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THE EXPERIENCE OF FORMING DIGITAL LITERACY IN PRIMARY SCHOOL CHILDREN

The article is devoted to the analysis of the experience of digital literacy formation among primary school students in various countries. It examines the issues of digital literacy, methods and approaches to its teaching, features of the introduction and use of digital technologies in the educational process of younger schoolchildren. The authors analyze the role of information and communication technology in the development of digital competence in primary school students, draw comparisons between local and international experience, and highlight key trends and issues in the field of teaching digital literacy. The article also presents the results of a survey aimed at studying the level of digital technology development. The survey revealed that most children actively use the Internet mainly for entertainment, while educational use of network resources takes them a smaller proportion of their time on the Internet. This emphasizes the necessity for focused instruction in digital literacy, with a focus on information security, online critical thinking, and the efficient use of digital resources for learning. Special attention is paid to the importance of early inclusion of schoolchildren in the information space, taking into account their safety and the development of critical thinking.

Keywords: digital literacy, digital competence, Internet, information technology communication, primary education, digital literacy training, domestic and foreign experience

Introduction

As a reflection of the contemporary demands of the information age, digital literacy is increasingly being taught in elementary schools. The experiences of various nations show a range of methods for forming digital literacy, acknowledging the significance of this process for younger students.

Children now have the freedom to freely access information and knowledge through a variety of devices thanks to the development of modern information and communication technology. This enables kids to actively engage with a variety of devices, fusing the real and virtual worlds, in addition to using a home computer. For the successful implementation of digital literacy among schoolchildren, it follows that preparing future teachers with digital competence becomes crucial. It's also becoming clear that younger students need to have their cognitive curiosity and skills in information and communication technology developed.

Because of the advancement of digital technologies, teachers today require specific training. It is imperative to recognize that youngsters of today regularly use digital devices and the Internet. The fact that primary school pupils actively utilize the Internet and have mastered a large portion of digital technology highlights the importance of raising their level of digital literacy.

The information and abilities required for using digital devices and Internet resources safely and effectively are included in digital literacy. It is regarded as a crucial component of pupils' talents and helps to shape their foundational competencies. The establishment and enhancement of digital competencies in pupils is turning into an essential duty in a digital society.

The State Educational Standard of the Republic of Kazakhstan states (State educational standard of primary general education, 2022) that one of the goals of primary education is the development of information skills and safe behavior skills in society. Using resources and information technologies improves the quality of instruction in primary schools. Primary school age is beneficial for the development of information competence and digital literacy since it allows pupils to acquire information security competences, which is also vital [1].

El'tsova O.V. noted that teaching students the effective use of computers, as well as the movement, modification and use of information, is the main goal of developing information competence. Information and communication technologies contribute to the development of human competencies, and one of the key requirements of modern education is the ability of students to independently find the facts they need and choose an educational path [2].

The topic «Information and Communication Technologies» was added to the curriculum for grades 3–4 in Kazakhstan for the 2018–2019 school year, giving kids the chance to learn the fundamentals of using contemporary digital technology.

The course was moved to grade 1 and renamed «Digital Literacy» on the order of the Republic of Kazakhstan's Minister of Education and Science. This new course emphasizes the value of giving students a foundational understanding of computer use, information processing, and safe Internet access.

The questions designed to help pupils acquire the fundamental information and abilities required for the efficient use of digital technology in daily life are part of the methodological recommendations for the study of the topic «Digital Literacy» in primary grades.

The introduction of digital literacy into the educational process of primary schools helps to prepare students for life in the information society, the formation of critical competencies and skills for the safe use of digital resources.

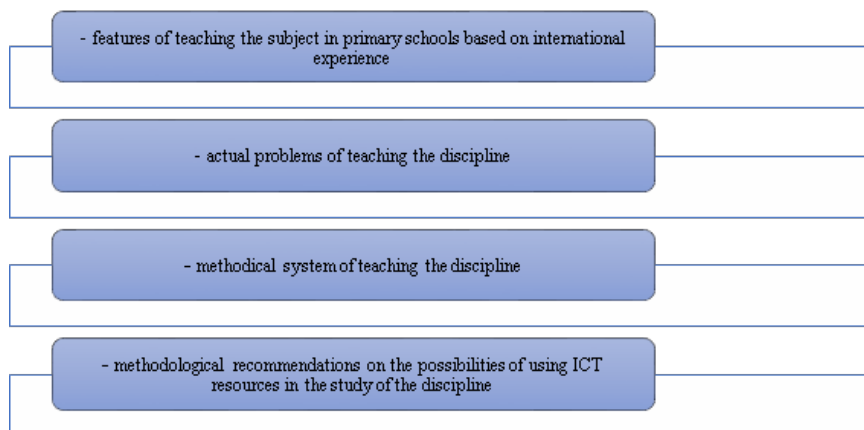


Figure 1. – Questions on the subject of «Digital literacy»

Studying «digital literacy» will ensure that school informatics in modern Kazakhstan advances and increase the demand for fundamental understanding.

Methods and materials

An examination of computer science and digital literacy courses across international borders was done as part of this research. Finding patterns and characteristics in the way primary school students are taught computer and Internet abilities was the aim of this investigation. Scientific publications and open-access information sources on the subject of digital education provided the data for the

analysis. The following criteria could be used to categorize countries based on the analysis:

- computer science as a separate subject that is required to be studied.
- computer science is incorporated into various subjects.
- the utilization of computer science's components in other academic fields

but its lack as a stand-alone study.

Students in the third «B» class were surveyed

The study's second component involved surveying pupils in Pushkin Gymnasium No. 1's third «B» class. 21 students – 14 boys and 7 girls – participated in the poll. The purpose of the survey was to find out how younger students were acquiring Internet capabilities and at what level. Among the primary inquiries on the survey were: What was your method of learning how to utilize the Internet?

What is the purpose of your Internet usage?

The primary patterns in this age group's Internet usage and understanding of information security issues were found through the collection and analysis of data.

As a result, the study combined practical research based on a survey of students with a theoretical examination of curriculum. As a result, we were able to build a thorough grasp of the situation regarding digital literacy development in primary schools as well as its future prospects.

Numerous methods for teaching digital literacy were identified by the analysis, and the survey's findings indicated that while most kids already know how to use the Internet, they still require in-depth understanding of information security. This emphasizes how important it is to continue developing digital technologies and incorporating them into basic school curriculum.

Results and Discussion

The topic of «Informatics» is crucial to the development of students' information competency at this point in the school reform process. For computer science to remain a stand-alone topic for general education, it must keep up with the demands and trends in the growth of science and education in the global community. It is crucial to take into account the current developments in school informatics overseas in this aspect.

A summary of worldwide patterns in computer science education

The various ways that information and communication technologies (ICT) are implemented in the educational process are determined by the varying rates of development of ICT in different countries. Nations can be categorized based on the various methods used to teach computer science:

Countries with compulsory computer science studies:

England: Since 2014, England has been among the first nations to incorporate computer science into the curriculum for the whole 12-year study span. There are four main stages to the curriculum:

In the first stage (5–7 years old), students create and modify basic programs.

Stage 2 (7–11 years): Create, draft, and modify programs to meet predetermined objectives.

Stage 3 (ages 11 to 14): Create, implement, and assess abstractions for simulation computing.

Stage 4 (14–16 years old): Cultivate and apply your analytical, computational thinking, problem-solving, and design skills.

"Computer Technology" was one of the subjects included to England's new national curriculum in 2014, according to research by Brown N. C. One of the few nations that incorporates programming into a complete learning plan is England. The fundamentals of computational thinking, computer science programming, and computer engineering form the basis of the computer engineering course [3].

Information technology: Utilizing a range of ICT resources and programs.

The ability to use digital technologies safely and effectively is known as digital literacy.

The primary goals of computer science education in England are to foster students' computational thinking, problem-solving and design capabilities, and analytical ability.

Based on its resources and strategic interests, each nation choose its own distinctive methods for incorporating computer science into its educational curricula, as the analysis demonstrates. Other nations wishing to update their educational systems to meet the demands of the information age can take a cue from the English method, which places a strong focus on programming and incorporates computer science into all phases of education.

Choi J. stressed that the education system in China is designed for 12 years of study (6+3+3). «Information technology» is the name given to computer science in schools. The block-modular nature of the course structure, which has been in effect since 2012, allows schools to change their curricula in accordance with government strategies [4]. Included in the course are:

Basic «Getting to Know the Computer» module (72 hours), robotics and programming algorithms modules (36 hours each) are offered in elementary school.

Secondary school: 36-hour modules including robotics, algorithm programming, and information technology.

High school: 36-hour variable modules including multimedia technology, network technologies, and programming.

The study of robotics is just one aspect of the practical application of knowledge that is the goal of computer science education in China.

The South Korean educational system consists of six-year elementary school, three-year middle school, and three-year high school. In 1971, computer education began, and by 2007, computer science was mandated. 2018 saw the introduction of a revamped curriculum that made computer technology an elective in high school and a requirement for secondary education. Tammaro R pointed out that the curriculum teaches computer thinking, programming, and digital literacy [5].

Hutagalung B. believes that the curricula of individual school districts are allowed because the American education system is decentralized. At the national level, computer science education for all age groups is becoming increasingly popular [6].

Vargas A. L. pointed out that Singapore implemented the Code For Fun initiative in 2014, which mandates computer literacy and programming instruction for all elementary school pupils. Ten-hour classes in robotics and visual languages are part of the curriculum. In order for schools to participate in the initiative, applications for funding are accepted [7].

In countries such as the USA, Canada and Australia, the focus is on elective computer science education. Computers are used in education and other fields in these countries. The requirements for studying computer technology, starting from the first grade, are reflected in the educational programs of the Canadian province of Ontario [8].

Some nations, like Finland, New Zealand, and Japan, include computer science into other academic fields. Since 2014, Finland has implemented interdisciplinary programming and algorithmic thinking training. It is intended to gradually implement mandatory programming education for all students in Japan [9].

The absence of computer science as a separate academic discipline

Although some countries do not provide computer science as a stand-alone curriculum, its components are used in other academic subjects. These nations are building early childhood education and training programs that enable children to successfully complete the computer science curriculum in schools [10].

Four major patterns in the evolution of digital literacy have been identified by an analysis of global experience:

- Teaching digital literacy through computer games and after-school activities.
- Including information from other subjects into the teaching of digital literacy.
- The development of an information culture devoid of computer use.
- Creation of training courses in digital literacy for various age groups.

Research on Digital Literacy at Pushkin Gymnasium No. 1

A survey was administered to pupils at Pushkin Gymnasium No. 1's third "B" class as part of the study. Seven females and fourteen boys took part in the survey. The survey indicated how critical it is for younger students to acquire information security and digital literacy.

The research method is a questionnaire on digital literacy among primary school students. The survey was attended by students of the 3rd «B» class of the Pushkin Gymnasium No. 1. There are 14 boys and 7 girls in the class.

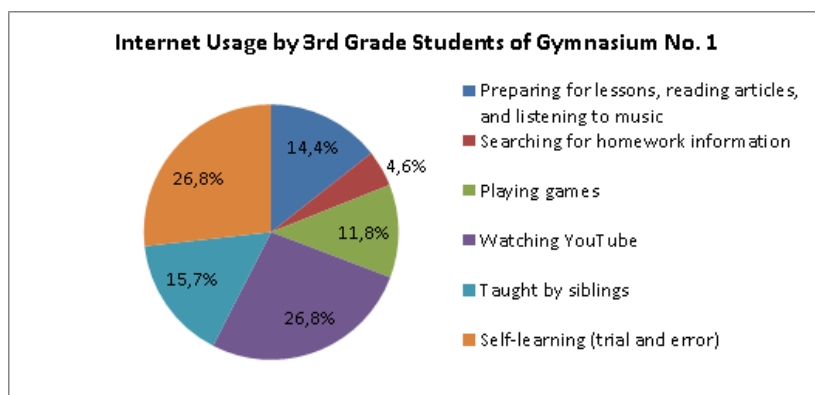


Figure 3 – The results of the survey of students of the 3rd «B» class

A survey was administered to students as part of the study, asking them about their Internet usage habits and how they learnt to use it.

In response to the inquiry, "How did you learn to use the Internet?" The distribution of the responses was as follows:

In response, 41% of participants said they had learned how to use the Internet on their own through trial and error.

Of the students, 24% said their siblings had taught them how to use the Internet.

These results show that most younger students learn to use the Internet without prior education; instead, they rely on their own experience or the help of older family members.

In response to the inquiry, «What is the purpose of your Internet usage» The distribution of the responses was as follows:

The majority of kids watch YouTube online.

Eighteen percent said they use it for gaming.

Seven percent of people look up information about homework online.

2.2% read articles, listen to music, and get ready for classes on it.

According to these findings, youngsters between the ages of 9 and 10 mostly use the Internet for communication and pleasure; instructional content makes up a far lower portion of their online activity.

The survey results allow for the following deductions to be made:

Rather than through official educational programs, the majority of younger pupils have learnt how to use the Internet on their own or with assistance from family members. Instead of being used for instructional purposes, people use the Internet largely for amusement, such as playing games and viewing YouTube videos. Pupils in elementary school know very little about using the Internet safely.

According to the study, younger students' information security needs to be raised, and a more systematic strategy to teaching them how to use the Internet needs to be implemented. In the digital age, using mobile devices, the Internet, and other electronic devices should be accompanied by the necessary network security knowledge and training.

Conclusion

Only by making a major shift in teaching strategies will it be possible to teach digital literacy effectively and get good results. Students' individual work must be encouraged, and their personality, cognitive, and creative development must be the main priorities. This necessitates using the strategies, formats, approaches, and tactics of educational activities that help younger students develop their digital literacy.

According to a poll conducted among Grade 3 "B" pupils at Pushkin Gymnasium No. 1, the majority of kids use the Internet mostly for amusement, including games and YouTube videos. A much smaller percentage of their online activity is related to educational use of the Internet.

This emphasizes the necessity of focused instruction in digital literacy, encompassing topics like information security, online critical thinking, and efficient use of digital resources for learning.

Developing appropriate curricula, providing teacher training, and granting access to digital educational materials are all essential components of an integrated approach to fostering digital literacy in primary schools. The curriculum for teaching digital literacy should take into consideration the age range of primary school pupils, pique their curiosity, and help them acquire the skills necessary to use the Internet safely and effectively.

An essential component of the contemporary educational process is teaching pupils digital literacy, which helps them study in the information age and get ready for a successful life. To achieve this, it will take the combined efforts of educators, parents, and the community to establish a secure and encouraging

learning environment. Every youngster will be able to grow and improve their digital abilities in such an atmosphere, which is essential for their successful future.

The study's findings highlight the significance of teaching digital literacy in primary schools using a targeted and organized strategy. Developing curriculum that works, hiring educators with the right skills, and giving students access to contemporary digital resources are all important steps in this process. Only under these circumstances can it be guaranteed that younger students will successfully acquire digital literacy and be ready for life in the information society

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БАСТАУЫШ СЫНЫП ОҚУШЫЛАРЫНЫҢ ЦИФРЛЫҚ САУАТТЫЛЫҒЫН ҚАЛЫПТАСТЫРУ ТӘЖІРИБЕСІ

Бұл мақалада әртүрлі елдердегі бастауыш сынып оқушылары арасында цифрлық сауаттылықты дамытудың әртүрлі тәсілдері қарастырылады. Онда цифрлық сауаттылық мәселелері, оны оқыту әдістері, сондай-ақ бастауыш сынып оқушыларын оқытуда цифрлық технологияларды енгізу және пайдалану ерекшеліктері талқыланады. Авторлар Ресейдегі және шетелдегі тәжірибені салыстыра отырып, цифрлық сауаттылықты оқытудағы негізгі белгілер мен қиындықтарды іздейді. Сонымен қатар, олар цифрлық технологияның жас студенттерге цифрлық сауаттылықты игеруге көмектесетін жолдарын талқылайды. Мақалада сонымен қатар цифрлық технологиялардың даму деңгейін анықтау мақсатында жүргізілген сауалнаманың нәтижелері келтірілген. Сауалнамаға сәйкес, балалардың көпшілігі Интернетті негізінен көңіл көтеру үшін белсенді пайдаланады. Алайда, желілік ресурстарды білім беру мақсатында пайдалану олардың интернеттегі уақытының аз ғана бөлігін алады. Бұл цифрлық сауаттылықты мақсатты оқыту ақпараттық қауіпсіздікті жақсартуға, интернеттегі сыни ойлауға және білім беру мақсатында цифрлық ресурстарды тиімді пайдалануға байланысты болмауы мүмкін дегенді білдіреді. Оқушылардың қауіпсіздігі мен сыни тұрғыдан ойлауының дамуын ескере отырып, оларды ақпараттық кеңістікке ерте енгізудің маңыздылығына ерекше назар аударылады. Зерттеу сонымен қатар бастауыш мектептерде цифрлық сауаттылықты қалыптастыру барабар оқу жоспарларын әзірлеуді, мұғалімдерді даярлауды және

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ОПЫТ ФОРМИРОВАНИЯ ЦИФРОВОЙ ГРАМОТНОСТИ МЛАДШИХ ШКОЛЬНИКОВ

Статья посвящена анализу практики формирования цифровой грамотности среди учащихся начальных классов в разных странах. В ней рассматриваются проблемы цифровой грамотности, методы и приемы ее обучения, особенности внедрения и применения цифровых технологий в учебный процесс младших школьников. Авторы, сравнивая отечественный и зарубежный опыт, выявляют основные особенности и проблемы в области воспитания цифровой грамотности, обсуждают роль информационно-коммуникационных технологий в формировании цифровой компетентности младших школьников. В статье также представлены результаты опроса, направленного на изучение уровня развития цифровых технологий. Опрос показал, что большинство детей активно используют интернет в основном для развлечения, в то время как использование сетевых ресурсов в образовательных целях занимает небольшую часть их времени в интернете. Это подчеркивает необходимость целенаправленного обучения цифровой грамотности с упором на информационную безопасность, критическое мышление в интернете и эффективное использование цифровых ресурсов в образовательных целях. Учитывая безопасность и развитие критического мышления учащихся, особое внимание уделяется важности раннего включения их в информационное пространство. Исследование также показало, что формирование цифровой грамотности в начальных

школах требует комплексного подхода, включающего разработку адекватных учебных программ, подготовку учителей и доступ к цифровым образовательным ресурсам. Важно, чтобы программа обучения цифровой грамотности учитывала специфику возрастной категории учащихся начальной школы и способствовала развитию их познавательного интереса и навыков безопасного и эффективного использования Интернета.

Ключевые слова: цифровая грамотность, цифровая компетентность, интернет, информационно-коммуникационные технологии, начальное образование, обучение цифровой грамотности, отечественный и зарубежный опыт

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