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## FEATURES OF TEACHING STUDENTS OF THE FIRST CYCLE OF PRIMARY EDUCATION USING THE WORLD'S DIGITAL RESOURCES

### ABSTRACT

The article analyzes the educational regulations that provide for the use of primary school teachers of various digital resources for the study of academic disciplines. The task of information and communication competence in foreign language and mathematics lessons from typical educational programs edited by O. Savchenko and R. Shiyan is singled out. The possibilities of Internet and digital resources from different countries of the world in the study of academic disciplines by students of the first cycle of primary education are analyzed in detail. In the article, the authors are of the opinion that digital resources in the modern world, with the skillful use of primary school teachers in the classroom and in extracurricular activities, will contribute to the education of students and their willingness to accept innovations.

The article is recommended for primary school teachers, students of higher education institutions in the field of „Primary Education”.

### KEYWORDS

students, primary education, information and communication competence, digital resources, curricula, mathematics in primary school, foreign language in primary school

## Introduction

Every country in the world wants to have a school graduate who will be ready to accept challenges in society and find his place in one or another activity in the future. Currently, the number of digital technology users is growing rapidly in the world. A number of prominent computer scientists and programmers have argued that the computer and a variety of software will help students develop. Seymour Papert (mathematician, programmer) studied mathematics and tried to understand how children learn and think using a computer. In 1967, he created the Logo programming language and the Lego Mindstorms programming environment, which is still used today. He was one of the first who understands the great potential of computers for children and their cognitive process. A book can only describes knowledge, but a computer like a piano will help you play them [3]. He persuaded the teachers to think about the importance of what they did for the children. He pointed out that the computer is not a tool for teachers, but for students.

Alan Kay is the author of Dynabook, a children's computer, who claimed that his dream of a Dynabook never came true. Before he developed computers, he taught playing on guitar. He started thinking about the computer like this: „When I sat down and started working, I didn't know how long it would take of my time. I was thinking more about that thing would have to be large and heavy. I decided that a perfect weight should take about one kilogram - so that children could easily carry it, and the size was so small that children could easily put it in a bag between other textbooks and notebooks. [4]. Kay thus created Dynabook, a tool that he described as a portable interactive computer as easily accessible as a book. Kay also drew a tool - still his drawing is considered a prototype of laptop, only more remindful of the current iPad. Problems of informatization of education, using of multimedia technologies, analysis of pedagogical potential of informatization of educational process are revealed in works of V. Bykov, M. Zhaldak, O. Kuchay, N. Morse, N. Savchenko, O. Shlykova, O. Yuzyk and others.

According to the „Conceptual principles of secondary school reform. New Ukrainian School „ include requirements for future graduate school - a person, a patriot and innovator. In defining the meaning of „personality“, according to the „Concept“ - „it is a holistic personality, fully developed, capable of critical thinking.“ Model graduate in Ukraine is „Educated Ukrainians, fully developed, responsible citizens and patriots, able to risk and innovation - that's who lead Ukrainian economy forward in the XXI century“[1].

The purpose of our study is to reveal the possibilities of digital educational resources in teaching students of the first cycle of primary education in different countries. The first cycle is for students of the first and second grades of a secondary school.

When planning educational activities, primary school teachers of the New Ukrainian School use typical educational programs edited by O. Savchenko and R. Shiyani. Take for analyzing educational program that is approved by the Ministry of Education and Science of Ukraine from 10.08.2019, № 1272 „Typical Education Program“, developed under the guidance of O. Savchenko.

The explanatory note of the typical educational program states that the purpose of primary education is the comprehensive development of the child, his talents, abilities, competencies and cross-cutting skills in accordance with age and individual

psychophysiological characteristics and needs, value formation and development of independence, creativity, curiosity, his readiness to live in a democratic and information society, continuing his education in primary school.

Let's analyze the programs in various subjects in the first cycle of primary school and give tasks that involve the use of primary school teachers skillful use of digital educational resources in the implementation of information and communication competence in the classroom.

In the content of the program for learning a foreign language, the teacher should: 1) learn a foreign language using special software, games, social networks; create information objects in foreign languages; communicate in a foreign language with the use of information and communication technologies; use ICT in accordance with the tasks. Attitude: readiness to adhere to network etiquette [2].

In the explanatory note to mathematics, the purpose of learning is the diverse development of the child's personality and its worldview orientations by means of mathematical activities, the formation of mathematical and other key competencies necessary for life and continuing education. Achieving this goal involves the following tasks: 1) the formation of students' understanding of the role of mathematics in the knowledge of phenomena and patterns of the world; 2) formation in children of experience in the use of mathematical knowledge and methods of action to solve educational and practical problems; 3) the development of mathematical speech of students, necessary for the description of mathematical facts, relations and patterns; 4) the formation of students' ability to reason logically, to assess the correctness and adequacy of data for solving educational and practical problems. Realization of the purpose and tasks of a primary course of mathematics is carried out on such semantic lines: „Numbers, actions with numbers. Values”, „Geometric figures”, „Expressions, equations, inequalities”, „Working with data”, „Mathematical problems and research”.

We will describe digital resources and Internet software that should be used by a primary school teacher in teaching a foreign language and mathematics in grades 1-2.

[www.interaktivnaskola.sk/jml/index.php](http://www.interaktivnaskola.sk/jml/index.php) - offers interactive technologies, educational materials and trainings. In the „Materials” section there is a section „Mathematics”, which contains a tab „I degree of mathematics”. Here you will find more activities that you can download to your own laptop or turn on directly online.

From other foreign sites, let's pay attention to <https://za.ixl.com/math/> - this is an exciting learning experience that provides comprehensive knowledge of mathematics and English from preschool to 12th grade. Below are the main topics that are offered for learning English and math for first and second graders.

#### Grade 1 (math)

Includes: Ordinal numbers. Roman numerals I, V, X. Subtraction facts - numbers up to 10. Estimate to the nearest ten. Read a thermometer.

#### Grade 2 (math)

Includes: Greatest and least - word problems - up to 1000. Complete the subtraction sentence - up to two digits. Find the next row in a growing pattern. Add and subtract numbers up to 100.

#### Grade 1 (English)

Includes: Statement, question, command or exclamation? Complete the sentence. What will happen next? Form contractions with ,not'. Choose the synonyms.

#### Grade 2 (English)

Includes: Unscramble the words to make a complete sentence. Identify the irregular past tense I. Select the best preposition to match the picture. Form pronoun-verb contractions.

Worth noting is the site [www.nlvm.usu.edu](http://www.nlvm.usu.edu) State University in Utah, USA, which offers many java applications in English, divided by levels - classes and mathematical areas - numbers and numerical operations, algebra, geometry, measurements, analysis information and probability. Learning and understanding mathematics, at every level, requires student engagement. Mathematics is not, as has been said, a spectator sport. Too much of current instruction fails to actively involve students. One way to address the problem is through the use of manipulatives, physical objects that help students visualize relationships and applications. We can now use computers to create virtual learning environments to address the same goals.

There is a need for good computer-based mathematical manipulatives and interactive learning tools at elementary and middle school levels. Our Utah State University team is building Java-based mathematical tools and editors that allow us to create exciting new approaches to interactive mathematical instruction. The use of Java as a programming language provides platform independence and web-based accessibility.

Below is one of the topics „Numbers and operations” for classes from preschooler to second grade.

Virtual manipulatives for grades Pre-K - 2.

Number & Operations (Grades Pre-K - 2)

Bar Chart – Create a bar chart showing quantities or percentages by labeling columns and clicking on values.

Base Blocks – Illustrate addition and subtraction in a variety of bases.

Base Blocks Addition – Use base ten blocks to model grouping in addition.

Base Blocks Decimals – Add and subtract decimal values using base blocks.

Base Blocks Subtraction – Use base ten blocks to model separation of groups in subtraction.

Chip Abacus – Learn about carrying and digits using chips.

Circle 99 – A puzzle involving adding positive and negative integers to sum to ninety nine.

Color Chips - Addition – Use color chips to illustrate addition of integers.

Color Patterns – Arrange colors to complete a pattern.

Diffy – Solve an interesting puzzle involving the differences of given numbers.

Fraction Bars – Learn about fractions using fraction bars.

Fractions - Naming – Write the fraction corresponding to the highlighted portion of a shape.

Fractions - Parts of a Whole – Relates parts of a whole unit to written description and fraction.

Fractions - Visualizing – Illustrate a fraction by dividing a shape and highlighting the appropriate parts.

Hundreds Chart – Practice counting and visualize number patterns using a hundreds chart.

Mastermind – Use inference and logic to play a game and guess a hidden pattern of pegs.  
Money – Learn about money by counting and making change.  
Number Line Arithmetic – Illustrates arithmetic operations using a number line.  
Number Line Bars – Use bars to show addition, subtraction, multiplication, and division on a number line.

Number Line Bars - Fractions – Divide fractions using number line bars.  
Number Line Bounce – Number line addition and subtraction game.  
Number Patterns – Discover the pattern and complete a sequence of numbers.  
Percentages – Discover relationships between fractions, percents, and decimals.  
Pie Chart – Explore percentages and fractions using pie charts.  
Place Value Number Line – Explore place value by placing dots on number lines.  
Rectangle Division – Visualize and practice dividing numbers by using an area representation.  
Rectangle Multiplication – Visualize the multiplication of two numbers as an area.  
Rectangle Multiplication of Integers – Visualize and practice multiplying integers using an area representation.  
Sieve of Eratosthenes – Relate number patterns with visual patterns.  
Spinners – Work with spinners to learn about numbers and probabilities.  
Another exciting site is <https://www.abcmouse.com>, which is aimed most for first-year elementary school students. Of course, there are many tasks for preschoolers, but to repeat, to promote mathematics, it should be used. The only downside is that the site only allows one month of free use, and then requires payment. Below is a curriculum in math, reading, science and art, which are studied on this site.

The Math Curriculum Includes:

1. Recognizing and counting numbers 1-120.
2. The base ten system.
3. Place value.
4. Addition and subtraction.
5. Names and attributes of 2D and 3D shapes.
6. Length, time, and money measurement.

The Art & Colors Curriculum Includes:

1. Primary and secondary colors.
2. Shades of colors.
3. Paint-by-number activities.
4. Number and letter dot-to-dots.

The Science and Social Studies Curriculum Includes:

1. The body and health.
2. Plants and animals.
3. Weather, climate, and the seasons.
4. Earth's environments.
5. Maps.
6. Regions of the United States.
7. The Solar System.
8. Matter and its properties.

The Reading Curriculum Includes:

1. Uppercase and lowercase letter recognition.
2. Phonics.
3. Rhyming words and word families.
4. More than 450 books and beginning readers.
5. Sentence structure.
6. Parts of speech.

When studying geometric shapes in elementary mathematics, we can use Tux Paint - a free drawing program (graphic editor), aimed for children aged 3-12 years. It was originally created for Linux, later transferred to Windows, Mac OS X, Android and other operating systems. It has a multilingual interface, including Russian and Ukrainian.

On the website [www.silcom-multimedia.sk/tituly/alik-vesela-matematika/](http://www.silcom-multimedia.sk/tituly/alik-vesela-matematika/) you can buy the program Alík - Veselá matematika. The central character is a cute dog Alik, a friend and a guide in one person. In eight different games, children learn to add, subtract, multiply, divide and compare numbers. Students find themselves in different environments and situations. For example: they will help Alik to win by pulling the rope; will visit the shooting, where they will hit the targets; take part in „ultra-fast“ snail running competitions; they will compare on scales and so on. Interactivity in the program also contains a „workbook“ filled with examples, in which you can choose the exact type of material that is practiced, and solve only this type of examples. Games are divided into three levels of difficulty; choosing a new player, you can choose how many players can already count - up to 10, up to 20 or up to 100. For correctly solved examples, the player receives ducats, which accumulate in the box office - a piggy bank. In the large toy store Alik, he can exchange the ducats for toys in his room. Each of the screens in this title contains a large number of humorous animations and sound effects. The game is suitable mainly for students of grades 1 - 3 of primary schools, it develops mathematical skills and logical thinking. You can find many tutorials on the Internet that are available for free. You need to think about the meaning and didactic purpose of these programs. It is important to evaluate them well before use.

2 + 2 Math games for kids is a free program designed for children from 5 years. It is created in English, but can be changed to other languages, such as Polish, Slovak, German, French, unfortunately there is no Ukrainian. 2+2 math for kids is a freeware program aimed to help children's education in the area of basic mathematical skills. Thanks to the program, the child learns how to count, compare numbers, add, subtract, multiply, and divide. Interesting exercises, intuitive usage, beautiful music, attractive graphics and lovable narration make children return to learn mathematics with pleasure. 2+2 math for kids can be used for individual lessons as also at school. 2+2 FEATURES: 1) Learning: counting, addition, subtraction, comparing numbers, multiplication and division (ranging from 0 to 100); 2) 21 interesting exercises; 3) Easy and intuitive program usage; 4) Comments read by lector. Possibility of changing his voice; 5) Great music; 6) Possibility of printing the multiplication table.

We will describe the Internet resources used by primary school teachers in Slovakia to study disciplines. Slovak web pages with educational material:

1) <http://www.matika.sk/index1.htm> is a Matika.sk page that focuses on elementary mathematics and its teaching, offers resources for teachers and simple web applications that can be used directly in mathematics lessons, especially at the first stage of primary school. It presents a modern view on the teaching of mathematics with an emphasis on modern content, independent research and communication.

2) <http://www.zborovna.sk> is a portal for teachers and pedagogical staff, where you can find materials in the knižnica section, but must be registered here. Those materials can be easily searched by specifying the year, subject or keywords. For elementary mathematics, there are more than 300 articles. It is an online system used to present, search, select or share learning materials. Its users are primary school teachers.

Positive aspects of this portal: a large amount of material; teachers use this portal often, and therefore the materials are relevant; easy search system; material quality rating, can also be commented on, offering an interesting opportunity for teachers to communicate with each other; part of the material is available free of charge; the Czech and Polish libraries are also available. The downside of this portal is that teachers can not register alone because schoolshave to register and pay for this service.

### Conclusion

Analysis of digital resources in the world using primary school teachers in educational activity promotes more active study of mathematics and foreign languages. To achieve the goal we should use digital software online resources such as: [www.interaktivnaskola.sk](http://www.interaktivnaskola.sk); [www.za.ixl.com/math/](http://www.za.ixl.com/math/); [www.nlvm.usu.edu](http://www.nlvm.usu.edu); [www.abcmouse.com](http://www.abcmouse.com); Tux Paint - a free drawing program (graphic editor); Alik - Merry Mathematics; 2 + 2 Math games for kids; Matika.sk; [www.zborovna.sk](http://www.zborovna.sk).

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## **CECHY NAUCZANIA UCZNIÓW PIERWSZEGO CYKLU EDUKACJI POCZĄTKOWEJ Z WYZYSKANIEM ŚWIATO- WYCH ZASOBÓW CYFROWYCH**

### STRESZCZENIE

W artykule przeanalizowano regulacje edukacyjne przewidujące wykorzystanie podstawowych zasobów cyfrowych przez nauczycieli szkół podstawowych do nauki dyscyplin akademickich. Wyróżniono zadanie kompetencji informacyjnych i komunikacyjnych na lekcjach języka obcego i matematyki w typowych programach edukacyjnych pod redakcją O. Savchenki i R. Shiyana. Możliwości wykorzystania Internetu i zasobów cyfrowych z różnych krajów świata w nauczaniu uczniów pierwszego cyklu edukacji podstawowej są szczegółowo analizowane.

W artykule autorzy są zdania, że zasoby cyfrowe we współczesnym świecie, dzięki umiejętnemu wykorzystaniu przez nauczycieli szkół podstawowych w klasie i podczas zajęć pozalekcyjnych, przyczynią się do edukacji uczniów i ich gotowości do przyjmowania innowacji.

Artykuł polecany jest nauczycielom szkół podstawowych, studentom szkół wyższych z zakresu „Edukacja początkowa”.

### SŁOWA KLUCZOWE

uczniowie, edukacja podstawowa, kompetencje informacyjne i komunikacyjne, zasoby cyfrowe, programy nauczania, matematyka w szkole podstawowej, język obcy w szkole początkowej