FORMATION OF DIGITAL LITERACY FOR STUDENTS FROM THIRD GRADE – THE STATE OF THE PROBLEM IN PEDAGOGICAL PRACTICE

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Abstract

Digital literacy is a complex concept that covers different aspects of IT work. The scope of digital literacy changes with the development of technology. The digital literacy of the modern person is expressed in his ability to work with different devices, the way he interacts in online communities, his ethical behaviour in the online environment, finding and critical attitude to information, and many others.

Modern children are surrounded by technology, but the knowledge they receive is not enough to form a basis for digital competence. Systemic knowledge and skills in digital literacy should be developed in an educational environment.

This article examines the current state of the problem of digital literacy in third grade students. It analyzes the opinion of teachers and students on the case of the problem in practice. Attention is drawn to the opportunities that can be accomplished in an educational environment for the formation and development of digital literacy for young pupils.

The results of a survey are presented on the opinion of primary school teachers. It is based on different aspects of the integration of information technologies in the educational process - problems, material security, technical training, methodological solutions.

Keywords: digital literacy, Information Technology, research projects, third grade.

1 INTRODUCTION

In general, digital literacy is defined as the ability to use information and communication technologies with the aim to find, evaluate, create and transmit information that requires both cognitive and technical skills [1].

The skills to work with certain devices and technologies that are considered as mechanical actions can not be compared to digital literacy [2]. The technology-savvy generation of youngsters cope easily with a variety of new devices. They are looking for an analogy of skills and actions which are already formed. They are using successfully the Sample-Error Principle to finds the necessary steps to accomplish the task.

This article examines the current state of the problem of digital literacy in third grade students. It analyzes the opinion of teachers and students on the case of the problem in practice. Attention is drawn to the opportunities that can be accomplished in an educational environment for the formation and development of digital literacy for young pupils.

The results of a survey are presented on the opinion of primary school teachers. It is based on different aspects of the integration of information technologies in the educational process - problems, material security, technical training, methodological solutions.

Digital literacy is a complex concept that covers different aspects of IT work. The scope of digital literacy changes with the development of technology. The digital literacy of the modern person is expressed in his ability to work with different device, the way he interacts in online communities, his ethical behaviour in the online environment, finding and critical attitude to information, and many others.

In general, digital literacy is defined as the ability to use information and communication technologies in order to find, evaluate, create and transmit information that requires both cognitive and technical skills [2].

Skills for working with certain devices and technologies that are considered as mechanical actions cannot be compared to digital literacy [2]. The younger generation, surrounded by technology, handles

various new devices with ease and search for an analogy to skills and actions that are already formed. The trial-and-error principle successfully identifies the necessary steps to accomplish the task.

The specific features of digital skills and digital literacy are described in Table 1 [3]:

Table 1. Digital skills and digital literacy - specifics.

Digital skills	Digital literacy
Sending an email and text message	The ability to find the appropriate digital channel for communication with peers, parents, teachers.
Using Microsoft Office (or similar)	Critical evaluation for using an appropriate program to accomplish a task
Posting on Twitter and Facebook, uploading a video on YouTube, adding a Snapchat story, and posting a photo on Instagram	The ability to use social networks safely, identify and differentiate propaganda, cybercrime, harassment, critical attitude towards shared information.
Searching for information using Google (or other search engine)	The ability to effectively use online search as a research tool - choosing the right search terms; evaluating results based on characters such as web addresses tracking information to a credible source; assessing the tone, style, audience, attitudes and purpose of determining the accuracy of the information.

Digital literacy is not a constant concept. It is changing with the development of technology. Its level depends on:

– practical technical skills;

– cooperation skills;

– social and cultural skills;

– critical thinking.

2 METHODOLOGY

From the academic year 2018-2019, in Bulgaria was introduced as a compulsory subject in the third class "Computer Modeling". The initial program for computer modeling is aimed at mastering basic knowledge, skills and attitudes related to building digital literacy of students. They create computer models of familiar objects, processes and phenomena and experiment with them. The emphasis on third grade students is mastering digital skills, working with files, creating animated projects using condition algorithms and repetitions through a visual block programming environment. The implementation of computer models in a visual environment is prepared with visual materials in a familiar environment for students and the implementation of algorithms with the means of this environment. This includes albums with blocks and puzzles, easy to manually control robotic devices and more. The training is provided by primary teachers who have received the necessary qualifications [4].

Until this school year, in many of the country's primary schools, it was taught as an elective subject in Information Technology. With the changes in curricula, the number of schools in which IT education is continued has decreased significantly. The necessary digital competences are formed in the curricula for the other subjects.

In order to determine the status of the changes made regarding the introduction of information technologies in the elementary school, at the end of the school year a questionnaire survey of the opinions of teachers and students from the third grade was started, which is still ongoing. The respondents from the survey are from different parts of the country, from different types of educational establishments and from different largest settlements. The survey is anonymous. This article presents and analyzes the survey conducted with third grade students.

3 RESULTS

The results of a survey with students from 3rd grade and with teachers who in the past school year taught the new subject Computer Modeling in 3rd grade are presented.

3.1 Survey analysis

3.1.1 Analysis of the survey with 3rd grade students

The results are from a survey with students from different cities across the country. The survey includes small and large cities, as well as various schools - elementary, middle and high schools. The students interviewed do not attend IT and programming competitions. They do not specifically target the formation of a digital culture beyond the prescribed compulsory hours of the curriculum.

All students have studied Computer Modeling in the past year. All students have excellent grades at the end of the school year. Students from different cities worked with textbooks from different teams of authors.

31% of the students surveyed studied IT before third grade as an EPA.

This year, 21% study IT as an additional subject or other form.

All third-graders surveyed said they liked their computer modeling lessons. Only a few of them have specified exactly what they like - and this is working with a computer.

The questionnaire follows two questions that are controlling. On the question "Did you work with a computer in the "Computer Modeling"? ", all students answered in the affirmative by not describing what else they did.

 "Did you ever work with Scratch during your next Computer Modeling lesson? " - 12% of students said no.

In order to establish the digital literacy formed in the survey, several control questions were included:

a) If you want to paint a picture on a computer, which program will you use?

b) If you want to write text on a computer, which program will you use?

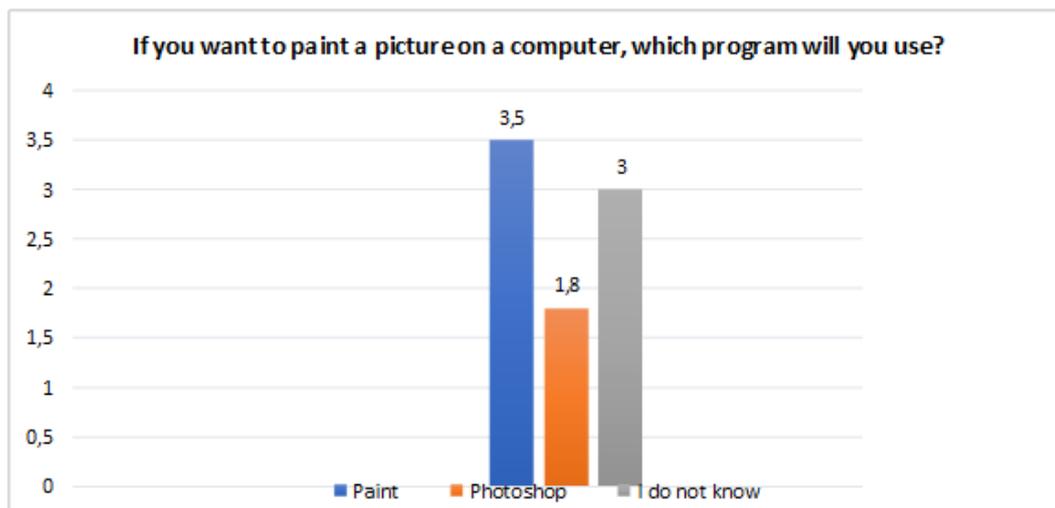c) If you want to make a presentation on a computer, which program will you use?

Figure 1. Answer to the question: "If you want to paint a picture on a computer, which program will you use?"

The results are reflected in the diagrams. On question A) 41% of the children answered Paint, 6% answered Photoshop, and "I do not know" is the answer of 53% of the students (Fig. 1).

On Question B) 8% of the children answered PowerPoint, 15% - I do not remember the name, and "I do not know" is the answer of 77% of the students (Fig. 2).

We separated the response from the students who answered "I do not remember the name" as this answer suggests that they may have seen or worked with the program but did not remember its name. As the survey is still going, it will be interesting to find out also how students will accept this answer. There is not any answer given - Word.

On question C) 12% of the children answered PowerPoint, 8% Scratch, 4% Photoshop, and "I do not know" is the answer to 80% of the students (Fig. 3).
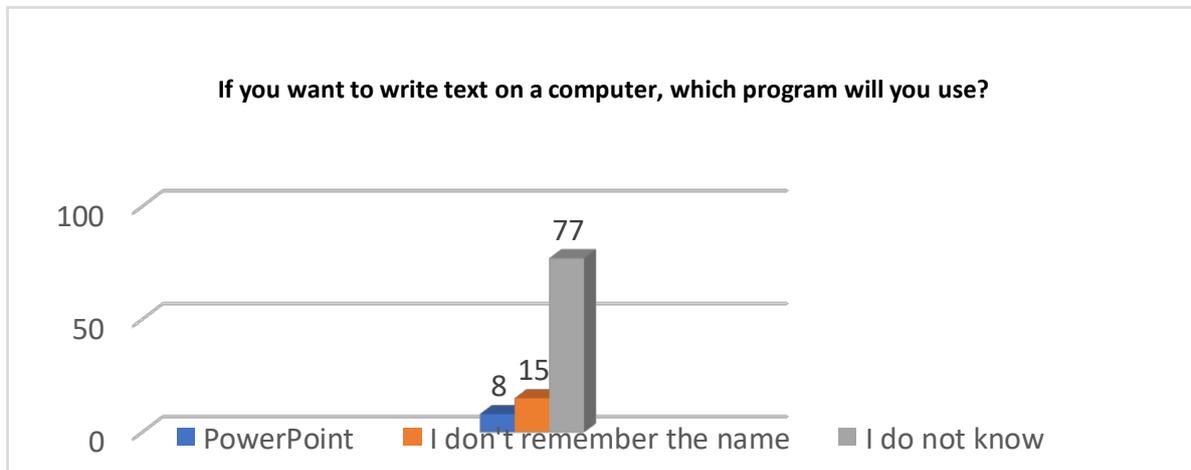

Figure 2. Answer to the question: "If you want to write text on a computer, which program will you use?"
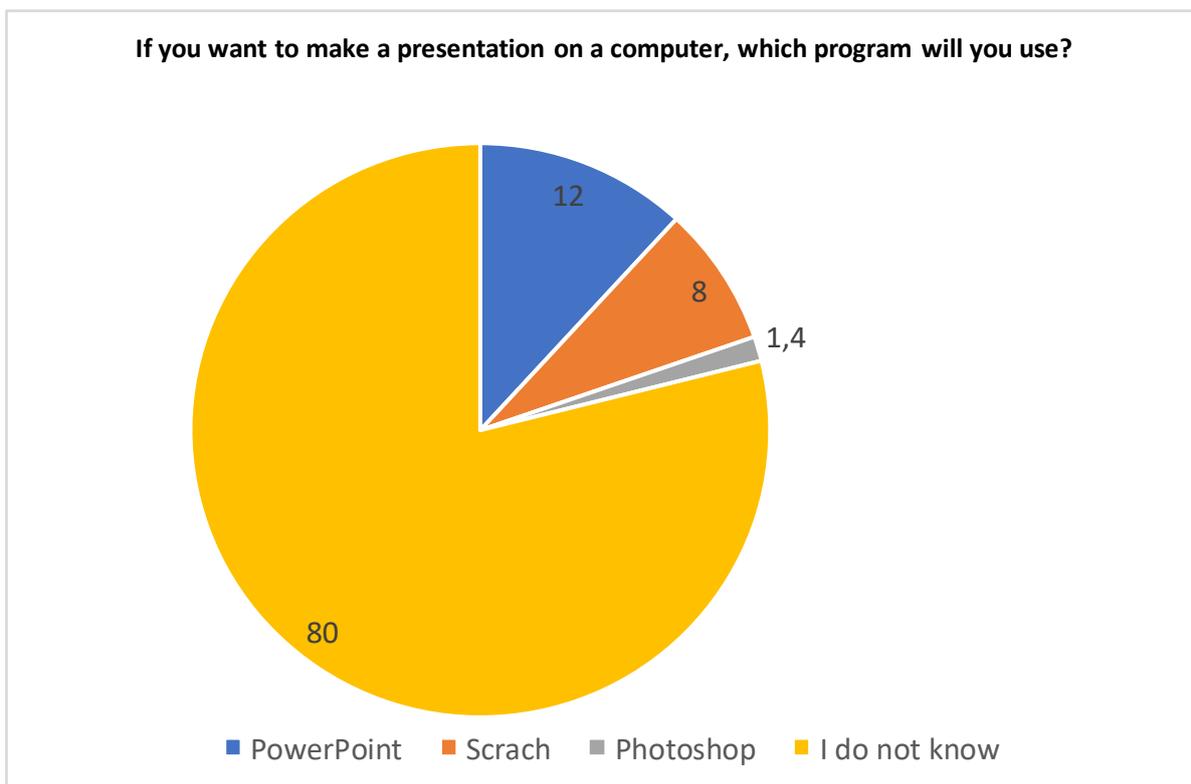

Figure 3. Answer to the question: "If you want to make a presentation on a computer, which program will you use?"

To the question "What do you use a computer for?" The students answer: "to make interesting games", "I use it for learning", "to make programs", "for games", "for work or for fun".

At this stage, we did not ask students to specify what games they play and how they use the computer to learn. It is planned for later surveys the students to specify their answer.

To the question "Do you spend classes on different subjects in a computer room?" 15% of the students responded positively but not indicating on which subjects. 85% responded that they did not. Talking to the students, they share that their teacher uses a computer presentation in Math, Bulgarian, or science. We can conclude that technology is still being used to increase transparency in learning, but not enough to activate students' activities.

All the students surveyed were invited to create a project with the Scratch program, which included basic digital skills intended for third grade learning. It turned out that 13% of the students did not work with the program. They explained that the teacher showed them what could be done with it, but they could not use the computer room in the school. A large number of students demonstrated certain knowledge and skills in creating the project. The biggest problem was the lack of knowledge and inability to understand the file organization and the ability to save a file in a specific directory (Fig. 4).

Figure 4. Projects of students who work only in the obligatory class

3.1.2 Analysis of the survey with teachers

The results presented are related to the survey of teachers who taught the new subject "Computer Modeling" during the last school year.

100% of the teachers surveyed said that Computer Modeling classes were not enough to form students' basic digital skills.

Teachers say that students who have not studied information technology in grades 1 and 2 are slowly understanding the subject matter and it is difficult to realize the set goals and tasks for digital skills.

To the question "In what educational forms could basic digital skills be formed in primary school students?", the majority of teachers answered that these were different options of extracurricular forms (64.7%). In the remaining hours of the compulsory program, 17.6% responded. People who have no opinion - 5.9%. They recommend compulsory IT education - 11.8%.

An important question that the teachers were asked was "Do you spend hours in a computer room in different subjects?" 35.2% answered positively and 64.7% negatively.

During the last school year at your school, which subjects as additional activities were optional for students in grade 3?

Most of the extracurricular activities of the elementary school students are related to the subjects Bulgarian, Math, English. Few teachers have cited Robotics, Programming and IT.

These responses suggest that the likelihood of offering extracurricular forms for digital skills and literacy is unlikely.

An important prerequisite for the selection of such extracurricular forms is the teacher's preparation to work with modern technologies, as well as with methodological solutions for their use.

4   CONCLUSIONS

From the presented results it can be concluded that it is impossible to rely only on the compulsory subject "Computer modelling" to form initial digital literacy in students. There is a need to regulate different forms in which students can form digital skills and digital literacy, in addition to the educational goals for a given class.

The development of programming skills should not displace the formation of skills for working with text, creating presentations, photo and video processing - skills needed in the everyday life of the modern individual.

The formation of digital literacy in adolescents is crucial. The ability to eliminate fake news, for example, will be a crucial 21st century skill. The education system should provide an environment in which to give students the tools and the skills needed to process the vast amount of information they are exposed to on a daily basis, to prepare them to use it to solve life's problems.

ACKNOWLEDGEMENTS

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