacher and the student, refers to these three components primarily with reference to face to face education. (See Knoers, 1980, p.8 and De Block, 1982, p. 322.) In the framework of open higher education we convert these to the following three more general components:
- The student: he or she is ultimately the person who has to produce the learning results by means of study directly and teaching indirectly.
- The educators: by this we mean both the educational institute and the teacher or supervisor. The educator helps, guides and supports the student in the attainment of the learning results.
- The body of knowledge: this concept refers to everything that is to be learned and its expression in written materials, electronic media and persons.

The active elements in education are the student and the educator. They develop activities which are intended to achieve the learning results, be it directly or indirectly. By contrast the body of knowledge is the passive element, although it too has a continual part to play in the activities of the student and the educator.

A number of didactic functions must be fulfilled for the interaction between the student, the educator and the body of knowledge to achieve the learning results. (See Gagné, 1977; Bååth, 1979; and Pilot et al., 1983.)

We distinguish the following six didactic functions:
1. Analyzing the characteristics of the student.
2. Creating an optimal educational setting.
3. Determining and clarifying the objectives.
4. Making the body of knowledge accessible.
5. Inducing and maintaining the learning processes.
6. Assessing the learning results.

These didactic functions are realised in the activities of the student on the one hand and in those of the educator on the other. We refer to these activities, which for the main

part have to do with the body of knowledge, as "didactic
behaviour". Contrary to the traditional interpretation, in
our definition didactic behaviour may come from either the
student or the educator. (See inter alia De Corte, 1974.)

To summarize the above points, we can represent the four
elements of education in the following model:
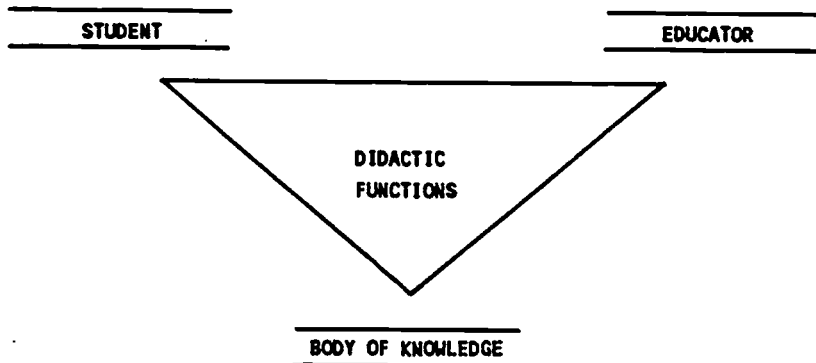
Figure 1: The model of education

In education there is always talk of interaction between
three elements. However, the situation may arise that a
student fulfils all the didactic functions him or herself,
interacting solely with the body of knowledge and without
making direct contact with the educator at all. From the
moment that the student studies in total independence, we do
not talk of education, but only of self-instruction, which
is certainly a phenomenon included in our definition of
didactics and which is capable of being studied. However,
when we talk about open education in our research, we are
referring to a situation in which an educator, that is a
teacher or an institute, has a clear contribution to make in
the fulfilment of the didactic functions. Self-instruction
is not included in the term "open education" as we
understand it and therefore lies beyond the scope of this
research.

4 THE STUDENT

Before we can discuss the various didactic functions in
depth and relate them to the concept of open education, we
intend to first represent the three elements of education in
separate models. In so doing we intend to emphasize the
definition of concepts.

Let us begin with the student:

```
                    ┌──────────────────┐
                    │   OBJECTIVES     │
                    │       │          │
                    │       ▼          │
STUDENT             │                  │     EDUCATIONAL
CHARACTER- ────────▶│     STUDY        │◀──── SETTING
ISTICS              │       │          │
                    │       │          │
                    │       ▼          │
                    │ LEARNING RESULTS │
                    └──────────────────┘
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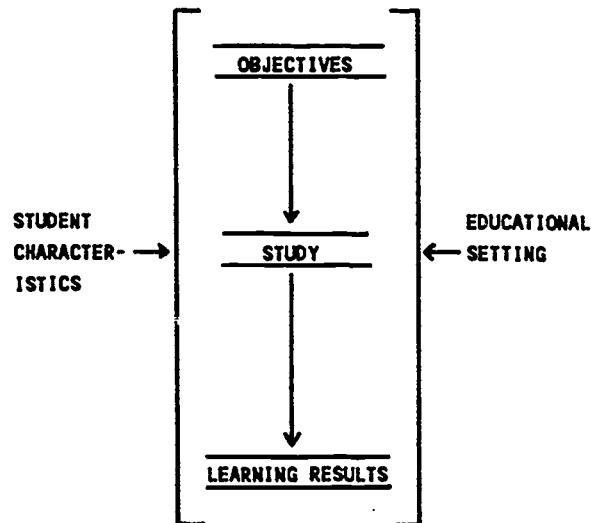
Figure 2: The elements of the student subsystem

The central process in this system is study which occurs
with relevance to the objectives and which ultimately leads
to learning results. We call this central process "the
process of study". This central process is influenced on
the one hand by the characteristics of the student and on
the other by the educational setting. In education there is
continuous interaction between the process of study and the
prr ess of teaching (see Section 5). In Section 7 this
interaction will be discussed with regard to the educational
process and in Section 8 with regard to didactic functions.

The characteristics of a student will influence all aspects
of the process of study. Student characteristics include
age, sex, background, previous experience, prior knowledge,
personal requirements, learning style, interest and
motivation. (Cf. Dochy, 1988 and Vermunt, 1986.)

Everything undertaken by students with reference to
education is directed towards the attainment of objectives.
We define objectives as "the intention to change students'

behaviour, that is to say their knowledge, skills and
attitudes." Students may have their own objectives or may
choose to adopt those presented by the educator.

In order to attain the objectives the students need to
develop a number of activities. We call these activities
"study". The term "study" has different interpretations
both in colloquial usage and in academic discourse. We have
decided to define "study" as "all those student activities
which are directed towards the attainment of their
objectives." Thus study is always intentional. We define
student activities which result in behavioural change only
by chance as the acquisition of experience rather than as
study. Student activity is frequently set in motion and
given support by activities of the educator. Nevertheless,
study can frequently occur independently of an educator.

We employ the term "study" in a broader sense than the
traditional interpretation. We regard study as not only the
concentrated persual of learning materials but extend it to
include all intentional activities connected with the
objectives. In our definition "study" includes attending
lectures, taking notes, carrying out practicals, discussing
material with other students, browsing through an
encyclopaedia and talking to authorities in a particular
field of expertise, not only intensively reading and working
on a textbook. Accordingly study can take place equally
well outside an educational institution as within it.

In this research we have decided to use the concept of study
rather than the concept of learning. The concept of
learning is used linguistically in many different ways.
(See De Corte, 1979, p.232.) Learning can be defined as the
alteration of knowledge, skills or attitudes effected by
means of both intentional and unintentional experiences.
(See De Wolf, 1989.) In this interpretation, although
learning may be a result of study, it may also take place
along with or instead of study. In addition, there are some
authors who define learning very narrowly as being an inner
activity, which is not directly knowable or observable,
takes place alongside study and which may only be known by
the learning results. This position has been adopted by
cybernetic didactics, where the student is regarded as a
"Black Box". Here only the input (teaching and studying)
and the output (learning results) are investigated, while
that which takes place inside the student is not looked at
at all. (See De Block, 1982, p. 147-148.) Considering the
fact that in the context of education, the concept of
learning is frequently used ambiguously, and that the terms
learning and study are freely used interchangeably in the
literature in this field, we have decided to avoid the term
"learning" as far as possible and to prefer the far more
precise terminology "learning process" and "learning
results". (See also Van der Linden, 1987.)

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The learning process refers to the inner activities taking place when a student studies. The learning process may be the result either of study or of the chance acquisition of experience. The learning process will ultimately lead to "learning results". We define learning results as changes in the student's behaviour, that is to say in his or her knowledge, skills and attitudes.

The entire process of study takes place in a particular educational setting. We take this to include the environment in which a student studies such as the lecture theatres, study centres and place of study at home as well as the organization of the process of study with reference to time and pace.

Our research does not refer to the learning of individual students and restricts itself to a consideration of teaching and study at the institutional level.

5 THE EDUCATOR

A model of the educator in parallel with that of the student may also be developed. The model we use here has been inspired by Van Gelder's model of didactic analysis. (See Van Gelder and Van der Velde, 1968.)

```
                    ┌──────────────────┐
                    │   OBJECTIVES     │
                    │        │         │
                    │        ▼         │
EDUCATIONAL ───────▶│   TEACHING    ◀──── EDUCATIONAL
SETTING             │        │         │    PRESUPPOSITIONS
                    │        │         │
                    │        ▼         │
                    │ LEARNING RESULTS │
                    └──────────────────┘
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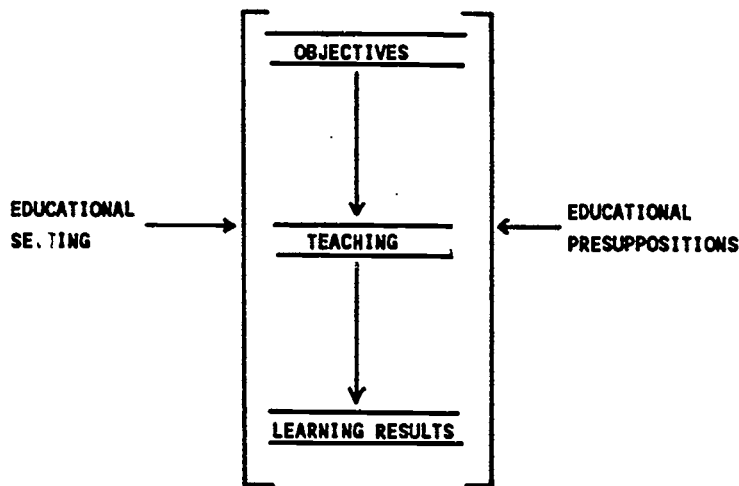
Figure 3: The elements of the educator subsystem

In the case of the educator, just as in the case of the student, a central process may be distinguished, namely teaching that begins with the objectives and that ultimately must lead to learning results from the students. We call this central process the "teaching process". The teaching process is influenced by the educational setting and by the educational presuppositions. In teaching there is always interaction between the teaching process and the process of study. (See Sections 7 and 8.)

"Teaching" includes all the activities undertaken by an educator with the intention of stimulating the student to study which should culminate in the activation of the learning process. The actualization of learning processes by means of teaching activities always occurs indirectly by means of study. A teaching activity sets a study activity in motion and this in turn sets off a learning process as represented in the following diagram:

TEACHING ──▶ STUDY ──▶ LEARNING PROCESSES

Figure 4: The relationship between teaching and learning processes

Teaching activities are always intentional and may take many different forms such as lecturing, leading a discussion, organizing group work, giving a demonstration, giving instructions, setting tasks and dealing with feedback.

The same sort of distinction may be applied to teaching as is commonly found in the literature on didactic methods (see De Block, 1982; De Corte, 1976; Standaert and Troch, 1980), for example:
- Information-offering teaching activities. These are primarily concerned with revealing the body of knowledge.
- Dialectic teaching activities. In the main these have to do with the teacher's entering into a dialogue with the students.
- Cooperative teaching activities. These mainly concern the setting up of group-centred study activities.
- Games. These include role-play and simulations which are intended to provide the student with a representation of reality.
- Tasks and projects.

Teaching may occur in direct interaction with the student in a classroom or lecture theatre or it may be collected and "canned" so that students may be presented with it at a later date by means of written materials or electronic media. Teaching always occurs through some medium or other, for example a teacher, written materials, audio-visual materials or computer programs. The choice of medium depends on the objectives, the educational setting and the educational presuppositions. Where distance education is opted for, written materials and electronic media play a more important part than in cases where face to face education is expressly selected.

The central teaching process is influenced by a number of implicit or explicit educational presuppositions. These presuppositions may refer to many different aspects such as the choice of a particular target group, the selection of open or closed education, prefering a particular teaching level and the selection of a particular educational ideology. These presuppositions play a part in every decision that is made in the educational process.

The "educational setting" includes the infrastructure and organization of teaching and is for the most part the concrete expression of the educational presuppositions in organizational structures. The relevant aspects here are for example the various faculties and study programmes, the requirements for degree courses, the implementation of study contracts, the entrance requirements for students and the way in which teaching is organized.

6 THE BODY OF KNOWLEDGE

We define the body of knowledge as the totality of that
which is to be known and to be learned and its expression in
persons, written materials and electronic media.

Everything which is to be known and to be learned, that is
the content of knowledge, can be designated as divisible
into a number of areas. The exact division is rather
arbitrary, although traditionally and socially they form
what are generally known as subjects or academic
disciplines, for example law, medicine, history, psychology
and mathematics.

The content of each of these areas can be stipulated, that
is to say the facts, concepts, relationships, structures,
methods and attitudes belonging to any particular area, as
well as the relationships existing between each part of the
content. This is what is called the substantive structure
of the body of knowledge.

In addition, how or where this content was committed to
paper or otherwise recorded can be described or
inventorized. This is the syntactic structure of the body
of knowledge. We can state which works of reference and
which textbooks there are, who the experts are in any area,
which data-bases exist, which films are available and so on.

The body of knowledge plays a continual part in education,
while not actively completing the various didactic
functions. The content is of great importance in
establishing the objectives as they state which objectives
are worth pursuing. The expression of the content in
written or electronic materials or in persons plays a
fundamental part in both teaching and study. When a teacher
teaches and a student studies, use is made of knowledge
which is recorded in some way or other.

Finally, the division of the body of knowledge is frequently
of crucial importance in the organization of education and
the specification of the courses.

7 THE EDUCATIONAL PROCESS

The student and the educator are united in the educational process. Having dealt with the student (Section 4) and the educator (Section 5) we can now present the interrelationship between them (see Figure 5). Here we maintain that there is always interaction between the student and the educator. This interaction develops mainly in the central educational process. The whole complex that we have outlined in this connection is in continual interaction with the body of knowledge as we have described it in Section 3. We represent the interaction between the central process of the student subsystem and the central process of the educator subsystem in Figure 5, in which the three segments of the triangle, which is located within a circle, represent the factors influencing the interaction between the student and the educator.
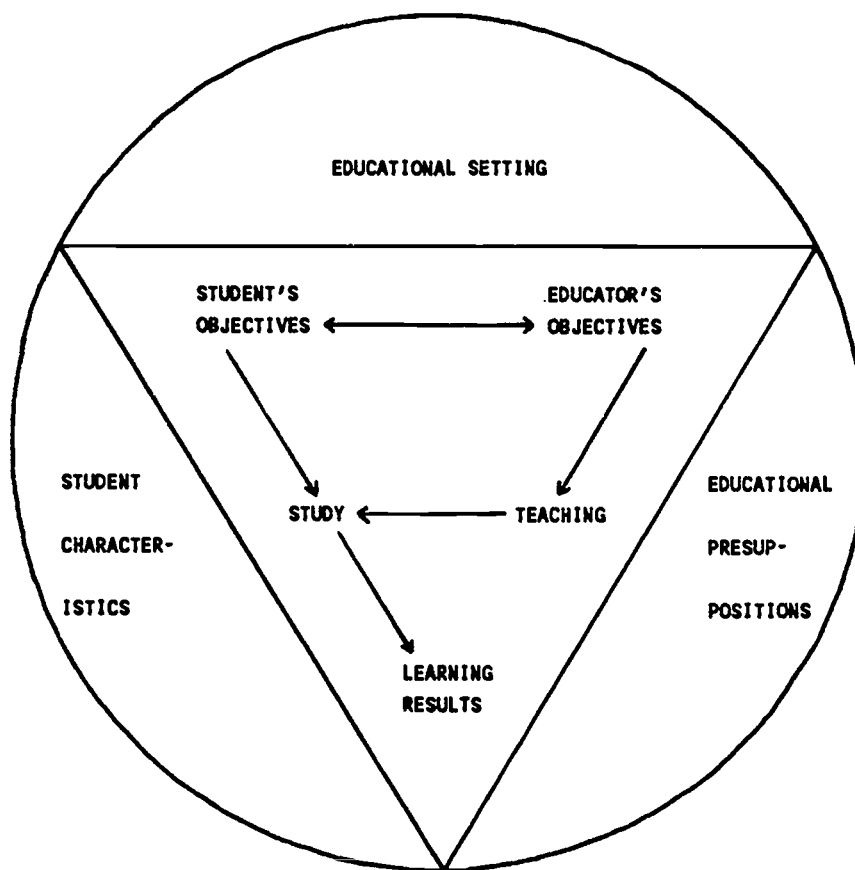

Figure 5: The educational process

The educational process occupies a central position here and
is influenced by the characteristics of the student, the
educational presuppositions, and the educational setting.
In our attempt to define open education we approach it with
regard to all the aspects included in the above diagram.

8 THE DIDACTIC FUNCTIONS AND OPEN EDUCATION

In Figure 1 the didactic functions are located at the centre of the three elements student, educator and body of knowledge. The dynamic interaction between these functions takes place on the basis of didactic functions. Didactic functions are connected with activities which have to be put into practice by the educator and/or the student in order to attain learning results. These activities are always connected with the body of knowledge in some way or another.

We mentioned the six didactic functions that we use in our research in summary form in Section 3. There is a clear parallel between these didactic functions and the aspects of openness referred to in Part I. We should now like to refer to these aspects of openness with the help of the following questions:

Dimension 1: Admission
1. Are there formal entrance requirements?
2. What requirements are there with regard to personal characteristics?
3. To what extent do financial considerations present a barrier to participation in education?

Dimension 2: Educational setting
4. What is the size of the smallest compulsory unit?
5. To what extent may individual students themselves determine their pace of study?
6. To what extent may individual students themselves determine the place in which they study?
7. To what extent may individual students themselves determine the time at which they study?

Dimension 3: Educational process
8. To what extent may the individual student have a say in determining the objectives?
9. To what extent may the individual student influence the composition of the subject matter and materials?
10. To what extent may the individual student influence the manner in which he or she wishes to study?
11. To what extent may the individual student influence the manner in which the results are assessed?

The didactic functions are associated with the dimensions of openness as follows:
- Analyzing students' needs and characteristics is connected with the question of admission.
- Creating an optimal educational setting is clearly a part of the second dimension of openness.
- The four remaining didactic functions, namely determining and clarifying the objectives, making the body of knowledge accessible, inducing and maintaining learning processes, and assessing the learning results, mainly tie up with the the third dimension of openness, the educational process.

We shall investigate the content of the various didactic functions below. In so doing we shall primarily specify the relationship between the various dimensions of openness and the manner in which the didactic functions are embodied in open education. In discussing this embodiment we shall draw a distinction between what we call "open supply education" and "open demand education". (See Part I of this paper.) An example of open supply education is the Open university of the Netherlands, where students can make a selection from a number of courses (see Nota Open universiteiten in Nederland, 1979). Examples of open demand education are the Empire State College (ESC) (see Granger, 1979) and the Self-Managed Learning Programme (SML) of the North East London Polytechnic (see Cunningham, 1986; Mossman and Stewart, 1987; Stephenson, 1983.) No courses are offered as such in these cases and the teaching is designed to meet the demands of the students.

8.1 Analyzing the needs and characteristics of the student

This didactic function is closely connected with all the other functions. Here we are concerned with the extent to which the characteristics of the student should be taken into account in the embodiment of all other didactic functions. The characteristics of the student will influence the objectives which can or must be pursued, the manner in which these objectives may be attained, the manner in which their attainment may be measured and the optimal setting for this process to take place in.

This is the reason why it is necessary to analyze these characteristics as thoroughly as possible in education and to relate the various elements of the educational process to them as closely as possible. This can occur in various different ways.

In the case of education that is closed with regard to the first dimension of openness (admission), the educator generally determines which student characteristics are relevant with regard to the specified objectives and educational setting. The student characteristics are then used as entrance requirements in the form of official certificates or age restrictions.

In open supply education, for example in the form offered by the Dutch Open University, while there are no entrance requirements, student characteristics are taken into account beforehand. An analysis is made of the target group in order to relate the educational process to it. The resulting teaching is presented in modules in which the entrance level required is clearly specified. This results in what we may call "off the peg teaching", as it is related to the highest common factor of student needs. Individual

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students may only make a selection from the ready made
modules, but may not adapt the content of the modules to fit
in with their personal requirements.

In the case of open demand education such as is offered by
ESC and SML, this didactic function is not specified only by
the educator in advance. The student also plays an active
part in this regard. Together with the educator, usually a
mentor or supervisor, the student draws up a profile of his
or her characteristics such as previous knowledge, learning
style and general circumstances. Moreover, the objectives,
the manner of teaching and study, the educational setting,
and the means of assessment are all negotiated by the
student with the educator. Given these conditions one can
speak of "made to measure teaching". The fact that at the
ESC the Center for Distance Learning also offers
"prefabricated" courses does not affect the status of
"demand education". It is no more than a form of
efficiency, so that the wheel does not have to be invented
over and over again as it were. (See Granger, 1988.)

8.2 Creating an optimal educational setting

An adequate educational setting must be created in order for
the teaching and study processes to proceed optimally. Thus
the student must have the possibility to be able to study
and to interact with the educator. The educator requires a
setting in which teaching can take place and in which the
learning results can be established.

In the case of education which is closed with regard to the
second dimension, the educational setting is extremely rigid
for the student. As a result of following a system in which
specific subject matter has to be covered by a group within
a fixed period, usually one year, the place, time and pace
of study have all been laid down. Students are required to
be present at an educational institution for the greater
part of their studies. Moreover, they are required to
attend lectures and practicals that take place at fixed
times. The examinations too are usually held at specific
times of the year.

In the case of open supply education on the other hand, we
find the educational setting being made as flexible as
possible. At the Dutch Open University for example,
distance education has been opted for so that students can
for the most part determine where and when they study and at
what speed. Students can complete the greater part of their
studies at home with the aid of "canned" materials (see
Section 5). This means that individual students can and
should themselves take the initiative in equipping their
study environments and places of study.

In the case of oper. demand education, distance education is
not chosen by definition, with the result that the
educational setting becomes a point of negotiation. The
student can negotiate the most suitable educational setting
with the educator when it comes to place, time and speed as
well as the manner in which the materials are adapted to the
student's needs.

8.3 Determining and clarifying the objectives

Education is directed at the attainment of learning results.
Accordingly it is necessary to begin the educational process
by determining which results one wishes to achieve and then
by specifying these in the form of objectives.

Several factors play a part in the determination of
objectives. On the one band it is necessary to have a clear
overview of the objectives regarded as worth pursuing. This
overview may be obtained by analyzing the content of the
body of knowledge, that is the academic areas, along with
the professional profiles and social demands. By means of
such an analysis answers to questions such as the following
may be obtained: Which learning results can be achieved in
the field of archeology? Which objectives must be attained
for a person to function as a doctor, lawyer, nurse or
whatever? What does society or the academic world demand of
an academic? In addition, such an analysis can provide
insight into the relationship existing between the different
objectives, for example by stating which objectives must be
attained as a precondition for the attainment of other
objectives.

On the other hand, it is also necessary to obtain
information about the student's previous knowledge in order
to establish which objectives have already been achieved and
which have still to be. Further, the objectives which are
relevant to the student have to be taken into account in
determining the objectives.

In the case cf education which is completely closed on the
educational process dimension, the educator has to take full
responsibility for the didactic function "determining and
clarifying the objectives." In this situation, the educator
will probably not be the individual teacher, but rather a
syllabus commission or curriculum commission. Educators are
regarded as experts in assessing the desirability of
particular objectives and can use their expertise in
determining what the objectives of a particular subject or
programme should be. The generally prevailing attitude here
is that students have no part whatsoever to play with regard
to this didactic function as they do not understand the
total structure of the objectives and fail to appreciate
which objectives can and should be achieved in a particular
area.

Concerning the student's level of previous knowledge, in
closed education it is assumed that the level of previous
knowledge required for each subject or programme is constant
and that it is the student's responsibility to ensure that
he or she meets the requirements which are stipulated.
These requirements are frequently even standardaized in the
form of certificates.

In open education on the other hand, it is held that
students have an active contribution to make in the case of
this didactic function.

In the case of open supply education, students may to a
certain extent determine their own objectives. The
educator does not rigidly lay down the objectives for an
entire programme but divides the curriculum into modules or
small self-contained elements. The educator can then
specify which objectives can be achieved for each of the
modules. In this system students do have a say in
determining the objectives insofar as they are not obliged
to take any programme in its entirity but are free to choose
the modules which are most relevant to their individual
needs and objectives. To the extent that smaller modules
and a greater variety of modules are offered, the chance is
greater that each student can construct a package which is
relevant to his or her individual objectives.

In the case of open demand education the student has more
influence when it comes to determining the objectives. The
objectives are completely determined in a dialogue between
the educator and the student. The starting point here is
not the offer of "prefabricated" modules, but rather the
learning needs and demands of the student. Here we are not
concerned with making a selection from a wide variety of
prefabricated courses but with an approach to tailor-made
education. Two important responsibilities of the educator
in the fulfilment of this didactic function are: first,
providing the student with support in analyzing his or her
needs; and second, the provision of information with regard
to the objectives that may be achieved. The educator and
the student should then determine in close consultation with
each other which objectives that particular student,
following whatever particular programme, will pursue.

8.4 Making the body of knowledge accessible

The attainment of objectives always occurs by virtue of
making the body of knowledge accessibile. We have defined
the body of knowledge as the totality of that which is to be
known and be learned and its expression in persons, written
materials and electronic media.

In education, use is made of a particular part of the body of knowledge. In the literature (see De Block, 1982) the term "subject matter" is used to express this. The didactic function of making the body of knowledge accessible includes both the selection of the subject matter as well as making this material accessible to the student. We refer to all activities embodied in this didactic function as "study" if they are performed by the student, and as "teaching" if they are performed by the teacher.

In education that is closed on the dimension of the educational process the educator will play the most important part in the embodiment of this didactic function. A teacher will select the subject matter from the whole of the body of knowledge and will prescribe which textbooks, articles, films etc are to be studied. He or she will make the subject matter accessible by showing how it applies to the student. The educators will frequently present the content in their own words in a lecture or written work and will put forward their own interpretations and draw their own conclusions. The educator functions as a sort of intermediary between the body of knowledge and the student. The student is not advised to enter into direct interaction with the body of knowledge.

Where education is open on the dimension of the educational process, the student will be given a more active part to play in the embodiment of this didactic function. The educator will no longer select the subject matter without consulting the student at all. Nor will he or she go on to present it to the student idiosyncratically, but will present the body of knowledge by making it directly accessible and by assisting the student to become acquainted with it. The educator will give the students help and advice on finding their way through the body of knowledge and will make suggestions concerning for example the sequence in which books and articles should be studied. In this type of education the individual students themselves select the subject matter in consultation with the educator and on the basis if the educator's advice. Thus the individual students themselves play an active part in selecting and processing the subject matter.

8.5 Inducing and maintaining learning processes

Making the body of knowledge accessible is alone insufficient in order to achieve objectives: learning processes must also occur. Thus an extremely important didactic function is that of inducing and maintaining learning processes. Both the student and the educator will have to develop a number of activities in the realization of this function. If a student develops activities for this purpose we call it study, while if the educator develops them we refer it it as teaching.

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In education that is closed on the dimension of the educational process the educator decides how the subject matter will be taught and for the most part also how the student should study. The students have little influence and are essentially compelled to have their studies wholly determined by the educator.

In open education, particularly open demand educaton, the student can play a much more active part in determining the manner of study and the manner in which he or she is taught. Students can negotiate the most suitable form of teaching and study with the educator (cf. ESC and SML).

8.6 Assessing the learning results

Finally, it is important in education that the learning results be assessed and that there can be feedback from these results to the other elements of the educational process.

Assessing the learning results consists of a number of aspects:
- determining the way in which the learning results should be measured;
- determining the criteria which should be used in evaluating the results;
- measuring and evaluating the learning results;
- giving feedback with regard to the learning results.

In the case of education which is closed on the educational process dimension, this didactic function is provided in full by the educator. The educator determines both the manner in which the learning results are measured as the criteria that are used to evaluate them. The measurement, evaluation and provision of feedback are all performed by the educator. Here it is regarded as inconceivable that the student should have any say at all on these matters. We find this situation inter alia at the Dutch Open University and at practically every other traditional institute of education.

However, in education that is open on the educational process dimension we find the belief that the student does indeed have a part to play in fulfilling this didactic function. Students can negotiate the manner in which they are tested and evaluated with the educator. It is also conceivable that they contribute towards determining the criteria themselves and can even participate in judging or exerting influence over the choice of the examiners. We should like to cite the Self-Managed Learning Project as an instance of this. In the handbook for this project (NELP, 1987, p.14) we find the following extract in the "Principles of Assessment": "All parties to the Assessment process have

an equal voice and the decision about whether or not to
accept an individual self-assessment has to be reached by
concensus. Each set agrees its own assessment procedure and
criteria with External Examiners."

8.7 Conclusion concerning didactic functions

In this section we have shown how different didactic
functions can be completed and how this can be related to
the various dimensions of openness.

In the case of education that is closed on all the
dimensions it appears that the educator alone determines the
manner in which the didactic functions v. 1 be embodied as
well as the way in which the embodiment of these functions
will be performed. As soon as students opt for instruction
in preference to self-instruction, thus deciding to enlist
the assistance of an educator, they will frequently find
themselves in a situation in which the right to decide on
the didactic functions is removed from their control.

With regard to the didactic functions, in the case of open
supply education more choice is given to the student.
While the student does have more influence as a result, this
choice is restricted to a prefabricated selection. In
contrast to this, open demand education attempts to give the
student far greater influence over the embodiment of the
didactic functions. In several cases the embodiment of the
didactic functions is allowed to become predominently a
student activity rather than being left in the hands of the
educator.

9 CONCLUSION

In part II of this paper we have developed a didactic model that we use in the analysis and examination of open education. The emphasis in this model has been placed mainly on the didactic functions which must be fulfilled in education and on the manner in which these functions must be embodied by the educator on the one hand and the student on the other. The didactics of open higher education must take into account all the elements of the model as described above. The relationship between the student and the educator and the manner in which decisions are made with regard to didactic functions occupies a central position in the development of open higher education.

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