University of Rijeka
Teacher Training College of Pula

Croatian Pedagogical-and-Literary Association - Zagreb

Interactive Communication in Education

Edited by:
Nevenka Tatković

Pula, 2005

PH.D.Nevenka Tatković
Sveučilište u Rijeci, **Filozofski fakultet u Puli,**
Visoka učiteljska škola u Puli
Maja Ružić

Interactive Communication by Applying Contemporary Media in Higher Education

Summary
Today society has become a multimedia society, turned towards new forms of communication, ready for changes and the new communicational challenges. The students, surrounded by PCs, mobile phones and ever so sophisticated software, videos, wireless sets and TVs, DVDs, satellite transmissions and 'the media above all other media' - the Internet. Because of that, the teaching ought to lean on new tools of technology that would speed up and make more efficient the process of communication. Considering several definitions of communication, the students learn about the communicational modules (compiled by Shannon, Shram, Newcomb, P.Watzlawicky) as well as the scheme of contemporary media used for educational purposes. A video-conference presented with more details, the relevant equipment required for realization of the same, types of conferences are indicated as well as the samples of video-conferences in the field of education, especially so in the Republic of Croatia.
The last portion of the work contains a brief survey on the research work carried out among students in order to elicit their opinions on interactive communication by means of contemporary media in high school education.
Key words: communication, modules of communication, contemporary media, video-conference, higher education.

1. INTRODUCTION

The educational process in the IT society as compared with the previous one, presented in the Industrial Age, has changed in its very essence. Modern media have brought great changes in the educational sector. Digitalization of the sound, images and video sequences has enabled a new approach to work while contents may now be distributed by means of new media and presented multimodal.

Subsequently, all teacher training colleges in the Republic of Croatia have incorporated in their curricula a study course named **the Basics of IT Practitioning**, which allows the comprehension of knowledge and skills by applying communication media as well as the interactive communication between students and teachers.

The studies are carried out by means of contemporary technological basics, while students obtain special knowledge on Informatics.

Table 1. Presence of IT Teaching in Curricula

Teacher Training College/Teachers' Academy of Zagreb (pre-school education)	Curriculum IT BASICS
Rijeka	IT Baiscs Lab – 60 Lessons IT Basics Lab – 60 Lessons
Pula	IT Basics Lab – 60 Lessons
Zadar	IT Basics Lab – 60 Lessons
Split	IT Basics Lab – 60 Lessons
Petrinja	IT Basics Lab – 60 Lessons
Čakovec	IT Basics
Zagreb	IT Basics
Osijek	IT Basics

2. DEFINITION OF COMMUNICATION

Sometimes it becomes extremely difficult to point out a definition that would be acceptable and agreed upon by everybody, and for this reason Socrates ‘insisted on particular attention when selecting the words of a definition before usage of such words in a discussion’ (Reardon, K., Kathleen /1998/: Interpersonal Communication. Zagreb, Alinea.)

The word 'communication' derives from the following terms:
Communicare = communicate, inform, discuss, agree.
common = joint, public, general
community = union, cell

Communication is:

1. ‘The interactive process (activity, mutual influence, work) represents the exchange of notifications among people with a specific

purpose (agreements, negotiations, collaboration, instruction...) and in public (takes place between two or more persons or in-between various structural layers of one person) by which community is formed (togetherness, an effort to make the two to act as one). Communication represents a process of creating and exchanging INFORMATION-messages (symbols and connotations) among People.’(Mušanović,M., Rosić, V. 1997)

2. It is a process enabling the exchange of signs with the purpose of intermediation of information. (according to Lavrnja, I. 1999).:

3. ‘The process of communication presupposes the openness of people towards communication’ (Group of authors 1994)

. 4. ‘It is an interaction of one person with another, or one person with a non-living source of information in order to transmit such information (messages, notification, declarations).’ (Bognar, L., Matijević,M. 2002).

3. MODULES OF COMMUNICATION

Shannon's Communication Module

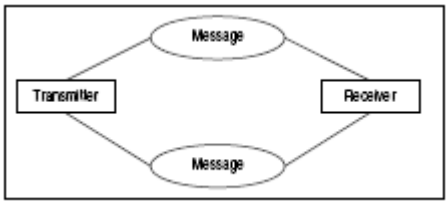


Chart 1. Shannon's Communication Module

Communicating represents a system of transformation of information. During the process of communication some sounds may occur, so that they are linked with the communication channels. The message is transmitted from the transmitter to the receiver through a communication channel. Communication may be considered successful when the party who is transmitting and the party who is receiving the message equally understand the message.

Shramm's Communication Module

Communication is a two-way process. It consists of encoding certain connotations within a determined system (consisting of signs), while the same system is applied when making a message dispatched to the recipient.

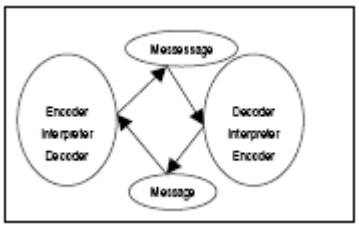


Chart 2. Shramm's Communication Module

T. Newcomb's Communication Module

Two or more persons are trained to keep a simultaneous orientation towards each other, or towards the object of communication. When the orientation does not exist, participants seek consensus or agreement.

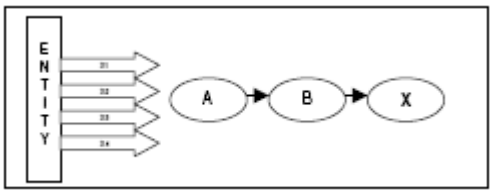


Chart 3. T.Newcomb's Communication Module

P.WATZLAWICKY'S THEORY OF COMMUNICATION :

Communication axioms:

- WE CANNOT AVOID COMMUNICATION!
- COMMUNICATION DIMENSION REFERS TO THE CONTENT AND RELEVANCE.
- RELATIONSHIP IS DETERMINED BY VISUAL NOTION AND INTERPRETATION OF BEHAVIOR.
- COMMUNICATION MAY BE DIGITAL (VERBAL) AND ANALOGUE (NON-VERBAL).

Educational communication may take various forms; it may be:

- intrapersonal, interpersonal and mass communication,
- personal and impersonal communication,
- verbal and non-verbal communication,
- one-way and two-way communication,
- direct communication and telecommunication,
- auditorial and democratic communication,
- violent and non-violent communication.

(according to Bognar, L., Matijević, M. 2002)

4. CONTEMPORARY MEDIA IN EDUCATIONAL SECTOR

The new forms of interactive communication successfully substitute the failures of traditional learning and teaching methods by applying modern media in the process of education.

The following Chart contains a survey of contemporary media:

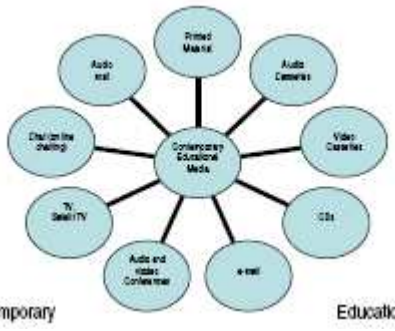


Chart 4.: Contemporary Educational Media

As the higher education institutes have shown an increased interest in video-conferences, we describe it here in detail:

4.1. VIDEO-CONFERENCES IN EDUCATIONAL SECTOR

Video-conferences may be used for Distance Learning. Linking professors and students who act from remote points shows that they are united in the educational process.

Video-conference enables participants who are located on remote points from each other to exchange information and collaborate on projects equally efficiently as if they were in personal contact, and this results in considerable savings of time and money. Video-conferences have been increasingly used in the educational system of Distance Learning, also for tele-surveillance – surveillance of production processes and remote objects. The photo shows the video-conference we presented at the University of Split (Croatia) last December. (Telecommunications: *http://www.telcompact.hr/usluge/telekomunikacije/telekom.htm*)

The required equipment for video-conference:

- Codec (Codec (coder-decoder) is either a contraption or a programme for digitalization, compression and codification of data to be transferred through a computer network)
- A video-camera
- Microphone
- Monitors (one monitor displays the remote image, the other transmits the image of the classroom)
- A Control Unit (i.e. picture control)
- A Video-player
- A PC
- A Fax Machine

Chart 5.: The Equipment required for video-conference

The Video-conference systems may be divided as follows:

- **Point-to-point conferences** - are such conferences where only participants belonging to two parties involved with compatible equipment may communicate, while the contact itself may be established by any of the two hereto referred parties.

(images:http://edupoint.carnet.hr/casopis/broj-05/clanak-02/index.html).

- **Point-to-multipoint conferences** – refers to a number of participants from different locations, e.g. in CARNET-System, video-conference may include eight locations at maximum.

TYPES OF VIDEO-CONFERENCES:

1. INDOOR VIDEO-CONFERENCE – at least two specialized classroom labs, with relevant equipment, are required. In one of the rooms, teacher held his lecture while students sitting in the other room listen to the lecturer. This type of video-conference is characterized by a traditional type of lecture, as it is held by teacher, it basically includes a general discussion, there is no creativity.

2. A DESKTOP CONFERENCE

For this type of conference there will be required a PC with the relevant equipment (corresponding hardware and software).

The system of Desktop Conferences frequently contains a document that may be seen and changed by the participants during a discussion. This type of conference differs greatly from a traditional type of lecture and enables communication among all participants, enabling an equal participations to all.

TYPES OF VIDEO-CONFERENCES IN EDUCATIONAL SECTOR:

Students may attend lectures which are not offered in their school; e.g. foreign language courses.

- Schools and faculties may offer lectures to students outside the regular timetable and include such students who are otherwise not allowed to attend the traditional lectures.
- Faculties may be connected with various businesses and offer certified courses and training for their employees.
- Professors may collaborate with other professors, acting on very remote locations. They may exchange their experiences and methods of teaching and relevant presentations of the chosen topics.
- Students may consult their tutors. This is an excellent way of providing support to schools.
- Librarians may offer a survey of their services to schools.
- Professors and students may collaborate and exchange information with other schools.
- Students may use the so called 'video pals' for their communication purposes and learn in this way about various cultures, ways of living, cultural and ethnical differences among people. This mode of collaboration also represents an excellent way of practicing foreign languages.
- Competitions that take place between students from various schools – discussions, research, etc. – may be organized by means of video-conferences.
- A video-conference may facilitate group work; one group, set on a remote 'site', webpage takes over a task of teaching distant colleagues.
- Already developed projects apply a video-conference system in order to achieve communication and collaboration with partners.

(http://www.pefri.hr/-zadami/cw/tipovi.html)

DIGITAL VISUAL COMMUNICATION

Digital visual communication differs from classical videoconferences as they integrate sound, video images and data. They enable an automatic transfer of images, documents and objects, simultaneous work on documents provided by remote computers, integration in the existing information infrastructure and unified surveillance and supervision over the entire network.
(www.multilink.hr/prof-usl-dvc.html)

AN EXAMPLE OF A VIDEO-CONFERENCE IN CROATIA

'The first experimental remote lecture in the Croatian academic environment was held in January, 1997. The students of the Faculty of Electrotechnical Science in the city of Osijek attended the lecture held by Ph.D.Hrvoje Bebić, Professor at the Faculty of Electronic and Informatics in Zagreb. During this lecture, the students were allowed by the lecturer to ask him direct questions. Since then,
regular lectures have been held at the above-mentioned faculties by means of the video-conference system. At both faculties, special classrooms were prepared, primarily schemed for remote lectures. The classrooms are put at disposal to all the faculties and institutes which are covered by the Universities of Zagreb and Osijek'.

(http://cn.carnet.hr/arhiva/1997/970123/distlrn3.html)

The equipment required for the establishment of videoconferences is situated in four educational institutes in the Republic of Croatia:
- Faculty of Electrical Science and Informatics of Zagreb,
- Faculty of Electrotechnical Science, Machinery and Shipbuilding of Split,
- Faculty of Technical Sciences of Rijeka, and
- Faculty of Electrotechnical Sciences of Osijek).

(www.carnet.hr/sobne-vc/sustav)

E-learner represents the first Croatian LMS (Learning Management System) that provides a learning system through the Internet. (http://www.itcenter.hr/kolumna.asp)

Lotus' Sametime 2.5
Lotus' Sametime represents a system of desk video-conferences meant for the work of virtual teams. Except for its basic properties supported by other systems of desk video-conferences, this particular system enables some more progressive features that have not been adopted and integrated by other systems, such as:
- instant messaging
- scheduled meeting booking system
- discussion halls
- premises for teamwork
- conferences with moderators
- monitoring conferences
- integrated system of research/questions
- detection of presence of a participant within the system.

The properties of such a system represent almost an ideal addition to the existing system of Distance Learning.

The entire interaction with the system takes place by means of web interfaces which are simple and intuitive when utilized. (Novak, Albert: http://edupoint.carnet.hr/casopis/broj-05/clanak-02/index.html).

5. RESEARCH INTO THE OPINIONS OF STUDENTS ABOUT INTERACTIVE COMMUNICATION IN THE APPLICATION OF CONTEMPORARY MEDIA IN HIGHER EDUCATION

5.1. RESEARCH ISSUES relate to the opinions of students about interactive communication by applying contemporary media in higher education.

5.2. AIM OF THE RESEARCH refers to the opinions of students about the frequency of usage and application of IC media in educational sector.

5.3. RESEARCH TASKS:
1. To determine the opinions of students about the frequency of application of contemporary communicational media in higher education and the assessment of their current usage
2. To research and learn which media, according to students, may be considered the best communication media in

teaching.
3. To research their opinions about the position of lecturer within the conditions that enable the introduction of modern communication in the process of education.

5.4. RESEARCH HYPOTHESES:

Within the research, we started from the hypotheses that contemporary media tools have not been sufficiently used in the higher sector of education, and that these tools change the role of teacher in the stated sector.

5.5. RESEARCH SUBJECTS

The sample consists of the students attending the first and the second year of studies at the pre-school teaching department and belonging to both groups of students – half-time and full-time students (the total number of 130 in the academic years of 2001/2002 and 2002/2003.

5.6. RESEARCH METHODS, PROCEDURE AND INSTRUMENTS:

1. In the theoretical part of the paper, we used scientific and professional literature.
2. By means of the empirical-inductive approach and the relevant instruments, the opinions of students were gathered.
3. A Questionnaire was also used.

5.7. DATA PROCESSING:

The data processing was carried out in several phases.
In the first phase, we made a survey of the questionnaires.
In the second phase, we carried out the grouping of the collected data into tables.

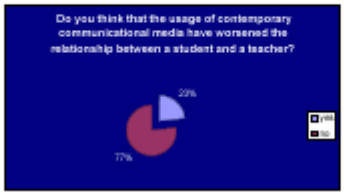
In the third phase, the data was processed and corresponding results were interpreted.

5.8. RESULTS OF THE RESEARCH

N=130 TARGET QUESTIONNAIRES

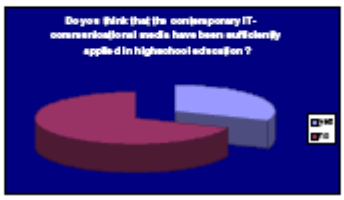
1. Do you think that the usage of contemporary communication media has worsened the relationship between student and teacher?

Do you think that the usage of contemporary communicational media have worsened the relationship between a student and a teacher?	
YES	NO
30	100



2. Do you think that the contemporary IT-communication media have been sufficiently applied in higher education?

Do you think that the contemporary IT-communicational media have been sufficiently applied in highschool education ?	
YES	NO
40	90

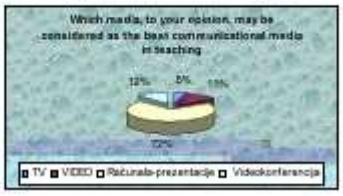


3. Do you think that the contemporary communicational technology would "throw out" a teacher from the educational process?

Do you think that the contemporary communicational technology would "throw out" a teacher from the educational process?	
YES	NO
62	68

4. Which media, to your opinion, may be considered as the best communicational media in teaching

Which media, to your opinion, may be considered as the best communicational media in teaching			
TV	VIDEO	PC PRESENTATIONS	VIDEO-CONFERENCES
8	14	95	15



5.9. PROCESSING AND INTERPRETATION OF THE OBTAINED DATA:

Most of the students (77%) think that the use of contemporary communication media in the process of education DOES NOT HAVE A NEGATIVE INFLUENCE in terms of the student-teacher relationship, i.e. the usage of media has not been worsened.

69% of the subjects consider the contemporary ITcommunication media as NOT SUFFICIENTLY PRESENT in higher education.

52% of the subjects think that the modern communication technology WILL NOT exlude teacher from being a subject in the process of education. However, we should not disregard the data which state that 48% of the students think that it could happen!

95% of the subjects think that PC PRESENTATION represents the best communication media in teaching, while 6% of them think that it is the TV, and it should also be noted that 15% of the subjects

consider PC-video-conferences as the best media!

6. CONCLUSIONS AND PROPOSALS

1. The interactive communication and the application of contemporary communication media in the process of education has had a very complex task to resolve. Teachers ought to update their skills in Informatics and become capable of applying the new, modern media in the process of education in order to bring the existing means of communication up to a higher degree.

2. Starting from the strategic plans of information in Croatia, there should be designed a plan of technological-IT education which would deal with all those issues related to education. The IT literacy should be provided for human resources at all levels, from kindergartens to higher education as well as for those at the advanced age.

7. BIBLIOGRAPHY:

1. Bognar, L., Matijević, M. (2002): Didaktika, Zagreb, Školska knjiga
2. Group of authors (1994): Integralna metoda, Zagreb, Alinea.
3. http://cn.carnet.hr/arhiva/1997/970123/distlrn3.html
4. http://www.itcenter.hr/kolumna.asp
5. http://www.lotus.com/home.nsf/welcome/learnspace
6. http://www.pefri.hr/-zadami/cw/tipovi.html
7. Lavrnja, I.(1999): 'Didaktičke vježbe, Rijeka
8. Mušanović,M., Rosić,V. (1997): Opća Pedagogija, Rijeka, Pedagoški fakultet Rijeka
9. Nataša Hoić-Božić http://pefri.hr/metodika
10. Novak, Albert:
http://edupoint.carnet.hr/casopis/broj-05/clanak-02/index.html).
11. Reardon, K., Kathleen (1998): Interpersonal Communication. Zagreb,
Alinea.
12. Telecommunications
hettp://www.telcompact.hr/usluge/telekomunikacije/telekom.htm
13. www.carnet.hr/sobne-vc/sustav
14. www.multilink.hr/prof-usl-dvc.html
15. Zakon o visokom obrazovanju Republike Hrvatske

7.1. USEFUL LINKS:

- TALENT: http://www.le.ac.uk/TALENT/about.html
- Learning based on Internet (http://awbl.com/)
- British Educational, Communicational and Technology Agency (BECTA – formerly NCET) http://www.becta.org.uk/index.html
- CAsTLE (JTAP's Computer Assisted Teaching and Learning) (http://www.le.ac.uk/cc/ltg/castle/)
- Computerized Media Communication (http://www.ascusc.org/jcmc/)
- Interactive Media in Education (http://www-jime.open.ac.uk/index.html)
- Teaching Technologies (http://node.on.ca/tfl/integrated/)
- Western Governors University – a complete on-line University (http://www.wgu.edu)
- www.elearningnetwork.com
- www.eurolearn.net
- www.eureka.be
- www.cepu.it/glo.asp
- www.cepuweb.it