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**MATHEMATICAL ELEARNING TOOLS: INFERENCES IN THE
PRIMARY SCHOOL**

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Abstract

eLearning may enrich the mental representations, save energy, time and resources. Both in the case of the primary school in Romania and the primary school abroad, the electronic teaching materials and tools are capitalized. They are integrated in traditional lessons or final exams. Because the equipment with electronic tools is not a problem in our country anymore, the research is based on the analysis of the information obtained through questionnaires. These questionnaires are designed according to the opinion questionnaires realized by G. H. Gallup, respecting in the same time the conditions regarding the length of the questionnaire, its design, avoiding the „halo” effect in the questionnaires applied on the primary school teachers, parents and students.

Consequently, this paper aims to: 1. Analyse the usage degree of some eLearning tools in the Romanian primary school, degree which rises or decreases together with other variable involved in the researching process; 2. To answer the following questions: what eLearning tools are involved in the teaching-learning process today and in what degree? What is the connection between the educational degree and the usage degree of the eLearning tools? To what extend do they help anyone keep in mind the information? To what extend do they simplify the teaching process? To what extend do the actors involved in the teaching-learning process consider that the working style may be modified and if they may lead to addiction? 3. To present, in the end, if and how these eLearning tools respect the principles of teaching Mathematics.

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Keywords: eLearning tools; teaching-learning process; primary school in Romania.



1. Introduction

Nowadays, the learning process is sustained by electronic models like electronic portfolio (Tan, 2011) (Tan, 2011) (Neacsu & Dumitru, 2013), tools which are usually under change because of the evolution of technology and society. Memorizing the information is not the base of learning and acquiring information, but the abilities throughout teachers/ learners are able to find the necessary pieces of information which may help them not only get the information, but also to apply it in many situations. E-learning, no matter the main development direction is (at a regional/state level), definitely represents a tool which may influence the actors involved in the learning process: through the distribution of digital resources (e-readers, digital classbooks, educational softwares) - Beijing, SUA, through the development of Internet connections and the endowment of schools with computers- Germany, Romania, through the students' abilities development, which are quite necessary in this century- Taiwan, Canada, through the teachers' digital abilities and competences- Singapore, through the development of distance-learning activities- Brazil.

2. Theoretical Context

We should briefly note (from the most recent to the oldest) some definitions of the eLearning concept, which has always been discussed and explained by the scientific communities: "Yet, e-learning encompasses far more than the technology alone and more than educational institutional environments" (Haythornthwaite, Andrews, Fransman, & Meyers, 2016), "we define elearning as pieces of instruction delivered on a digital device that is intended to support learning" (Clark & Mayer, 2016, p. 8), "eLearning was understood in different ways in the business, education and military sectors" (Nicholson, 2007, p.5), „e-learning is a reconceptualization of learning that makes use of not only instructor-led pedagogy but all the flexibility that asynchronous, multi-party contribution can bring" (Andrews, & Haythornthwaite, 2007, p. 19). We come to the conclusion that „eLearning is just one word, but it does not refer to just a single issue" (Hederson, 2003).

This article intends to present through a micro-research (focused on the primary school teachers) how eLearning tools are integrated in the primary school lessons, to answer the question if the working style can be changed, if it is addictive, if there is observed any connection between the primary teachers' educational degree and the usefulness of the new technologies, if the Mathematics teaching principles are respected during a digitized lesson.

3. Research

In the content of our research, the validity of the close-ended questions results in the questionnaires which were applied (50 educators participated in this survey) are checked through the calculation of the Cronbach-Alpha coefficient, the result being 0.8589. The electronic tools, which are highlighted in the questionnaires, being the base of the learning-teaching process in the Romanian primary school, are presented in the following way: word processing sheets (12%), presentation sheets (70%), counting sheets (6%).

Using the computer in the educational performance (connected to the Internet and everything it means) had the following results (the score is related to the number of persons who answered in the respective way): 25- totally assent, 20- highly assent, 3- average assent, 1- relatively assent, 1- weakly assent. Rising the performance through technology seems to be mostly preferred, but we cannot deny the teachers' abilities to present the information by means of technology.

As the results of the research indicate, the older teachers are not reserved about the implementation of the new technologies, the advance of the teacher certification and the boost of the utilization degree (as far as the implementation of the new technologies is concerned) following the same increase in the case of the second level teacher certification and a decrease for those who actually have the first level teacher certification (when the questionnaire was applied). The following diagram illustrates the results:

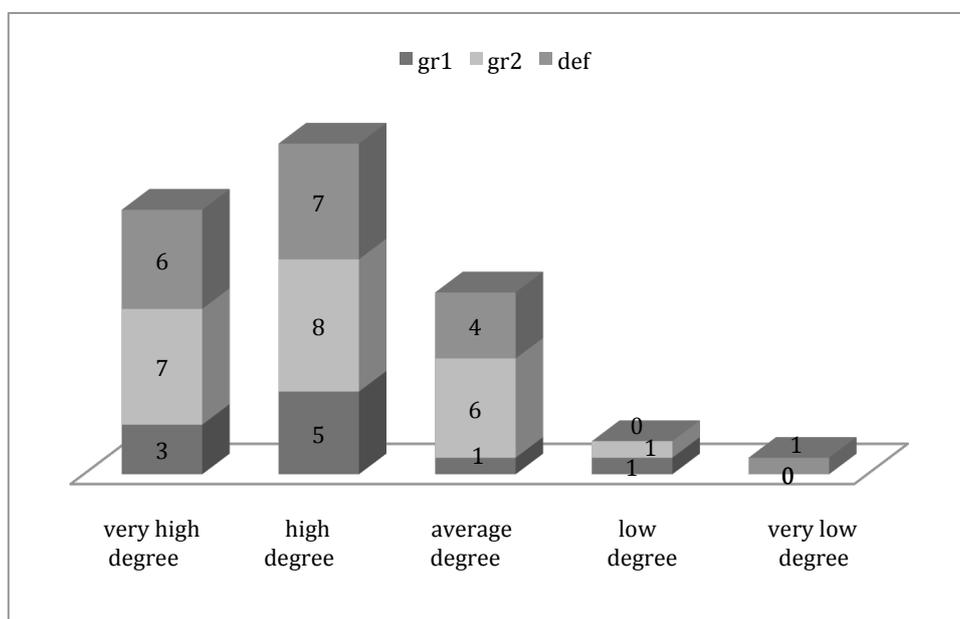


Fig. 1. Diagram in relation to teaching grades

After these commentaries on the application frequency (if there is the necessary endowment), we may conclude that using the computer is positively seen by the teachers, at the primary school level in Romania. The correctness of these answers is sustained by the positive attitude of both educators of all ages and pupils and also by the reactions related to the eLearning lessons, the way of interaction with the computer during the lessons, educational meetings, eLearning national conferences. We may observe that no more worries exist mostly because the technology is used in a familial environment (smartphone, tablet, computer), in the society (where children meet to play games, mall, banks etc.), but also during the Informatics classes in the primary school. The great variety of games, educational softwares, educational videos which are delivered through tablets, smartphones and computers. Consequently, the evolution of the new technologies, highlighting the positive effects, brought to a fast acceptance and usage of the computer, in the case of students of all ages.

The working style (when teaching, learning and evaluating) has been modified, the interactive and modern methods being now those who allow the pupils to make the difference between wild animals and domestic animals, between odd and even numbers. They also help the pupils to make puzzles,

cognitive maps which are specific to a certain story, but also the map of the water cycle, for example. To do this, they use interactive tablets, digital monitors, which are connected to Internet.

On the one hand, teachers are also aware of the relative addiction which is generated by the ICT lessons, because the animations are quite attractive to pupils (videos, learning games, evaluation tools). On the other hand, writing on the blackboard, standing up and having breaks (when one uses the computer) lead to a certain addiction in the case of the educators too. It must not be disregarded. Thus, the educators' opinion are the following: totally assent with the addiction to the new ICT tools 46%, highly assent 28%, average assent 14%, relatively assent 10%, weakly assent 2%.

4. Conclusions

As a first result of this research, we should mention the fact that the technology inferences in the learning-teaching process in the primary school may be efficient because of the teachers who manage to use them properly, having already crossed the barrier of using the ICT tools.

It is also important that during the eLearning lessons, the methods used when teaching Mathematics can be properly used: the principle of conscious and active involvement of the students in the teaching-learning-evaluating process (through images, sound, animations and interaction); the insightful character of the educational system principle (through the direct constructions they may operate- on a calculation, presentation or text processing sheet,- which can transform the abstract sentences in concrete, practical models); theory and practice connection principle (which can be reached through the usage of videos in the teaching-learning process, visiting online the museums, factories and working studios, etc.); continuous and methodical educational system principle (the content being properly organized); solid acquirement of information and knowledge principle (through profound revisions, logical criteria presentations, maps, diagrams which should be used in order to achieve a transdisciplinary and interdisciplinary level); accessible and individualized educational process principle (the electronic sheets may be easily done, having specific characteristics for each student); the reversed connection principle (the electronic models permit a better control of the activity, in order to optimize and adapt it); the principle of Mathematics education scientific character (through a correct access to information using the Internet); the optimal motivation principle (through a positive motivation, obtained by the electronic models awards); the problematize principle (through a balanced connection between theory and problems, and reality, virtual and imaginary); the permanent and continuous education principle (through electronic models which permit the unlimited access to information, communication and update) (Brânzei, & Brânzei 2000, pp. 28-50).

The future research which refer to a the ICT inferences in the primary school should focus on: the usage degree of technology in the case of parents, which lead to gradual inferences in the case of primary school pupils too; the socio-economic environment development, environment where the respective teachers live.

The research regarding eLearning generated, in time, certain analysis regarding the technological side (software and hardware), but also analysis which develop different types of relationships between the individual and the computer (synchronous/asynchronous, direct/distance, audio/video, one/or more).

Finally, we conclude that using technology should be encouraged and capitalized for better learning, socialization and development. Even the reserachers who considered, in the 80s, that the computer is a negative element, nowadays, they reconsidered their initial ideas, finding that the technology develops the creativity, leading to a fast evolution, when it is correctly integrated in the teaching-learning-evaluating process.

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