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**USING ICT IN THE EDUCATION PROCESS BY PRE-UNIVERSITY TEACHERS
AND PRE-SERVICE TEACHERS - COMPARATIVE STUDY**

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Abstract: *Practice has often proven that in many cases the multimedia technological applications (internet, media editing hardware and software platforms) can rise the quality of the educational act by optimizing the information transfer, pupils'/students' development of specific competences, development of creativity and involving in common activities with the help of the internet. Nevertheless, a series of studies reveal the fact that teachers consider the student-teacher relation could not be replaced, even partially, by technology.*

The present paper presents the results of a study run in the 14 gymnasiums and high schools from Arges county and University of Pitesti. The purpose of the study is to analyze the perception of the teachers and students in the group on the efficiency of multimedia means in facilitating the transmission of knowledge and the shaping of pupils' competences, in the judicious management of the time allocated to class teaching, in the differentiated treatment of pupils, in intermediating the pupil-teacher relationship, is among the objectives of this study.

The conclusions further to the research provide relevant data for improving the ICT use methodology in the process related to the teaching of social-humanistic disciplines.

Keywords: *teaching process, students, teacher – student interactions*

I. INTRODUCTION

Computer-assisted instruction (ICT) is a teaching or a learning method that capitalises on the cybernetic modelling and analysis principles of the instruction activity in the context of the new computer and communication technologies, specific to the contemporary society.

ICT (Cerghit, I., 2006) is a variety of teaching experiences that use hardware as technical support and software as information support. The optimal integration of ICT within the learning process is conditioned by:

- the assurance of hardware resources, the provision, installation and integration of computers, the continuous management and maintenance, the technical assistance;
- the assurance of software resources – educational programmes; the multimedia recordings meant to facilitate the learning of various contents;
- the assurance of orgware resources – the adoption of organisational and methodological rules aiming at an integrating and efficient *modus operandi*.

The **ICT method** capitalises on the following teaching operations integrated at the level of an action of heuristic and individualised control of the **teaching – learning – assessing** activities:

- **information organisation** according to the requirements of the curriculum adjustable to the abilities of each student;
- **cognitive challenge** of the student through teaching sequences and questions that aim at identifying gaps, problems, problematical situations;

- **completion of teaching tasks** previously presented by reactivating or obtaining the necessary information from the information resources accessed through the computer;
- **performance of a recapitulative synthesis** following the coverage of some topics, study modules; lessons, groups of lesson, subchapters, chapters, school subjects;
- **stimulation of the creativity** of the student by guaranteeing additional exercises.

Since the ICT involves the intermediation of the direct teacher – student relationship by means of the educational hardware and software, the online tutoring approach is also needed. A model of roles of the tutor in online instruction is carried out by Salmon Gilly (2000):

	Technical support	Electronic moderating
Level 1 Facilitates, provides access and develops motivation	Establishing the system and accessing: <ul style="list-style-type: none"> - online help for the purpose of solving access problems - validity of the printed manual with all the instructions 	Receiving and encouraging: <ul style="list-style-type: none"> - explaining the way in which the system is going to work - encouraging beginners for the purpose of eliminating stress - regular revision of course support
Level 2 Online socialising	Sending and receiving messages: <ul style="list-style-type: none"> - explaining the features of a software system for the purpose of optimising the time spent online 	Familiarising and carrying out the connections between cultural, social and study environments: <ul style="list-style-type: none"> - achieving a personal presentation and receiving similar data from online participants - encouraging the participants to contribute to the discussions and to read the contributions of others
Level 3 Assures the exchange of information	Identification and personalisation software: <ul style="list-style-type: none"> - checking the acquirement of all basic skills - finding information regarding the differences between programmes 	Facilitating the performance of tasks and providing support in the use of study materials: <ul style="list-style-type: none"> - explaining the difficulties faced by the participants - offering a use strategy of information and of lists of electronic resources that may facilitate online discussions
Level 4 Knowledge assimilation	Carrying out conferences: <ul style="list-style-type: none"> - assuring that each electronic moderator electronic creates messages by performing new documents 	Intermediation process: <ul style="list-style-type: none"> - analysis of the individual contributions to the effort to synthesise the messages - collaborating with other moderators for the purpose of organising and solving the problems inside groups
Level 5 Consolidation of knowledge assimilation	Assuring links outside the closed conferences: <ul style="list-style-type: none"> - assuring the conditions necessary in order for all participants to be able to handle the discussion - facilitating the exchange of information from one participant to another 	Support and response: <ul style="list-style-type: none"> - offering the opportunity to reflect on the online study - providing the appropriate tools for monitoring and assessing - encouraging the participants with the help of the best technical equipment

In a study from USA (Yali Zhao, 2007, p. 311) is indicate that the teachers held a variety of views of technology integration. These views influenced their use of technology in the classroom. Most teachers were willing to use technology, expressed positive experiences with technology integration training, increased their use of technology in the classroom and use technology more

creatively. Despite all the advantages provided by the technology, the research found that willingness to use technology and positive experiences were related to teachers' increased use of technology and to more creative use of technology, but they did not ensure that teachers would replace their teaching with technology.

In addition, the use of the ICT without discernment may generate a series of disadvantages, such as:

- The ICT may not fully replace the practices of the experiences and laboratory experiments, nor the field research (Cerghit, I., 2006);
- Although the ICT creates a new learning environment focused on the intercommunication with the computer, there is the risk of diminishing the influx of discussion, of rhetoric and dialectics, of decreasing the ability of verbal expression of the students;
- The excessive use of the computer as means of making the contact with the professor may lead to the isolation of the student from his or her colleagues. Such decrease of human and social relationships runs the risk of generating even a false socialisation.

II. PURPOSE OF THE RESEARCH

Identify the perception of the social-humanistic discipline teachers in pre-university education and of the students at the social-humanistic faculties (psychology, history, journalism), training for a future didactic career, on the use of ICT resources in the didactical process.

III. OBJECTIVES OF THE RESEARCH

Analyzing the perception of the teachers and students in the group on the efficiency of multimedia means in facilitating the transmission of knowledge and the shaping of pupils' competences, in the judicious management of the time allocated to class teaching, in the differentiated treatment of pupils, in intermediating the pupil-teacher relationship, is among the objectives of this study.

IV. HYPOTHESES OF THE RESEARCH

1. There are differences as regards students' and teachers' perception on the utility of multimedia means in facilitating the application of teaching-learning methods which are attractive and interactive for pupils.

2. The existence of differences as regards students' and teachers' perception on the judicious management of the time allocated to class teaching through the use of multimedia means.

3. The existence of differences as regards students' and teachers' perception on the individualization of training through the application of multimedia methods.

4. The existence of differences as regards students' and teachers' perception on the intermediation of the pupil-teacher relationship through social media means.

V. DESCRIPTION OF THE INSTRUMENT

The methodology used in this investigative approach is the questionnaire applied to the social-humanistic discipline teachers in pre-university education and those students who attend the courses of the psycho-pedagogical studies program with certification for a teaching career.

VI. TARGET GROUP

The study was carried out on a group of 41 socio-humanistic teachers and 56 third-year students of the University of Pitești, in the social and human sciences field. Only third-year students were included in the group because the Computer Assisted Instruction was a subject studied during that year. Also during the third year students undertake pedagogical training and have access to schools in order to attend to lessons and to teach a certain number of hours.

VII. The findings and results

The findings and results of this study pursued the verification of work hypotheses. The results were processed and interpreted through the statistical descriptive and inferential analysis.

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According to the results obtained (table 1) through the application of the t test for the verification of the first hypothesis, there are significant differences between the teachers and the students included in the study on the utility of multimedia means in facilitating the application of teaching-learning methods which are attractive and interactive for pupils [$t(95) = 6.455$, $p < 0.01$]. Thus, the students in the IIIrd year obtain on the average significantly higher scores on the utility of multimedia means in facilitating the application of teaching-learning methods which are attractive and interactive for pupils (mean = 3.93) as compared to the teachers in pre-university education (mean = 2.80). The indicator of the r coefficient size was calculated, and an effect size of $r = 0.66$ was obtained. According to Cohen criteria, the student or teacher status has a strong influence on the perception of the utility of multimedia means in facilitating the application of teaching-learning methods which are attractive and interactive for pupils.

Table 1

Independent Samples Test							
Utility of multimedia means in facilitating the application of teaching-learning methods which are attractive and interactive for pupils	Status	N	Mean	Standard deviation	t	df	p
	Student	56	3,93	0,970	6,455	95	<0,01
	Teacher	41	2,80	0,641			

According to the results obtained (table 2) through the application of the t test for the verification of the second hypothesis, there are significant differences as regards students' and teachers' perception on the judicious management of the time allocated to holding a lesson through the use of multimedia means [$t(95) = 7.562$, $p < 0.01$]. Thus, the students preparing for a didactical career obtain, on the average, significantly higher scores on the judicious management of the time allocated to holding a lesson through the use of multimedia means (mean = 3.93) as compared to the teachers of socio-human disciplines in pre-university education (mean = 2.83). The indicator of the r coefficient size was calculated, and an effect size of $r = 0.77$ was obtained. According to Cohen criteria, the student or teacher status has a strong influence on the perception of the judicious management of the time allocated to holding a lesson through the use of multimedia means.

Table 2

Independent Samples Test							
Using multimedia allows better manage the time needed in order to carry out a lesson	Status	N	Mean	Standard deviation	t	df	p
	Student	56	3,93	0,783	7,562	95	<0,01
	Teacher	41	2,83	0,587			

The third hypothesis “the existence of differences as regards students’ and teachers’ perception on the individualization of training through the application of multimedia methods” was confirmed through the application of the t test [$t(95) = 10.390, p < 0.01$] (table 3). The investigated students consider that the multimedia methods are very useful in the judicious management of time within lessons (mean = 4.16) while socio-human science teachers in pre-university education pay no special attention to the role of multimedia methods in the better management of time within didactic activities.

Table 3

Independent Samples Test							
Individualization of training through the application of multimedia methods	Status	N	Mean	Standard deviation	t	df	p
	Student	56	4,16	0,890	10,390	95	<0,01
	Teacher	41	2,41	0,706			

The application of the t test for the fourth hypothesis “the existence of differences as regards students’ and teachers’ perception on the intermediation of the pupil-teacher relationship through social media means” was infirmed [$t(95) = 1.339, p > 0.05$] (table 4). Both the students and the teachers included in the study consider that the indirect relationships between teachers and pupils, through social media means, are not to the benefit of a constructive dialogue. According to the indicator of the r coefficient size, which was calculated at a value of $r=14$, the student or teacher status has a weak influence on the perception of the intermediation of the teacher-pupil relationship through social media means.

Table 4

Independent Samples Test							
Intermediation of the pupil-teacher relationship through social media means	Status	N	Mean	Standard deviation	t	df	p
	Student	56	1,98	0,646	1,339	95	>0,05
	Teacher	41	1,80	0,641			

VIII. DISCUSSIONS

Such differences between the students also having the status as pre-service teachers and socio-human teachers are also determined by the different didactical experience of the two categories of study respondents. The students preparing for the didactical career in the IIIrd year also attended a computer-aided training course which developed them, to a large extent, the abilities to use ICT in training. Among the arguments brought by students as regards the utility of social media means in training, there are also the modality to present the new knowledge in an interactive manner, the possibility to adapt to the particularities of the individual, the simulation of psychosocial processes and phenomena which under normal conditions would be very difficult to achieve. Also, the software used in the teaching of various socio-human disciplines has self-adjustment functions, so that pupils shall be informed in real time of the made errors and shall find out immediately the correct measures for settlement. Moreover, the online applications might facilitate the development of skills aimed at by the subjects by adjusting the educational requirements to the learning rhythms of the students.

Although the investigated teachers do not have very developed abilities in using ICT in didactic activities, they recognize the value of ICT in training. Teachers consider that there is a series of limitations which have to be considered, such as: the involvement of high costs for computers and software, the impossibility to replace all the social experiences and the field investigation. Also, they considered that the excessive use of social media means may lead to the social alienation effect and to the risk of reducing the verbal expression capacity and avoiding interpersonal dialogue.

The fact that 83% of students and teacher answered that the direct teacher – pupil relationship could not be intermediated by the computer confirmed that based on the specific of the professional training their opinion was that direct *face to face* communication was a *sine qua non* condition of the development of interpersonal skills, a significant area in the range of skills related to these subjects.

The new information and communication technologies are increasingly present in our daily lives. The ICT upholds the learning activity by offering facilities and support inside the lesson and outside the same, but does not guarantee the quality of the instruction and education process. We cannot expect that the mere use of computer in class will increase the level of instruction activities, but the actual integration of such activities in a complex instruction and self-instruction strategy will. Moreover, the efficient use of the ICT must not be mistaken for the excessive use thereof.

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