

# DIDACTICS AND COMMUNICATIONS CRITERION OF DISTANCE EDUCATION

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## **Abstract**

*Last decade's technological development in the field of information technology has boosted the range of varieties of its use in the distance education and given new dimensions to this type of education. Distance-learning nowadays is practised by several theory's, each differing from the other in its formal access, in the analyse of its teaching and learning materials, in its ways and range of counselling and the range of its communication with the participants, as well as in its didactic concept of preparing and forming learning materials, etc. Distance education is important criterion for new communication trends in education. Therefore it shall be covered more thoroughly in this work.*

**Key words:** didactics, distance education, ICT, teacher training.

## **Introduction**

The results of sociological as well as pedagogical and psychological research (Gerlič, 2000) in our country indicate an increasing tendency of changes taking place in the field of education, with an increasing amount of interest in the School reform(s) being recorded throughout the part of the world with well-developed educational systems. Political, economical and technical changes, as well as the development of democratic society have brought up the need for some crucial changes in the existing school (educational) system which - on the other hand in its present situation - often finds itself in the state of a social, pedagogic (educational) as well as financial crisis. Some of the most developed countries find themselves today in a firm course of a developmental phase called information society. This new type of society tends to solve the problems of industrial production coming to a halt with a mass introduction of robots and computers, as well as with a powerful development of education and research. Such society puts much emphasis on the role of the process of providing the educational system with the informational technology taking place in the field of introducing modern information and communication technologies as well as in the field of searching for some more modern and more innovative forms of learning and teaching (Keegan, 1993). A society like this feels and is increasingly becoming aware of the changes in the society itself and in the ways of human activities that indicate the need for the improvement of the existing educational systems as well as the adjustment of the latter to modern needs in the educational process. The solutions that are on their way or that are already available in the field of telecommunications as well as in the field of information technology, make it possible for the experts to establish some new forms of educational environment, where the process of the so called distant teaching and learning is gradually gaining importance.

Distant teaching and learning represent the form of direct or indirect education respectively, where there is a physical or even time-based separation between a teacher and a learner. The teacher or tutor respectively checks consequently the learner's learning progress. The teaching and learning materials are communicated over long distances in a print format or in electronic form with the help of various media. As Keegan puts it (Keegan, 1993), distant education and learning represent a form of indirect education, which enables the learners to learn in their own (i.e. home)

environment or in a distant environment. This form of education is very popular and widely used in the process of permanent education involving people who have already finished some form of formal education and who now want to extend their knowledge and skills or to qualify for some other job or gain some additional skills useful in their work experience. Distant teaching and learning is aimed at all those who want to get some additional education in their particular field of activities, since the very system of distant teaching and learning is a very flexible one and because it enables at the same time the anonymity in the whole course of educational process. That is exactly why one can find people of nearly all ages being involved in the process of distant teaching and learning. Thus this system also represents an important element of permanent, i. e. life-long learning.

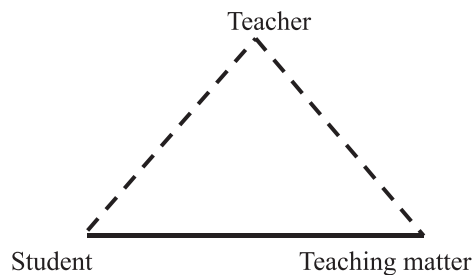
Distance-learning nowadays is practiced by several theory's, each differing from the other in its formal access, in the analyze of its teaching and learning materials, in its ways and range of counseling and the range of its communication with the participants, as well as in its didactic concept of preparing and forming learning materials, etc. The main purpose of our study is communication and didactic analyses of distance education as important criterion for new communication trends in education.

### **Communicological and Didactic Analysis of the Development of Distance Education**

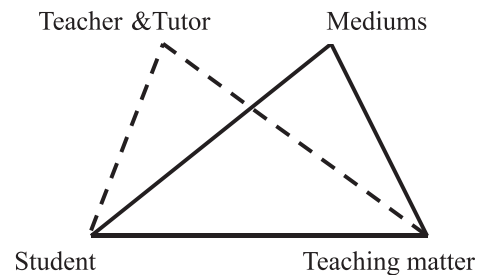
Distant teaching and learning throughout the world boasts of a long tradition. As stated by Mrs Bregar (Bregar, 1998), it is not something that has been invented recently, but something that already existed in some form or other in the eighteenth century where the first beginnings of distant teaching and learning can be traced. The then development of postal service and printed materials, for example, enabled the people living in some distant parts of North America to educate themselves on their own, without having to attend any of the then rather traditional, remote educational institutions out of their reach. The knowledge, which these people gained in this way, was – thanks to some appropriate evaluation systems and certificates – valued as formal education. However, it was only in the second half of the nineteenth century that the process of distant teaching and learning started to appear in a greater extent, when the so called system of *correspondence-based education* was successfully being introduced in the USA, Canada, Australia, Sweden, Germany and Great Britain (Gerlič and others, 2002). The knowledge acquired in this way too, was – thanks to some appropriate evaluation systems and certificates – valued as formal education. The methods of the correspondence-based education depended greatly on the stage of the development of the rest of the educational forms and educational process, especially on the development of technology, i.e. technological development. The use of mass media had been on the increase and had contributed greatly to the increasing number of the communication channels, i.e. channels of knowledge and information transfer. The more the educational technology - and the various forms of computer-assisted educational forms, group work and project-based work along with it – developed, the more the system of distant teaching and learning opened and became ready to take on some new forms of work as well as working techniques. Thus the process of distant teaching and learning can – according to Taylor (Bregar, 1998) – be divided into four individual generations or periods respectively, which – in order to present them in a transparent way and in order to make a better analysis – can be united and presented as a system of the so called didactic models (Gerlič, 2000) as follows:

- First generation model, which is based on the so called *correspondence models*; where the text is based on the form of a two-way written communication i.e. on the correspondence going on between the teaching staff (teachers) on one hand and the participants of this form of distant teaching and learning (students) on the other. (The classical didactic triangle shown by Figure 1)
- Second generation model based on various forms of *multimedia* which represent some

new media used in the transfer of knowledge or teaching and learning materials the purpose of which is to enrich the already existing printed materials e.g. audiotapes, videotapes, materials for computer-assisted learning, interactive video, etc. Thus the written or printed materials, i.e. text-based materials, only represent one of the sources, whose importance that it had in the correspondence model however has been lost. (The corrected didactic triangle shown by Figure 2)

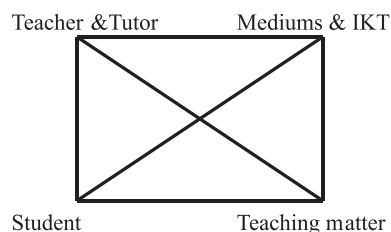


**Figure 1. Communicological and didactic 1<sup>st</sup> generation model of distance education**

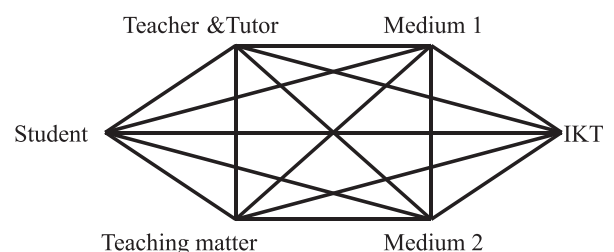


**Figure 2. Communicological and didactic 2<sup>nd</sup> generation model of distance education**

- Third generation model based on the systems of *distant teaching and learning* in the literal sense of the word. We can talk about this form of distant teaching and learning when there are many different sources of knowledge at our disposal (e.g. radio, TV, audio-conferences, videoconferences, etc.), which render possible a knowledge transfer over distances requiring on their part higher and higher level of external and internal interactivity, i.e. communication. (Didactic square shown by Figure 3)
- Fourth generation models characterized by *flexible learning*, which is based on the interactive multimedia systems, on the computer-assisted Intranet communication, on the Intranet itself, as well as on some of the more recent information and communication technologies (ICT). This period has attained a much higher level of interaction between individuals, and has done so with the use of various multimedia and Internet-based teaching and learning aids, whose main purpose is to give the learners more independence and greater flexibility in the process of their learning, thus assuring the highest level of external and internal interactivity – i.e. communication in the didactic as well as the communicological sense. (Didactic polygon shown by Figure 4)



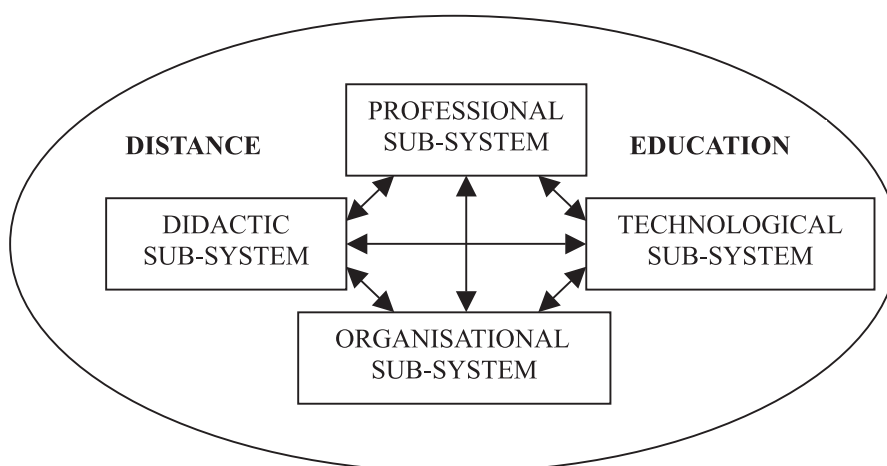
**Figure 3. Communicological and didactic 3<sup>rd</sup> generation model of distance education**



**Figure 4. Communicological and didactic 4<sup>th</sup> generation model of distance education**

### Some More Important Sub-systems of Distance Education

Lessons and lectures in their basic form always represent a deliberate action, i.e. planned and organised forms of education, which particularly holds true of the process of distant teaching and learning: it is *purposeful*, since it determines in advance what the participants should acquire; it is *planned*, since the teaching and learning materials are chosen and arranged into a series of logic and time-bound units and since the educational process follows in its steps the methods and techniques predicted and since it is aimed at attaining some educational goals that have been set systematically and deliberately.



**Figure 5. Sub-systems of distance education**

And finally, distance teaching and learning is an *organized* activity, since it is carried out in specific institutions, at a specific place, at a specific time, being carried out by staffs that have been appropriately trained for their task. The results of the system analysis of the distant teaching and learning process (Gerlič and others, 2002) can be shown in the form of four crucial interactively interconnected sub-systems. These are: the professional, the technological, the organisational, and the didactic sub-systems. (Figure 5)

*The professional sub-system* of distance teaching and learning is based on a short-term and long-term preparation of teaching and learning materials. It leads to the teacher's and participant's deeper understanding and mastering of the knowledge and skills. The participant is not supposed to master all the knowledge at the expert level only, but should be able to operate with the knowledge given to him/her in the same way as his/her tutor (teacher), who – on the other hand – is (or should be) able to pick out from a huge mass of data and knowledge the particular bits and pieces that may be of great help or interest to him/her. So it is the ability to choose accurately particular information out of a huge quantity of knowledge and the ability to transfer this particular information to the participant(s) that is of utmost importance, as well as the ability to make such pieces of information deliberately an integral part of the curriculum, which – on its part – determines which subjects should be taught and the order in which these subjects should be taught, as well as how much time should be given to them. Here one also has to bear in mind the lesson plan, which helps realize the aims stated in the curriculum by assigning within each individual subject the extent of the knowledge that should be acquired by the student in this particular subject, as well as by rendering possible the correlation among individual subjects. Thus the professional sub-system is based on the scientific accuracy and correctness, furthermore on the suitability of the teaching and learning stuff (materials), as well as on the process of systematisation. It is also based on the respect being paid to the learner's developmental stage, and on its capability to establish a link between theory and practice. It also indicates the possibilities of coordinating individual subjects,

as well as the evaluation and enhancement of the learner's progress and success. It is exactly this last requirement, which is of utmost importance, since it is based on the learning process, which must be:

- Reasonable (i.e. it must be based on the learner's understanding)
- Economical (i.e. it must lead to the desired goal in the shortest period of time possible and with as little energy and financial means used as possible, which however must include the use of appropriate teaching and learning aids)
- Real (authentic, - i.e. it must be closely connected with the environment, where it takes place)
- Rational (i.e. it must lean on the theories of psychology of learning, which recommends certain appropriate techniques of the acquisition of knowledge)
- Evaluation-based (i.e. the teaching and learning process must include certain different ways of evaluating the extent of the knowledge acquired by the learner)

*The technological sub-system* of distance teaching and learning is based on the recent idea that the quality of distant teaching and learning depends of the educational technologies used, which can basically be divided into two groups, - the developmental technologies on one hand, and the teaching technologies (Scheffknecht, 1999). In the course of the development of the teaching and learning process, the technology is made up of the software and the hardware which are used in developing and preparing the teaching and learning materials and which thus determine:

- Final products (all sorts of teaching and learning materials used in the process of distant teaching and learning, e.g. printed materials, Web-based materials, sound-based materials, videos, etc.)
- Program tools needed for the construction of the entire program of distant teaching and learning or its components, respectively (programming languages, graphic tools, multimedia tools, authoring systems, etc.)
- Program tools enabling the execution of the processes of distant teaching and learning, and
- Basic hardware needed for the production part of the development of teaching and learning materials.

In the course of the transmission of the teaching and learning process, the technology is made up of the software and the hardware which analyses and determines globally the following:

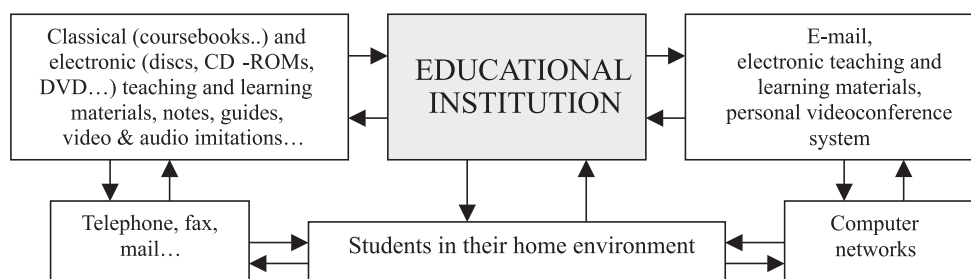
- Basic teaching and learning goals, which we want to reach in the process of distance teaching and learning (e.g. active cooperation, management of knowledge, assistance at working processes, asynchrony and synchrony in the educational process, evaluation of knowledge, etc.)
- Various sorts of the transmission of educational programmes (transmitting media) and technologies used for the transmission of educational programmes (traditional, multimedia, Web-based ones, etc.)
- Software and hardware of the users

*The organisational sub-system* is based on the ambition to optimise and rationalize the educational system. Within the production and work processes, however, this ambition is not new, but has already been present and emphasized as well as explored to an increasing extent for some time. The heads of the production firms have already come to the conclusion that only a well-prepared and well-organised working process can run smoothly, without interruptions, being successful in both economic and technical sense. Therefore some of the elements of organisation science have been implemented in the process of distance teaching and learning too. The essence

of this sub-system is a thoroughly elaborated methodical and methodologic approach that provides for the analysis of all teaching and learning situations as well as an accurately elaborated scheme of work (execution), which is based on this analysis. According to this Mr Debevc divides the experience gained in this field into the following three distance teaching and learning models:

- Model of independent education
- Model of a distributed classroom, and
- Model of open and classroom education.

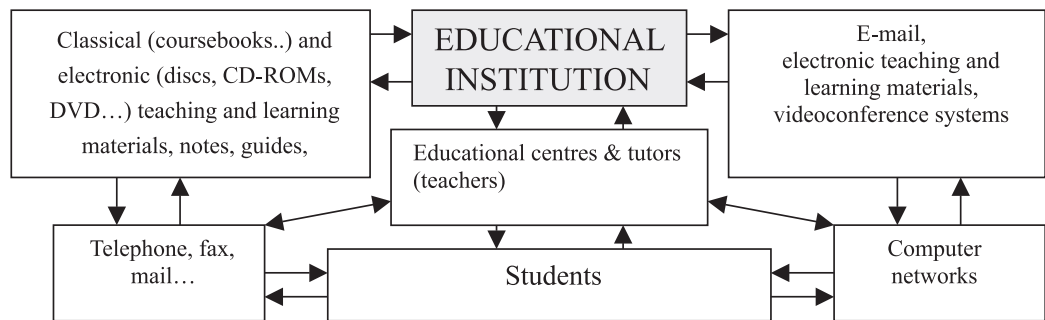
The model of independent education (Figure 6) represents one of the most interesting and current models of distance teaching and learning, and is actually the most frequently used one. In this model, the participants (i.e. the learners) stay at home and receive the teaching and learning materials in the classic or electronic form – on floppy discs or CD-ROMs. The participants also receive a certain amount of the teachers' additional notes and instructions containing hints for the participants as to what the latter should especially be careful about while studying these teaching and learning materials and which parts of the teaching and learning materials are of greater importance and need to be studied more thoroughly, etc. Teaching and learning materials of a higher level are made up of video and sound recordings of lectures, which can be accessed by the participants at any time, thus making the participants totally independent from time and place where the process of distance teaching and learning takes place. Due to the rapid development of information technology it can be expected, that the participants will get connected more frequently via the Internet with the school and educational systems, as well as information systems.



**Figure 6. Model of independent distance education**

Indirect communication taking place between learners and teachers can – with regard to what sort of technology the learners can access – be carried out with the help of telephone, fax machines, as well as videoconference systems. The process of direct communication on the other hand uses the traditional mail, e-mail, sound-based mail, and – recently – the video-based mail. For successful independent learning and their tackling with the exercises, the participants can receive special mail packages containing all the elements that are necessary for the participant in their doing the exercises in any particular field or area.

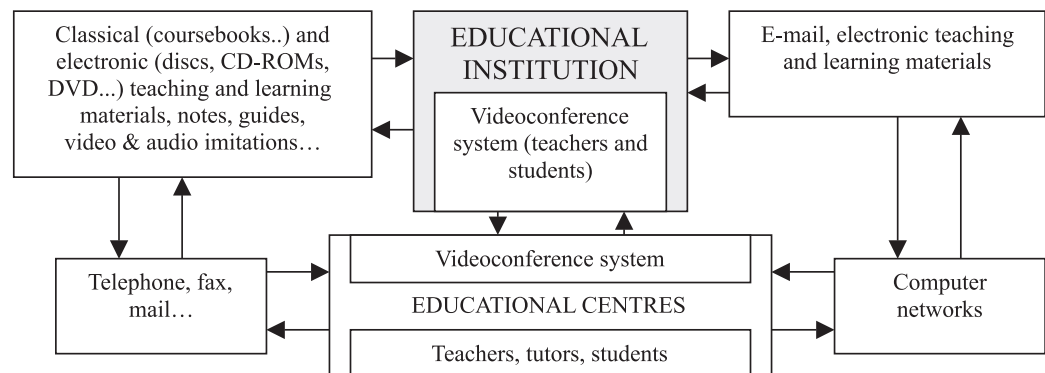
The model of a distributed classroom (Figure 7) is a classical model, where lectures can be transmitted (i.e. broadcast) from one place to many educational centres. Here an educational institution makes use of several educational centres throughout the country, where the participants of this form of education are assigned the so-called tutors who usually help the teachers.



**Figure 7. Model of a distributed classroom**

The latter occasionally visit these educational centres, however the videoconference systems can be used to establish a connection between the main educational institution on one hand and the educational centres mentioned above on the other. In such cases the teacher doesn't need to travel to individual educational centres. The distribution of teaching and learning materials is the same as in the case of the model of independent education, which means that the participants are given their teaching and learning materials in classical or electronic form. The participants also receive the texts of the lectures and various navigational systems for better orientation in their learning. A higher level of transmitting teaching and learning materials is made of multimedia-based video and sound clips stored on floppy discs, DVDs, or transmitted via the Internet.

The third model, - the most expensive one and thus not so easily affordable on the part of educational institutions - is the model of open and classroom education (Figure 8). Here a teacher gives a lecture which, with the help of a number of video cameras and an efficient video-conference system that are located in the lecture hall, as well as with the help of the so called quick network (e.g. multi-channelled ISDN, high-speed optic networks or ATM-network, etc.) is transmitted (broadcast) to lecture halls in some distant towns and cities, also equipped with cameras and video-conference systems. The participants also make use of teaching and learning materials in classical form as are typical of the traditional type of lectures. The model just described is - from the teachers' point of view - the simplest one, since they i.e. the teachers) teach in their traditional way. However, they have to get used to working with modern information and communication technologies.



**Figure 8. Model of open and classroom distance education**

The *didactic sub-system of distance teaching and learning* makes the core of the distance teaching and learning, since it is based on all of the three sub-systems already mentioned. It reflects the performer's i.e. the teacher's didactic and methodical and methodological skill and knowledge, as well as his/her pedagogic surveillance and his/her "art of teaching" (Roblyer, 1997). Since this sub-system is not so well known and since not much attention is being paid to it, let us have a look at some of its essential principles or problematic fields, which are as follows:

- An analysis of distance teaching and learning system as of a teaching and learning process ( e.g. Distance teaching and learning and their correlation with learning, the learning sources and conditions for successful learning, as well as the stages of learning, etc)
- Learning and didactic principles in distance teaching and learning
- The choice and arrangement of teaching and learning materials
- The preparation and formation of teaching and learning materials (the traditional as well as the electronic ones)
- The internal organisation of distant teaching and learning (the teaching methods, the teaching forms and techniques, as well as the structure and articulation of an individual teaching and learning unit)
- The internal organisation of distant teaching and learning (the teaching and learning environment, the communication, the teaching and learning aids, the didactic and organisational requirements, etc.)
- Special methodology of tutorship
- Evaluation of the learners' progress and prevention of bad results
- Evaluation and grading
- Information and communication technology in the process of distance teaching and learning, etc.

## Conclusion

As it can be seen in this analysis, distance teaching and learning represents a process, which is extremely elaborate and complicated and which requires a team-based work or approach, respectively at the stages of its preparation, execution and evaluation (Rowntree, 1994). The need for team-based work or approach is conditioned by the complexity of the problems, the complexity and variability of the knowledge, as well as the increasingly quick changes in the fields of professional careers, technology and organisation, and specially in the field of teaching and methodology!



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