

PUPILS MOTIVATION IN EDUCATION BASED ON INFORMATION AND COMMUNICATION TECHNOLOGIES

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Abstract: *Information and communication technologies (ICT) have been used for some time in education and most often using such technologies had a positive impact on teaching methods and pupil or student learning and achievement. A quicker data transfer, better comprehension and gaining various skills are associated with ICT because information and images can be used in many ways and this helps to improve retention of knowledge and its understanding or development of school related skills. More studies have focused on the relation between ICT and motivation in education both on students and pupils and overall it has been found that ICT has a beneficial effect. For pupils, ICT has a motivational value because gives pupils the ability to interact with the knowledge transmitted during lessons in a more open and joyful way and also helps them to work quicker and with better results when are working on their tasks for writing them or improving their presentation. Because of these previous results the hypotheses of this study were to identify if there is any association between pupils motivation and use of ICT in the activity of integrated teaching-learning and also, to identify if means of teaching-learning based on exploration and use of ICT contribute to an increased motivation in pupils from primary school.*

Keywords: *motivation in education, ICT, teaching methods, didactic strategies*

1. INTRODUCTION

Although reviewing computer assisted teaching indicates another significant discrepancy between the rhythm of changes in education - in comparison with the rhythm of development for the systems of information transmission and modelling and their implementation rhythm in other life areas- modern technical means have confirmed their utility in educational area, through the easiness with which can recreate the pedagogic situation always, in concordance with the new acquisitions

from the education science area. So, a pedagogic strategy must permit the use of all means that can lead the pupil to attain the desired goal in the education process. But traditional pedagogic means complementarily with ITC means, no matter efficient would be, do not absolutely guarantee acquisition of the whole desired content, by the pupils, being multiple factors that influence pupils efficiency learning. As a consequence, we consider appropriate an analysis of the role of ITC means over pupils motivation, from the perspective of teachers responsible with organization and unfolding of teaching-learning-evaluation strategies.

1.1 Speciality literature review

Theoretical aspects and references from this study are focused on the conceptual analysis and of the didactic strategies elements, both from the traditional perspective but also from the computer based teaching perspective, and the their advantages and disadvantages will present relationships with motivation particularities at primary classes pupils. In this perspective of approach of teaching strategies can be integrated the following definitions: "an assembly of shapes, methods, technical means and their using principles, whose help are used contents aiming to get specific objectives" (M. Ionescu, V. Chiş, 1992, p. 9); "the assembly of means used to get to the desired objective, starting from material organization and supports choosing and ending with learning task and required conditions identification. All these will depend by proposed objectives and by formation stages experienced by the subject" (G. Nunziati, apud. I. Cerghit, 2002). As action mode, the strategy supposes methods associations, didactic supports, means and organization modes. All these must act "act not as distinct entities, but as interdependent resources, that act following function complementarities principle, of compensation and reciprocal support (reinforcement)" (I. Cerghit, 2002, p. 275). Even more, the strategy supposes methods, procedures and means integration superior operational structures, in which are established functional hierarchies. "So, didactic strategies represent un group of two or more methods and procedures integrated in an operational structure, engaged at the level of teaching-learning-evaluation activity, through realising general pedagogical objectives, specific and concrete to it, and at superior quality parameters" (S. Cristea, 2000, p. 350).

From the perspective of continuous improvement and didactic strategies efficiency have been established few common principles to alleviate traditional teaching but also computer assisted teaching which are, in the same time, conditions of any efficient didactic strategies (N. Lebrun, S. Berthelot, 1994): structured organization, content gradation, pupil motivation, active participation of the pupil, practical-applicable character and frequent feed-back, taking in consideration the learning rhythm of the pupils.

1. Content organization and gradation. Numerous studies indicate that aquisition of knowledge or of a new behavior is favourized only it is realized in

small successive stages and in a progressive order; assimilation of each stage can not be done if the previous ones are not assimilated.

2. Pupil motivation. Motivation must be sustained and to be reinforced. There are didactic conditions and means, including here also ITC means, that favourize or trigger pupils' motivation, such as: making clear for pupils which are the objectives and purposes required; presentation of the teaching in a practical and realistic manner; challenging the pupils and creating success conditions; creating in every pupil the conviction that the goal is not only desirable but also attainable; making clear to the pupils the information about the realised progress and use of encouragements or other forms of reward; adaptation of the difficulty at the individual and his own evolution; organization of the instruction conditions so that to ensure a just balance between success and failure, through pondering of the learning tasks (if the task is very easy, the learning person is possible to underestimate it but if the task is too difficult there is the real risk like the person to become frustrated by it).

3. Participation. Learning is realised through the physical and mental activity of the pupil. Longer is participation, better his results. On one side pupil participation can be favoured by formulating some adequate questions; asking some good questions in right moments allows the pupil to reactuate assimilated or in course of assimilation information. On the other side, formation of an ability, of one behaviour or of a working method is, mostly, facilitated if the pupil is allowed to "practice" his task or to prove the stages of the task that is assimilated. Obviously, the participation level varies considerably depending on the activity the pupil is engaged in. The pupil that takes part to his own instruction has more chances to succeed than the passive one.

4. Feed-back. The process of instruction implies a professor-pupil communication. The feed-back is double, on one side is referring to ameliorate the acquisition, informing the pupil over educator requirements or over learning objectives and providing necessary clues during obtaining the desired performance. On the other side, it is allowing the professor a permanent adjustment of the communication content and rhythm.

5. Keeping the learning rhythm. A pedagogic strategy it is integrated in an assembly of pedagogic interventions even bigger as it is situated in a collective or an individualized one. These two are not mutually exclusive. In fact as a collective education system can be useful for oral communication presentations, collective approaches of problems etc., in the same way principles of individualized instruction principles can be integrated consciously in a collective instruction program, as it is the computer-assisted one.

Presenting the importance, advantages and disadvantages of computer assisted instruction even in 1984, F. Skinner said following a study on the American education system: "Pupils would learn twice more during the same time and with the same effort, if it would be used the computer technology in the teaching act" told F. Skinner in 1984, following a study focused on American teaching system.

S. Papert (1972) foreseen the movement of the frontier between intellectual development stages, through a quicker passing of pupils from concrete operations of thinking to the formal ones, propositional, because computer use in education.

W. Feuerzeig considers that use of computers in school learning leads to the development -for children- of some cognitive abilities and some thinking particularities, such as:

- a better thinking discipline, more precise mental operations and their expression, better ability to explain sentences (that are similar to the algorithmic language of computers);

- early formation of some general concepts such as: formal proceeding, variable, transforming function, hypothetical-deductive rationale (terms used in programming);

- facilitation of application of heuristic strategies in resolving problems from any area.

Gage and Berliner (1992) enumerate among advantages of computer assisted teaching the following ones: data about individual or group results can be stored, re-actualized and statistically processed, for being examined by the teacher all along the lesson and at its end; the software can be conceived in such a manner so that its ramifications to offer differentiated teaching support , in relation with pupils capacities; the software can record information about the speed pupils learn, can be presented non-verbal items (images, diagrams, figures, simulations etc.) or hearing (spelled texts, musical pieces etc.) on the computer screen or on audio boxes.

Among advantages of computer assisted teaching must be enumerated the facility to simulate animated phenomena, states, properties etc., and the possibility to create problem situations that have motivational value - in the presentation stage of the new material - or with test value - in the evaluation stages of the lesson.

In short, computer assisted teaching/learning guarantees: the possibility to individualize the instructive process and to personalize the learning act; covering of learning-evaluation sequences in the own rhythm of the user; learning activity control and knowledge evaluation; mobilization of the user for a quick and strong learning; development of some thinking strategies, elimination of empty moments

from the instructive process and giving the teacher more time for pupils guiding and counselling, changing of teacher-pupil relationships, producing that modification that is wished by the pupil - specifically, to be treated not as a subject capable to "swallow" information but as a partner of the teacher in the act of his own formation.

If above have been underlined the positive parts of the computer assisted teaching, disadvantages mentioned by other authors must not be ignored. The main critics of this method are related to the heterogeneity of techniques, the patchy teaching model, the discontinuity in the teaching-assimilation process because it is behaving such a cybernetic system with a negative feedback, controlled by two circles of reaction (one source of feedback being the teacher and the second one being the computer); formation of algorithmic thinking in the detriment of the divergent thinking; the difficulty - on some occasions - of the knowledge transfer and its integration; the fact that pupils are isolated by social interaction - and as effect will be unilateral formed individuals - although the recent connection possibilities through the Internet are contradicting this disadvantage to some extent.

So, in this study unfolding, we formulate the hypothesis that there is a correlation between pupils motivation and use of ICT means, from the perspective of didactic strategies design, based on a complementarity of traditional instruction principles and those of computer assisted instruction.

2. METHODS

2.1 Sample

For this sample the mean age was $M= 34,17$ $SD = 9,161$. This study questioned 90 teachers but out of these only 87 had experience with preschool and primary school classes (97,8% of the sample). In this sample the mean experience in years was $M=12,149$, $SD=9,517$ and 33 cases (37,9%) have obtained their first grade as qualification (0 - none, 1 - def., 2 - gr.2, 3 - gr.1 in Fig.1).

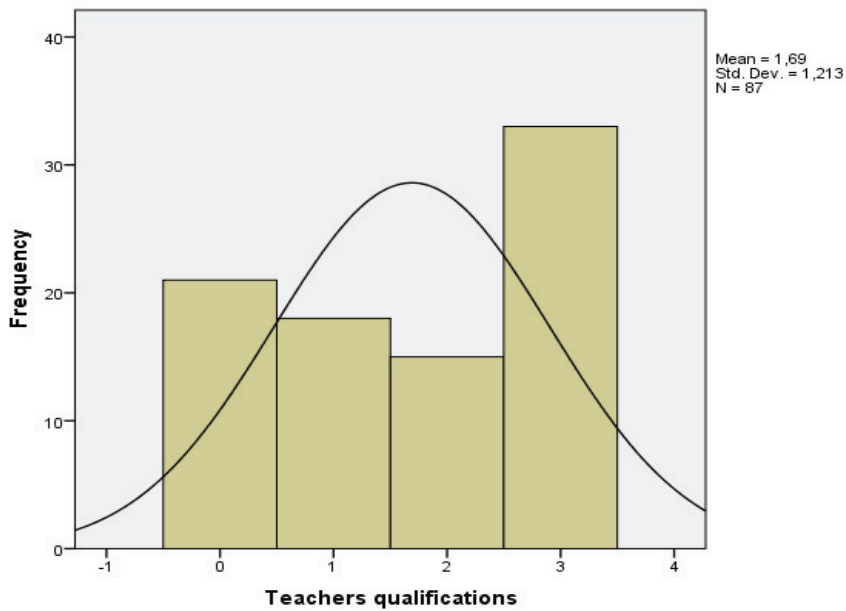


Fig. 1. Distribution of teachers qualifications variable

2.2 Instruments

Data was collected through a questionnaire containing more questions about teachers experience and their options and methods in teaching. Each person answered by self-evaluation.

2.3 Statistical methods

All the results were obtained using SPSS software. The statistical methods used in this study were descriptive statistics (mean, frequency, mode, SD) and correlations.

3. Results

Teachers appreciate that the influence of use of ITC in education over pupils motivation is a specific one. In our study teachers could rank three types of motivation and, 47% of them considered that cognitive motivation is the most influenced one, 28% considered that the positive motivation is the most influenced and 25% considered that intrinsic/extrinsic motivation should be the first answer.

Table 1. Teachers opinion about the influence of use of ITC over pupils motivation

	<i>Intrinsic/extrinsic motivation</i>	Positive motivation	Cognitive motivation
Mean (SD)	2.20 (.808)	2.06 (.791)	1.72 (.816)
Median	2	2	2
Mode	3	2	1

N = 82

Another question has been asking teachers about which are the advantages of using ITC means in the teaching-learning process. Their choices are ranked as follows: the most important advantage (41,5%) is that the software can be conceived in such a way that its branches can offer differentiated teaching support, depending on pupils abilities; the second option (31,7%) is related to the capacity of software to record information about pupils work speed during the time they accomplish different computer tasks and, ITC means facilitate presentation of non-verbal items (images, diagrams, figures, simulations etc.) or hearing (spelled texts, musical pieces etc.) on the computer screen or on audio boxes; and, the third option (23,2%) underlined that data about pupils performances, that these can be stored, re-actualized and statistically analysed, to be examined by teachers during or at the end of the lesson.

The correlation analysis between variables that measured advantages of using ITC means, mentioned above, and variables that measured how use of ITC influenced pupils motivation indicate a statistically significant relationship ($r = 0.226$, $p = 0.043$, $N = 81$) between cognitive motivation variable and the variable about software advantages (the software can be conceived in such a way that its branches can offer differentiated teaching support, depending on pupils abilities).

A different question asked about the disadvantages of using ITC means in teaching. In teachers opinion, main disadvantages of ITC assisted teaching are ranked as follows: the first option (54,9%) is related to the fact that computer based teaching isolates pupils from social interaction, the second option (15,9%) underlines that ITC means can induce an erratic and discontinuous style in the teaching-assimilation process because it is behaving such a cybernetic system with a negative feedback, controlled by two circles of reaction (one source of feedback being the teacher and the second one being the computer). The remaining options presented low frequencies.

- From teachers perspectives, ITC means are improving the positive attitude against learning and help to obtain a better class atmosphere, being accompanied by other positive effects such as content individualisation in learning or pupils capacity to work independently.

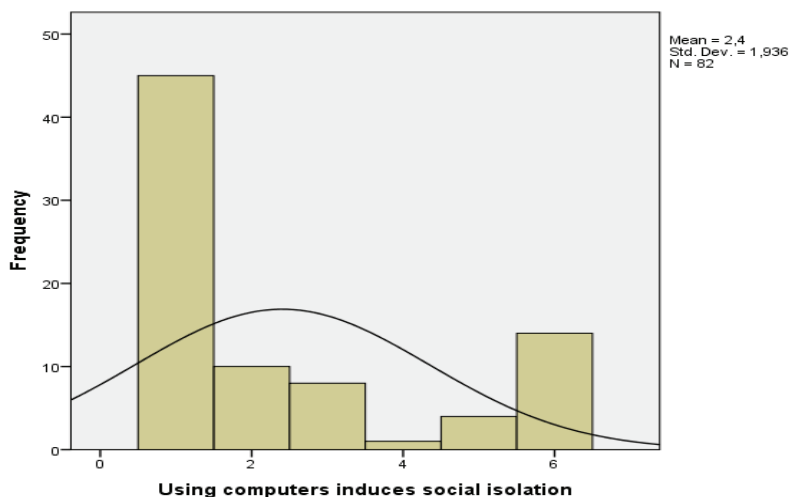


Fig. 2. Distribution of teachers opinion about how significant is the social isolation induced by use of ITC means in education variable

4. Conclusions

Results confirm the first hypothesis of this study. There is a positive correlation between pupils motivation and use of ITC in the integrated activity of teaching-learning. Teachers consider that first of all it is involved cognitive motivation, and related to this by involvement and curiosity proven by pupils from primary classes in discovering new information or contents. Presentation of new knowledge through age adapted instruction programs are much more appreciated than traditional handbooks.

The second hypothesis is confirmed by the presented results. Use of ITC means and of types of motivations indicate a statistically significant correlation ($r = 0,226$; $p = 0,043$; $N = 81$) from the perspective of cognitive motivation and software as instruction supports, differentiated by pupils capacities.

It is important as the instruction events to be, as much as it is possible, to be connected to pupils characteristics. Depending by pupils age and experience, a instruction system with traditional component elements or by use of ITC means can be situated on a continuum, from the first level (where the teacher is responsible for material, diagnosis, prescriptions and instruction evaluation; where the pupil himself is responsible to acquire what is prescribed in due time) to a second level (where the role of the pupil is more accentuated in choosing, objectives definition and his learning activities; where the professor remains available to guide the pupil all along of his journey).

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