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Using New Communication and Information Technologies in Preschool Education

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Abstract

The research investigated educational activities in terms of educational resources used in preschools. Educational resources were seen as classic teaching tools versus new information technologies teaching tools and resources. From this perspective, the objective of the research has focused on investigating the use of classic and modern educational resources in preschools. The main method used was questionnaire survey. Results obtained show that the vast majority: 96.12% (N=218) uses frequently modern educational resources: often 39.4% and very often 57.8%. The implication of these results show that teacher use both classic and NTIC educational resources and are aware of their benefits and limits.

Keywords: teachers; preschool education; educational resources; new information technologies;

1. Introduction

New technologies are an "umbrella term" that encompasses diverse technologies. Some experts believe that may be considered new media both blogs, podcasts, video games, virtual worlds, wikis encyclopedias, as well as any mobile device, interactive televisions and even websites and email. Others consider that blogs and virtual worlds have their place in the social media category, because it encourages the formation of virtual communities and social networks (Gane, Beer, 2008). New media, due to the interactive properties, have a big impact on the way in which students grow, develop, learn, communicate, or establish their own scale of values. The computer is very useful to both student and teacher but its use must be carried out in order to improve the qualitative educational process, not

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to hinder it. The computer should be used to pursue the acquisition of knowledge and the formation of skills which should enable the student to adapt to the demands of a society in constant evolution (Mărgean, 2012).

2. Background

There are studies that suggest that the use of these technologies depend on environment training, instructional strategies, and learning materials (Clark, 1983, cited in Anderson, 2008). R.B. Kozma (1991), on the other hand, argues that the particular attributes of the computer are required to bring real models and to carry out simulations in learning. The computer itself is not the one who makes the students learn, but the design of real models, simulations, student's interactions with them are very important (Kozma, 2001). The computer is only the vehicle that provides processing capability and offers students instructions. He maintains the utility and the positive characteristics, depending on the purpose of use and time allocated to virtual activities (Clark, 2001).

Children and young people are the most adaptable to the transformations which have occurred under the impact of technological development. That is why they are called "net generation", "digital generation", "gamer generation", or "generation M" (Carstens, Beck, 2005; Montgomery, 1996; Tapscott, 1999; Prensky, 2001; Oblinger, Oblinger, 2005; Pedró, 2006; Rideout et al, 2005; Prensky, 2001). This can be explained in terms of increased capacity of the new interception and the possibility of allocating a higher time frame, compared to adults, for familiarity with the information and communication resources and testing multiple functionalities and uses thereof. Most of them, having grown up in the family and school environments abundant in digital equipment, were obliged to learn early their use, both in the light of the fact that they have been standing around, and the necessity of joining the group, and align with the "digital inclusion" (Livingstone, Helsper, 2007). It is a generation that, in the field of education, it feels more comfortable with a personalized, collaborative and interactive learning (Sánchez, Salinas, Contreras, Meyer, 2011). As regards their social attributes, students seem to make use of their spare time for the consumption of the different media at the same time, and in particular digital media (Pedro, 2006; Prensky, 2001; Rideout et al, 2005).

From the perspective of existing solutions for access to information support, there are three categories of solutions for IAC: online, offline and mixed (Mierlus, Mazilu, Nistorescu, Rose, 2005; project,, Key skills through virtual games in kindergarten - teaching resources to build up training key skills in preschoolers'- POSDRU/91/2.2/S/63158). The past few years, brought to the forefront, the e-learning adapting for mobile learning (mLearning). However, so that the mLearning to achieve his entire potential, it is essential to develop pedagogy mLearning and the training design tailored to the needs of this new environment for learning. Dual-coding theory presented by a. Päiviö (1986, 1990), formal and informal mLearning (Li, Zheng, Ogata, Yano, 2005; Livingstone, 2007; Andreatos, Michalareas, & 2008) register mLearning in the current trends of the information technologies field. In the past three decades, the digital technologies have been introduced inside and outside the course. The digital technologies are used so far unconsciously in education. From "radical optimism" (Inge, 2003/1912) to pessimism (Dienstag, 2006) the use of new information technologies in education still remains an open subject of discussion.

3. Methodology

The objective of the research focused on the identification and analysis of educational activities from the standpoint of teaching resources used in the process of education, the teaching means were divided into classical didactic means and teaching means of new information technologies. Research hypotheses are:

1. the tools still used in the teaching process belong in general, to the classical type: plates, magnetic whiteboard, blackboard, flipchart, markers, chalk, sound recordings, television, videogames and less to those of the new information technologies;

2. increased age cannot be regarded as a restraining factor for the use of new information technologies in teaching.

In research, the main method used was a questionnaire-based survey; the questionnaire is built on three dimensions: types of teaching used in educational process, the use of means in the process of learning and the usefulness of the new information technologies. The questionnaire was developed and validated specifically for this

research (Alpha Cronbach = 0,7671). The research encompassed 218 teachers in pre-primary education in Romania. Of whom 79.6% were female, while the remaining 1.8%, male. According to the environment from which the kindergarten, were recorded: 75.2% whose kindergarten come from urban areas, while the remaining 24.3% kindergarten come from rural areas. If we look from the perspective of age research group, we've got 41.7% aged 30-39 years, 21.1% aged between 20-29 years, 18.8% with over 50 years of age and 18.3% aged 40-49 years. Another criterion of differentiation was the highest teacher's degree, thus were: 37.6% entry-level teachers, 13.8% teachers with the right for permanency in education, 15.6% teachers with second didactic degree and 33% teachers with first didactic degree (the highest distinction for teachers).

4. Results

Looking from the standpoint of experience in education, most subjects 31.7% have between 1 and 4 years, followed by 24.3% with experience between 10 and 14 years, then follows 19.3% with more than 20 years of experience, then 12.8% with length between 5 and 9 years, followed by the 11.9% with age between 15 and 20 years. Completed studies are another indicator, depending on which one can characterize the subjects, 50.9% have graduated the university, 39% have a master's degree, 10.1% have graduated from high school/college. Research addressing the new information technologies, we have pursued the investigation, depending on the completion of ICT. We had 65.6% which have completed such courses and 34.4% which have not participated. Regarding revenue, 28% claim that the family's monthly income is about 400 Euro, then 4.2% that their income is over 400 Euros and 40.3% that have an income of 350 Euros, 27.1% claim that they earn 300 euros and the remaining 0.5 percent claims that they have an income of 250 euros.

The first hypothesis of research: teaching tools used in the process of education, generally speaking, the classical type: plan views, magnetic whiteboard, whiteboard, flipchart, markers, chalk, sound recordings, television, videogames and less to those of the new information technologies.

We can start from the frequency with which teachers use educational teaching resources. It appears that the vast majority 86 subjects (39.4%) of them use often and 126 subjects (57.8%) very often. If we take the number of teaching means used by the teachers note that 44 subjects - 20.2% use six teaching means; seven teaching means: 14 subjects - 6.4%; eight teaching means: 16 subjects - 7.3%; new teaching means: 20 subjects - 9.2%; ten teaching means: 9 subjects - 4.1%; eleven teaching means: 12 subjects - 5.5% and twelve teaching means: 9 subjects -4.1%.

Table 1. Educational resources used in preschooler's educational activities

No.	ACTIVITIES	Very often	Often	Rarely	Very rarely	None	No answer
1	Didactic plan views	71.6	23.9	2.8	0	0.5	1.4
2	Magnetic board	29.4	49.5	6.4	3.7	5.5	5.5
3	Board / flipchart	11.9	42.2	14.2	4.6	12.4	14.7
4	Chalk / marker	30.7	35.3	11.5	1.8	9.6	11
5	Sound recordings	29.4	27.5	17	3.2	11.5	11.5
6	Television	12.8	21.1	15.6	9.2	28	13.3
7	Video games	10.1	14.7	13.8	6.9	34.9	19.7
8	Computer/ Laptop	29.8	33	11.9	6.4	10.6	8.3
9	Educational sofware	17.9	21.6	18.3	8.7	18.3	15.2
10	Videoprojector	13.8	21.1	18.8	7.3	23.4	15.6
11	Educational sites	13.8	21.6	8.7	11	22.5	22.5

One of the questionnaire items aimed the teaching resources used by teachers (item with multiple choices). Didactic plan views are the most used means of teaching, 208 subjects choose as often and very often – you can see in Table 1, the binding from 95.5%, with 71.6% very often and 23.9% often. Are the magnetic sheet, as used, 172 subjects teaching (78.9%, with 29.4% very often and 49.5% often). Chalk/marker pens is on the next place, as teaching mean with 144 choices (66%, with 30,7% very often and 35.3% often, as usage). Barely on the fourth position we have found a teaching mean belonging to the new information technologies. This teaching mean is the computer/laptop. It was chosen by 137 subjects (62.8%), 29.8% use it often and 33% very often. On the following

two positions we find all the classical teaching means, namely: sound recordings and board/flipchart. Sound recordings were chosen by 124 subjects, (56.9% to 29.4% very often and 27.5% often). Blackboard/Flip-singles chart are chosen from 118 subjects, (54.1%, 11.9% very often and 42.2% often). It can be said that less than half of the subjects choose new information technologies means, such as educational software, educational websites, educational and videoprojector/projector. Educational software was chosen by 86 subjects (39.5%, 17.9% very often and 21.6% often). Educational sites were chosen by 77 subjects (35.4%, 13.8% very often and 21.6% often). The videoprojector/projector was chosen by 76 subjects, (34.9% 13.8% very often and 21.1% often). The least didactic means chosen are: didactic games and TV. The TV is selected by 74 subjects, (33.9%, 12.8% very often and 21.1% often).

After applying ANOVA the following results were obtained: $F_{(26)} = 2.115$, $p < .002$ between the means teachers use sound recordings belonging to the new information technologies, $F_{(26)} = 2.033$, $p < .004$ between user computer / laptop and teaching resources belonging to new information technologies.

The second hypothesis refers to the fact that age (for older teacher) may be regarded as holding back factor for the use of teachers belonging to new information technologies. Knowing that occur with age conservatism that trait can capture the claim that teachers have over 50 years in age will choose educational resources belonging to the new information technologies in higher proportions than younger people (aged between 20-29 years and 40-49 years). Subjects older than 50 years recorded 13 elections to educational sites (position No. 2), 15 choices for projector (2nd position), 11 choices for educational software (2nd position) and 13 elections computer / laptop (3rd position). In comparison, teachers aged 20-29, who recorded nine choices for educational sites (3rd position), 9 choices for projector (3rd position), and 5 choices for educational software (4th position) 15 choices for computer / laptop (2nd position). Analysing after teaching degrees, we observed that subjects with grade 1 teachers are the biggest users of educational resources, including educational resources belonging to new information technologies. This record 49 elections boards (2nd position), 23 magnetic board elections (position No. 1), 13 choices for the board / flip-chart (position No. 1), 27 choices for chalk / markers (positioning No. 1), 31 choices for sound recordings (position No. 1), 31 choices for TV (position # 1) and 123 choices for video games (position # 1). Same position, only one place is maintained to the means teachers who belong to the new information technologies: 9 choices for educational sites (position No. 2), 10 choices for projector (position No. 1), 204 choices for educational software (Position # 1) and 28 choices for computer / laptop (position # 1). So the great new information technologies users are individuals who have teaching degree 1 combination: experience - professionally choose the combination of classic and modern teaching tools to increase the efficiency of education.

Tests of significance: teaching degree has a significant effect on the board / flipchart $t_{(110)} = 59.68$, $p < .005$; grade teacher has a significant effect on the chalk / markers $t_{(110)} = 20.78$, $p < .005$; grade teacher has a significant effect on the video game $t_{(110)} = 21.83$, $p < .002$; grade teacher has a significant effect on educational software $t_{(110)} = 13.10$, $p < .006$; grade teacher has a significant effect on the projector $t_{(110)} = 52.47$, $p < .002$ and second degree has a significant effect on the use of educational sites $t_{(110)} = 14.60$, $p < .004$.

5. Conclusions

The research sought to investigate the activities of staff in terms of staff resources used in education, teaching aids which were divided into traditional teaching tools and educational resources belonging to the new information technologies. The results confirm the first hypothesis of the research: the means teachers still used in education, in general, the classical type: boards, magnetic board, whiteboard / flip chart, chalk / markers, sound recordings, television, and video games least to those related to new information technologies. Most 212 subjects - 96 12% (N-218) uses often (86 subjects - 39.4%) and very often (126 subjects - 57.8%) NTIC. The number of teaching tools used by teachers is six teaching tools: 44 subjects - 20.2%; seven teaching aids: 14 subjects - 6.4%; eight teaching aids: 16 subjects - 7.3%; new teaching tools: 20 subjects - 9.2%; Ten teaching tools 9 subjects - 4.1%; eleven teaching aids: 12 subjects - 5.5% and twelve teaching tools 9 subjects - 4.1 Exhibits are the most widely used teaching resources, 208 subjects often and very often they choose to use (95.5%, 71.6% and 23.9% often that use). The second research hypothesis: increased age factor cannot be regarded as being a restraining factor for the use of new information technologies tools and resources. Subjects older than 50 years recorded 13 elections to educational sites (position No. 2), 15 choices for projector (2nd position), 11 choices for educational software (2nd position) and

13 elections computer / laptop (3rd position). In comparison we can look, age 20-29, who recorded nine choices for educational sites (3rd position), 9 choices for projector (3rd position), 5 choices for educational software (4th position) and 15 choices for computer / laptop (2nd position).

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