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FACULTY OF PSYCHOLOGY AND EDUCATIONAL SCIENCES

DOCTORAL SCHOOL "EDUCATION, REFLECTION, DEVELOPMENT"

VALORIZATION OF DIGITAL RESOURCES IN THE EDUCATIONAL PROCESS OF YOUNG DIGITAL NATIVE PRIMARY SCHOOL STUDENTS. APPLICATIONS FOR DIGITAL TEXTBOOKS IN PRIMARY SCHOOL

-Abstract of PhD Thesis-

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When the research topic for this doctoral thesis was outlined, the main motivation was that we did not find a unitary and practical approach to the theme "Valorization of digital resources in the educational process of young digital native primary school students." Applications for digital textbooks in primary school", working in the education system, as a primary school teacher at the "Iacob and Ioachim Mureşanu" Secondary School", in the locality of Rebrişoara, county of Bistriţa-Năsăud.

Young people transform the world we live in through the power of information and communication technologies, a fact that demonstrates the effectiveness of education since the primary school for these students of the 21st century. Both the family environment, education and other factors contribute to the development of digital skills and competences, students being interested in discovering a virtual world that offers them the opportunity to access information more easily and quickly. Since the preschool period, some of the children have digital knowledge that "raise the level" for teaching in primary school. What we want, through the present research, is to demonstrate how we can conquer students with lessons in the digital sphere using didactic methods suited to their interests, but also the skills they possess by transposing them into a real world, where some accumulated knowledge could be put into practice.

At the same time, the educational message is that educational institutions have the role of creating a real bridge of communication and education, of inter-relationship and helping new generations who are under the attack of technology and rapid development by capitalizing on digital resources in the didactic process.

Within the research entitled "CAPITALIZATION OF DIGITAL RESOURCES IN THE EDUCATIONAL PROCESS OF YOUNG DIGITAL NATIVE PRIMARY SCHOOL STUDENTS. APPLICATIONS FOR DIGITAL TEXTBOOKS IN PRIMARY SCHOOL", we set out to certify the effectiveness of digital textbooks in the instructional-educational process, taking into account the areas of interest and the potential of the skills available to young school children.

All these were presented in five distinct chapters such as:

Chapter I – The digital era and changes in the evolution of intellect of young digital native students.

Chapter I approaches definitions of the concept "digital era, digital natives", emphasizes the social environment of digital communication among young students, debates the compatibility between digital natives and the education system, as well as the educational

CHAPTER I - THE DIGITAL ERA AND CHANGES IN THE EVOLUTION OF INTELLECT OF YOUNG DIGITAL NATIVE STUDENTS

CHAPTER II - THE IMPORTANCE OF USING DIGITAL RESOURCES IN THE EDUCATIONAL PROCESS OF YOUNG DIGITAL NATIVE STUDENTS

CHAPTER III - DIGITAL TEXTBOOKS AND THEIR EFFECTS ON THE DEVELOPMENT OF YOUNG DIGITAL NATIVE STUDENTS

CHAPTER IV – ORGANIZATION AND REALIZATION OF THE PEDAGOGICAL RESEARCH ENTITLED ''VALORIZATION OF DIGITAL RESOURCES IN THE EDUCATIONAL PROCESS OF YOUNG DIGITAL NATIVE STUDENTS. APPLICATIONS FOR DIGITAL TEXTBOOKS IN PRIMARY SCHOOL''

CHAPTER V - CONTENT OF THE STAGES OF THE RESEARCH

effects of social media.

The proposed study represents the results of a theoretical analysis related to a controversial generation, to the specifics of a nation and involves testing the pedagogical practice at both a practical and theoretical level.

Contemporary society lives and develops in an informational "empire", a digital era. From the linguist's point of view, "informatics" is used in more and more situations and fields, the semantic field expanding itself. We are talking about information technology, information strategy, informational services, informational products, informational culture and, of course, informational mentality. Due to the use of the Internet at the individual and global level, digital resources develop human beings from the point of view of education, culture both at the individual, collective and global level. In a social framework based on

knowledge, the priorities of the 21st century must be directed towards the formation of a new informational generation, based on digital information and electronic communication.

Education, is thus conceived as an opportunity of self-formation and permanent self-development of personality, open to intellectual, moral, technological, aesthetic and physical improving, at a formal, non-formal and informal level. In the conditions of the digital era, the computerization of education represents a pedagogical strategy adapted to the political level of education.

Due to the changes that arise in our society regarding the use of technology in almost all activities undertaken by adults, children are born surrounded by digital devices, learning from early ages almost everything they need to know about them.

The phrase "digital natives" was introduced for the first time, in the specialized literature, by the American author Marc Prensky in 2001, through two articles entitled "Digital Natives/ Digital Immigrants". The author considers that digital natives are the generations born after 1960, when the beginning of the digital era took place. (Prensky, 2001).

In the table below, the generations of digital natives are presented:

Generation	Period	Actual age
Silent Generation	1928-1945	75-92
Baby-Boomers Generation	1946-164	56-74
Generation X	1965-1980	40-55
Generation Y	1981-1996	24-39
Generation Z	1997-2012	8-23
Generation Alpha	2013-present	7

Table. The generational model

Source: Pew Research Center,

https://www.pewresearch.org/fact-tank/2019/01/17/

where-millennials-end-and-generation-z-begins/ apud. Raiu, 2021,

https://revistasociologieromaneasca.ro/sr/article/view/1735/1657

In our opinion, *digital natives represent a generation for whom education is an art, which facilitates the transmission of information from the conscious to the subconscious, which leads to the individualization of members of society not only through the storage of new knowledge, but through a socio-emotional and cognitive development of each individual, separately.*

The second chapter – The implementation of digital resources in the educational process of young digital native primary school students highlights the formative potential of the computer in the educational process through its ecological perspective. It also presents E-Learning as a form of education through informational technologies. Computerization in the Romanian Education Reform emphasizes the role of digital resources in overcoming learning difficulties.

Computerization has been implemented and continues to be implemented at the managerial level, both in the field of the system and of the educational process, in the content, method and philosophy of education. The use of the computer in the educational process has become a necessity in the conditions of the rapid development of information technology. For the new generations of students, already used to the avalanche of multimedia information, the concept of the educational process assisted by the computer is an inherent demand. This is sometimes seen as a toy, a tool, a resource of information, entering the daily routine for communication, information, training.

The computerization of education represents a "pedagogical strategy adapted / adaptable to the level of education policy in the conditions of the cultural model of the post-industrial, computerized society" (Sorin Cristea, Pedagogy dictionary, 2002, page 182).

At the practical level, through the computerization of education, the valorification of all the valences of the computer is realized in order to achieve the goals of education, being used as such to follow the acquisition of some knowledge and the formation of skills that allow the student to adapt to the needs of a society in permanent evolution.

Taking into account the fact that, in the last 40 years, the use of technology in the educational environment has expanded, there is hope for an improvement in the participation in activities of students with learning difficulties. This category includes students with special educational needs (SEN), due to its multiple valences, ICT being applied both as a

means of recovery and in the instructive-educational process. Applications based on the use of the computer have become a method of individualizing the education and remedial learning of students with SEN.

In order to form our opinion, the use of digital resources in an educational environment to support the learning process can be assessed in two ways: either learning "from" computers, or learning "with their help". The learning "from" represents the traditional use of the digital resources, through the discrete introduction of educational software programs. On the other hand, learning "with their help" is their use as a learning tool. (Penuel, Kim, Michalchik, Lewis, Means, Murphy, Korbak, Whaleu, Allen, 2002)

For digital natives, an active learning environment is one that incorporates the need for instant gratification and technology. Teachers who work with these students can use the opportunity presented by educational technology to promote effective control and self-regulated learning and promote positive teacher-student, student-student relationships. Unlike traditional learning environments, virtual learning environments allow students to move freely and access additional resources to enhance their own learning and development.

In chapter III - Digital textbooks and their effects on the development of young digital native primary school students, we highlighted the psycho-pedagogical peculiarities of the digital textbook and its effects. We also highlighted the importance of computer-assisted learning (CAL) E-learning addressed to students of early age.

For the digital native student, the social context he needs, consists in connecting to communication networks. He learns thanks to the mediators who perform the following roles: guiding, selecting, perceiving, verbalizing, organizing, encouraging, motivating or simplifying stimuli. Thus, it is essential that in the system of pedagogical disciplines we integrate computer-assisted learning as an alternative to the classical methods of teaching-learning-assessment. At the same time, in the educational training process, digital native students will develop skills in the use and design of educational software, they will identify situations of alternation between the classical method and the computer-assisted one, they will improve their skills in using the computer.

In the specialized literature, there are several approaches that aim to classify the advantages of using CAL for instructional-educational purposes. One of these is reproduced below:

(Ceobanu, 2016)

Figure 2.4. The advantages of using CAL in primary school

Source: adapted from (http://cis01.central.ucv.ro/iac/suport_curs.php)

The transmission of information through remote communication technologies defines the term e-Learning.

E-learning represents the potential to personalize learning according to the needs of each student, adapting the contents, organizing training according to learning styles and individual needs. The definition of e-learning content is a problem that still undergoes changes. For some researchers in the field, e-learning is a learning way and an electronic platform, and for others it represents a change in the vision of teaching-learning.

In the "Guide to the use of the computer in education", Ciprian Ceobanu states that "e-learning is a training model made with the help of digital devices, that can be carried out from the distance". E-learning can also be used in the classroom through CAL, using the computer in order to facilitate and improve this educational process. A particular model of e-learning is m-learning. (Ceobanu, 2016).

M-learning is a continuous learning process that offers flexibility to both teachers and students. For an effective teaching, M.G. Moisii and E. Tîrziu (2015) mentioned that in

an m-learning environment, both teachers and students must understand the nature of social relations, the quality of interaction and communication in order to ensure the communicative competence, which includes the exchange of information, knowledge, experience and skills development. Teachers must understand the complex interrelationships of cognitive tasks, social-emotional aspects and the social content of learning.

Mobile technologies are a complementary form of the traditional education process that ensure effective teaching for teachers, attractive learning for students, optimal assessment for teacher-student.

One of the most important electronic educational resources is the digital book, being associated with the digital textbook. By digital book/textbook we understand the systematic display of a discipline or a module in digital format, in accordance with the curriculum, the content of which combines text, graphics, audio, video, hyperlinks and other information. Currently, there are several definitions of the digital book, respectively the digital textbook, namely:

• a set of educational software that involves assignments and questions used both for the purpose of assessment, self-assessment and to obtain feedback;

• an educational software, which aims to provide unknown information, complementary to the printed book. At the same time, it also allows the assessment of knowledge.

The specialized literature allows us to highlight the following benefits of digital books:

• ensuring multiple representations of reality, avoiding simplifications and representing the complexity of the real world;

• obtaining information and using it through various means.

• didactic efficiency and objectivity of monitoring and assessment of learning results;

• establishment of a continuous feedback in the relationship "teacher-student";

• individualization of educational activity;

• increasing motivation towards studies;

• the formation of intellectual, productive, creative skills, which develops the analytical style of thinking.

In this context, the digital book represents the main motivation for the transition from traditional and rigid education to dynamic and flexible education to meet global needs.

Chapter IV – Organization and realization of pedagogical research on the topic, Valorization of digital resources in the educational process of young digital native primary school students. Applications for digital textbooks in primary school"

As part of the longitudinal research, we will work with a unique sample of primary school students, to whom we apply the intervention program - the Smart Kids platform, at the discipline Personal Development, in accordance with the school curriculum. We will make comparisons of the post-test results with the pre-test results in order to check the progress of the single sample, over a year, 2020-2021.

Digital native students have skills to easily use electronic devices, speed, facility and unprecedented availability to synchronize and adapt to the versatility of the digital world.

Is it feasible that, by implementing an interactive school platform, focused on the diversity of activities and at the same time on the acquisition of digital skills by students, to stimulate the desire to learn, implicitly contributing to cognitive and socio-emotional development?

The purpose of this research is to capitalize on digital textbooks in the educational process of young digital native primary school students.

Objectives of the research

Identifying the educational situations which the use of the computer is appropriate;	- Examining the initial level of development of socio-emotional skills in young digital native students; - Examining the initial level of skill development with which a young digital native student demonstrates certain cognitive skills; - Conception and implementation of the interactive school platform ”Smart Kids” for students included in the experimental group;

- Examining the level of socio-emotional and cognitive

development in young students, included in the experimental group;

- Establishing the effectiveness of the experimental socio-emotional and cognitive development program;

The general hypothesis of the proposed experiment is:

The systematic use of digital textbooks determines the optimization of the development of students' socio-emotional and cognitive skills.

Specific hypothesis 1 - The systematic use of digital textbooks will lead to a higher level of development of socio-emotional skills in the post-test stage compared to the pre-test (from the parents' point of view)

We will investigate the initial abilities of the students from the pre-test through the results of the screening of social skills, completed by the teacher, respectively the parent in the pre-intervention and post-intervention stages.

Specific hypothesis 2- The systematic use of digital textbooks will increase the students' cognitive performance (from the teachers' point of view).

We will investigate the initial cognitive abilities of the students in the pre-test through the results of the cognitive skills screening, completed by the primary school teachers, in the pre-intervention and post-intervention stages.

Independent research variable:

The participation of young digital native students in an experimental program for the systematic use of digital textbooks.

The dependent variables of the research:

Dependent variable 1- Development of socio-emotional skills in young digital native students.

Dependent variable 2- Development of cognitive performance in young digital native students.

The methods used in the research

The psychopedagogical experiment is the main research method used. This method consists in verifying a hypothesis regarding the effectiveness of the educational intervention, according to a goal. The experimental method is the type of pedagogical research through which the educational factors to which the students are subjected to are controlled and then its results and achievements are observed. Compared to the observation method, the experimental one consists in creating a new situation by introducing some changes in the conduct of some educational activities. (M. Bocoș, 2003, p 67)

Thus, the introduction of the independent variable, which involves the participation of young digital native students, in an experimental program of systematic use of digital textbooks, in our research, aimed to develop the socio-emotional and cognitive skills of the students.

The systematic observation method consists in following the students' behaviours. Observation in pedagogical research means the careful and systematic follow-up of phenomena and facts, with the aim of revealing causal relationships related to the instructive-educational process, on the basis of which predictive generalizations can be formulated. This method was used throughout the entire research, because it is the method by which we observed the students' behaviours in different situations. The observation was carried out systematically, adopting both a passive and an active attitude.

The survey method was used throughout the research, both in the pre-experimental stage when the respondents provided information about the level of socio-emotional and cognitive development, and in the post-experimental stage where the same instruments were used to test the research hypotheses. The realistic nature of the collected information was ensured, in a complementary way, by the data obtained by filling in the questionnaires:

Screening of emotional competences, form for parents, Screening of emotional competences, form for teachers.

Screening of cognitive skills, form for teachers.

The instruments evaluate the frequency with which children demonstrate certain socio-emotional, respectively cognitive skills, the evaluation being made on a scale from 1 to 5, depending on the frequency of the behaviour:

• 1 - the behaviour almost never occurs;

• 2 - the behaviour occurs very rarely;

• 3 - the behaviour sometimes occurs;

• 4 - the behaviour occurs very often;

• 5 - the behaviour occurs almost always

The method of analyzing the products of student activity

This method involves an analysis of students' products and was used to evaluate the level of students' socio-emotional and cognitive behaviours by comparison in order to determine the dynamics of the evolution of the behaviours mentioned. Thus, through drawing, construction of objects, puzzles, worksheets, the use of the Smart Kids platform represents the objectification of the students' efforts and results.

The method of research of school documents

The method of research of school documents in our research consisted in obtaining data on the activity of teachers. Thus, the official curriculum documents were analyzed such as:

The school curriculum for the discipline Personal Development, preparatory class approved by ministerial order No. 3418/19.03.2013

The framework plan for primary education, OMEN /3371 of 12.03.2013

Research tools

The survey

The objective of the survey, Screening of emotional skills, form for parents and Screening of emotional skills, form for primary school teachers, Screening of cognitive skills, form for primary school teachers, was to obtain information from which to start the experiment in fact.

The surveys used for the parents and primary school teachers of the students of the mentioned preparatory classes, are part of the Ped a evaluation set, procured by Cognitrom and are made up of five subscales that evaluate the frequency with which the students prove certain socio-emotional, respectively cognitive skills, the evaluation being done on a scale from 1 to 5, depending on the frequency of the behaviour.

Each survey includes 15 items, 18 items and 10 items, respectively, and the subject allocates the time necessary to fill it in.

The digital textbook - "Smart Kids" Platform

The interactive platform "Smart Kids", used in the experimental stage, is a tool structured in two stages.

The platform for primary school teachers and the platform for parents aim to diversify educational activities on the acquisition of digital skills by students, but at the same time, the development of socio-emotional and cognitive skills.

This resource was used systematically, twice a week, for 7 months, within the Personal Development classes, in the preparatory class.

Observation grid

The observation grid is a tool that we used according to the research objectives, tracking the level of development of acquired skills. In the form of a table, the observed abilities were noted. Acquired or improved abilities were marked with a smiley face, unimproved ones with a sad face.

Sampling

Primary school teachers - we selected a number of 10 primary school teachers from the county of Bistrița-Năsăud, teachers in the preparatory class in the period September 2020-June 2021.

Students - from primary school, preparatory class. A total of 100 students enrolled in the preparatory class in 2020-2021, in the county of Bistrita-Năsăud, will participate in the intervention program - the "Smart Kids" platform.

Parents - 100 parents of students enrolled in the preparatory class, from the county of Bistrita-Năsăud, in September 2020-June 2021.

In this stage, the sampling of the contents, we identified scientific contents in accordance with the school curriculum in force, in the discipline Personal Development, the identification of learning contents that will develop the students' cognitive and socio-emotional skills, the creation of a digital textbook that will be implemented in the educational process.

Chapter V – Pre-experimental stage

The purpose of the pre-experimental stage is to investigate and highlight the existing situation regarding the general opinion of primary school teachers and selected parents from the county of Bistrița-Năsăud, on the diagnosis of the initial socio-emotional and cognitive skills of young digital native students.

The pre-experimental stage represents a complex stage of preparation for the experimental intervention, a phase that involved a multitude of steps. In the pre-experimental stage, 100 parents and 10 teachers of students from the preparatory class were questioned. The instruments used were: Screening of emotional competences, form for parents, Copyright 2009 COGNITROM;

Emotional competence screening, form for primary school teachers, Copyright 2009 COGNITROM;

Screening of cognitive skills, form for teachers, Copyright 2009 COGNITROM.

The role of these questionnaires was to identify the development of the socio-emotional and cognitive skills of the students in the preparatory classes, the recorded results being the benchmark for the intervention by creating a favourable educational environment, which would develop these skills, which turn out to be not sufficiently developed.

Objectives of the pre-experimental stage:

Objective 1- Identification of parents' opinions regarding the initial level of socio-emotional skills of their own children

Objective 2- Identifying the opinions of primary school teachers regarding the initial level of socio-emotional skills and the level of students' cognitive performance;

Synthesizing the questions from the surveys, which targeted the following components: communication motivation, empathy, self-control, social skills, it was identified that students rarely develop socio-emotional skills, taking as a benchmark the answers identified as frequency between scale 1 and 5.

We appreciate that the results obtained in the surveys were also caused by the large number of digital students, who fail to familiarize themselves with the traditional methods of the Romanian educational system.

Chapter V – The experimental stage

The purpose of the experimental stage involved the development of the student's ability to know himself and to express in a positive way his interests, skills, personal experiences, relationship and communication skills as well as reflections on learning. During the stage, skills are formed and attitudes are developed, the purpose being the acquisition of self-confidence, their preparation for life and for the future.

The experimental stage involved the implementation and use of the "Smart Kids" platform in the teaching-learning activities, in the Personal Development discipline, preparatory class, as the main objective.

The "Smart kids" platform is an interactive project focused on the diversification of activities and on the acquisition of digital skills by students, but at the same time, the development of socio-emotional and cognitive skills. At a time when students are eager to interact with the devices they have at hand, this project wants to familiarize the younger students in a controlled way with everything that means technology.

At the same time, the classic learning methods are transposed in a modern way, able to capture the attention of students who can often be distracted. Precisely for this reason, in the development of this project, attention was focused on versatility and a high degree of adaptability, the platform being customizable, the platform data being able to be modified directly from the interface whenever needed, thus avoiding the appearance of monotony following its use.

Behind the decision to develop "Smart kids" is the desire to directly involve the younger students in activities that involve the use of the computer, thus activating their interest in the lessons taught or daily activities. In other words, the purpose of this platform is to stimulate students' desire to learn and, indirectly, to integrate into their lives the technical component that is so useful nowadays.

The activities realized were carried out according to the school curriculum for the Personal Development discipline, the preparatory class, approved by ministerial order No. 3418/19.03.2013, the framework plan for primary education, OMEN /3371 of 12.03.2013 and the planning carried out by the primary school teacher for the discipline mentioned above. Depending on the chosen activities, the teaching process was influenced by the proposed independent variable, the systematic use of digital textbooks, two activities per week (except for holidays), for 7 months.

At this stage, a number of 100 students were selected from the preparatory class, from the county of Bistrita Năsăud, students enrolled at "Iacob și Ioachim Mureșanu" Secondary School, Rebrișoara, "George Coșbuc" National College, "Lunca Ilvei" Secondary School, Dumitra Secondary School, Cepari, "Mihai Eminescu" Secondary School. They were included in an experimental program elaborated and implemented by us during 7 months, November 2020 – May 2021.

Each mentioned school had the appropriate conditions for access to the Internet and digital media. We mention that the school units, during the entire period of application of the program, experienced both physical teaching, in the classroom and teaching in the online space according to the following chronology of closing and opening schools during the pandemic:

• **September 14th, 2020**. The 2020/2021 school year begins with students at school. The authorities have prepared three scenarios for conducting classes: with all students in the classroom, hybrid - half at school and half online, exclusively online. Universities continue online.

• **November 9th, 2020**. All schools in Romania close as a result of the increase in cases of coronavirus infection.

• **February 8th, 2021**. The second semester brings students back to school. The activity is based on five scenarios.

Chapter V – Post-experimental stage.

In the post-experimental stage, we analyzed in June 2021, the effects of the interventions exercised on the students' behaviours in formal, non-formal and informal contexts.

We mention that there were no changes in the sample of subjects, so we applied the same survey method to a number of 100 parents and 10 teachers.

At the level of the experimental group, the "Smart Kids" platform was used in the activities of the Personal Development discipline, preparatory class. The students quickly adapted to the new

method, being attracted by the interface as well as by the proposed activities. If in the pre-experimental stage, following the questioning of parents and teachers as well as the direct observation of students' behaviour, it was observed that most of the behaviours aimed at socio-emotional skills appear with average frequency, following the use of the platform an increase in the frequency of behaviours is observed that indicates a progress in developing the targeted skills.

At the same time, in the pre-experimental and post-experimental stage, we analyzed each answer of the applied surveys separately, in the post-experimental stage making comparisons only for those skills that targeted an average level that tends to decrease.

Within the paper, for the statistical analysis of the obtained results, the SPSS application for Windows, version 23, was used. To establish whether the difference between the results obtained for the students participating in the experimental program, in the post-test compared to the pre-test, is statistically significant, the Hi-square test was used. The calculated values of $\chi 2$ indicated that the difference between the frequency of answers for the targeted behaviours is statistically significant at the significance threshold $p<0.05$, as a result the null hypothesis is rejected.

So, according to the statistical analysis carried out to determine the level of socio-emotional development of young digital native children, we showed that the results from the post-test compared to the pre-test improved, the dependent variable one being confirmed.

At the same time, the statistical analysis carried out to determine the level of cognitive development of students, digital natives, demonstrated that through the systematic use of a digital textbook, cognitive skills improve, dependent variable two being confirmed.

Chapter VI – Conclusions. According to the results obtained, we conclude that the **participation of young digital native students in an experimental program of systematic use of digital textbooks will increase the level of development of their socio-emotional and cognitive skills.**

By means of the present paper, we tried to capture the territorial reality of the theories and hypotheses conceived. All these reasons justify the existence of a material that approaches this topic in an integrative manner and propels it towards an applicable field.

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