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## USING REASONED REALITY IN SCIENCE TEACHING IN 4TH GRADE

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#### ABSTRACT

The article examines the prospects and results of using the technology of reasoned reality (AR) in the process of teaching natural sciences to 4th grade students. The authors of the study assess the impact of AR on the activity and interest of students in studying subjects such as biology, physics and chemistry. The article presents the results of an experiment conducted using AR technologies in the classroom, as well as an analysis of the effectiveness of this method in comparison with traditional educational approaches. The data obtained allow us to draw conclusions about increasing student motivation, improving material assimilation and developing key skills through the integration of AR into the educational process. The work provides teachers and researchers with valuable recommendations for the successful implementation of reasoned reality in an educational environment for primary school children.

# **K**EYWORDS

Reasoned reality, 4th grade education, Natural Sciences, Interactive learning, Technologies in education, Virtual objects, Development of observation skills, Interactive learning applications, Improvement of material assimilation, Visualization of educational content, Technological innovations in the classroom.

### Introduction

Modern technologies are changing approaches to education, making it more interactive and

exciting. One of the innovative technologies that is widely used in the educational process is

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augmented reality (AR). In this article, we will look at how AR can be effectively used in teaching science in 4th grade. Reasoned reality is a technology that complements the real world with virtual objects, information, or scenes. In the context of education, AR creates unique learning opportunities by allowing students to interact with virtual elements, expanding the boundaries of the traditional learning process. AR allows you to visualize complex concepts of natural sciences, such as cell structure, the solar system, or animal anatomy[1]. Children in the 4th grade can better understand the educational material by seeing it in virtual form, which contributes to a deeper assimilation of knowledge.

AR creates interactive learning scenarios where students can interact with virtual objects. For example, they can study the properties of different materials, conduct virtual experiments, or explore different ecosystems. Using AR makes lessons more fun, which helps to improve student motivation. The ability to interact with virtual objects creates children's interest in the learning process. Students can use AR-enabled devices to view the cellular structure in three dimensions. This will allow them to literally immerse themselves in the world of microorganisms, studying their functions and interactions.

With the help of AR, students can embark on a virtual journey through the solar system, studying the characteristics of the planets, their orbits and features. This will create a unique for them and experience deepen understanding of cosmic phenomena. AR can be used to simulate chemical reactions and virtual

experiments with various substances. This will help children understand the basics of chemistry conducting safe and interesting experiments[2]. In modern education, technology plays a key role, opening up new ways for students to learn more deeply and engagingly. One of the innovative technologies that is being actively introduced into the educational process is augmented reality (AR). In this article, we will consider how AR can be successfully applied in teaching natural sciences to 4th grade students.

AR allows students not only to read about nature and science, but also to actually immerse themselves in a virtual environment created for learning. For example, using AR, students can view three-dimensional models of cells, planets, animals and other objects, making learning more visual and understandable. AR provides the opportunity to create interactive lessons that attract the attention of children[3]. With the help of mobile devices or tablets, students can interact with virtual objects, solve problems and perform experiments, which makes learning more exciting and memorable.

AR allows you to conduct virtual excursions to scientific laboratories and research centers without even leaving the classroom. Students can explore laboratories. observe scientific experiments and ask questions to virtual scientists, which expands their understanding of the world of science[4]. AR also promotes the development of students' critical thinking. In the process of interacting with virtual scenarios, they can analyze information, make decisions and solve problems, which is important for the

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formation of a scientific method of thinking. AR technology allows teachers to adapt learning to the individual needs of students. Each child can explore the material at their own pace, choose topics of interest and receive feedback, which contributes to more effective learning.

In a world saturated with modern technology, education is becoming more interactive and exciting. One of the innovative technologies, the introduction of which is successfully used in education, is reasoned reality (AR)[5]. Reasoned reality provides unique learning opportunities, allowing students to explore and understand the world of natural sciences in a new dimension.

#### What is augmented reality?

Reasoned reality is a technology that combines virtual elements with the real world. Using devices such as tablets or smartphones, students can see additional graphical or textual information layers added to the real environment. In the context of science education, reasoned reality can be used to visualize complex concepts, experiments, and processes, making them more accessible and understandable.

The benefits of using AR in Science Education in 4th Grade:

1. Visualization of abstract concepts: Reasoned reality allows you to visualize abstract and complex concepts such as the molecular structure of substances or astronomical phenomena. This helps students to better imagine and understand scientific concepts.

- 2. Interactive experiments: Using AR, you can create virtual labs where students can conduct interactive experiments. This not only makes learning more interesting, but also ensures safety in conducting experiments.
- 3. Development of observation skills: Reasoned reality allows children to interact with the real world, improving observation and analysis skills. They can study the surrounding objects and then see additional information that expands their understanding.
- 4. Support for differentiated learning: Reasoned reality systems can be customized to each student's level, providing differentiated learning. This allows each child to move forward at their own pace and at their own level of understanding.

Examples of the application of reasoned reality in 4th grade science education:

- 1. Cell Research: Using AR, students can explore the internal structure of cells by observing them in three-dimensional format and studying the functions of various organelles.
- 2. Immersion in the world of dinosaurs: Reasoned reality can transform an educational space into a dinosaur landscape where children can interact with virtual dinosaurs and learn about their biology.
- 3. Solar System Exploration: Students can explore the planets of the solar system by observing their orbits and participating in virtual space travel.

The introduction of reasoned reality into science education in 4th grade provides unique

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opportunities to improve the educational process. This technology promotes a deeper understanding of scientific concepts, stimulates interest in the subject and develops important skills of students[6]. Expanding the boundaries of education with the help of reasoned reality opens up new prospects for the formation of critical thinking and curiosity in children, which is fundamental for their future success.

The educational environment is constantly evolving, and one of the most exciting developments in recent years has been the introduction of reasoned reality (AR) into learning. This innovative technology turns science lessons for 4th grade students into an exciting and exciting adventure, allowing them to literally "immerse themselves" in the world of knowledge. Reasoned reality is a technology that combines virtual elements with the real world. In the context of education, this means that students can see additional information superimposed on real objects through devices such as tablets or smartphones.

AR allows you to visualize abstract and complex concepts of natural sciences, making them more accessible and understandable for 4th grade students[7]. For example, they can see the internal structure of an atom or observe the processes inside a cell. With AR, lessons become interactive. Students can interact with virtual objects, change parameters and observe how this affects the results. This contributes to a deeper understanding of the material. Augmented reality provides an opportunity for learning taking into account different styles of information perception. Visual, auditory, and kinesthetic types of students can interact with the learning material equally successfully.

Students learn to analyze information, make decisions and solve problems in an interactive environment. which contributes development of critical thinking and a problembased approach. Students can conduct experiments in virtual laboratories, studying physical and chemical processes without the need to use real reagents. Anatomy, geology, astronomy - all these subjects are becoming more accessible using 3D models that students can view in real time. Educational materials can be linked to specific locations, creating the opportunity for guided tours and guidebooks explaining natural phenomena. Students can use AR devices to solve tasks and perform exercises right in the classroom. The use of reasoned reality in teaching science in 4th grade has become an important step in modern education. This technology not only makes lessons more interesting and exciting, but also contributes to a deeper understanding of the educational material, forming the basis for future success in science and technology.

Modern technologies have firmly entered the field of education, changing teaching methods and opening up new learning opportunities. One of the innovative technologies that finds its application in education is reasoned reality (AR). In this article, we will look at how using AR can transform the learning process of science in 4th grade.

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1. The advantages of reasoned reality in learning: First. AR creates unique opportunities for visualizing complex concepts. For example, when studying biology, students can use AR to "animate" cells by observing their structure and functions right on the screen of a tablet or smartphone. This will make the learning material more accessible and interesting.

Secondly, AR promotes interaction collaboration. Students can work in groups, exploring virtual models, exchanging ideas and solving problems together. This develops communication skills and contributes to the formation of team spirit.

Thirdly, reasoned reality makes learning more individualized. Given the different learning styles of students, teachers can tailor content to provide a personalized experience for each student.

- 2. Examples of using AR in science education in 4th grade:
- Biology: Using AR to study animals and plants, their structure and functions. Students can "attach" virtual labels to various parts of organisms, which will help them better understand and remember information.
- Physics: Creating virtual experiments that allow students to observe and interact with physical phenomena such as gravity, magnetism, or the simplest mechanical systems.
- Chemistry: Using AR to demonstrate chemical reactions. Students can see how substances

interact with each other and observe state changes in real time.

3. Practical experience with AR in the educational process: The implementation of augmented reality in science education in 4th grade requires the introduction of special applications and equipment. Teachers can conduct lessons using tablets, smartphones or AR glasses. It is important to provide teachers with training so they can effectively integrate new technologies into the educational process[8]. Reasoned reality opens up new horizons for teaching natural sciences in elementary school. This innovative technology makes the learning process more fun, interactive and accessible for children, contributing to their interest in science and developing key competencies for the future. The introduction of AR in education is a step forward in the direction of creating a more efficient and innovative learning system.

Conclusion: The use of reasoned reality in teaching natural sciences in 4th grade is not only modern, but also effective. It opens up new horizons for students, making the learning process exciting, interesting and as accessible as possible. By developing technological skills and stimulating a passion for science, AR plays an important role in the training of future researchers and scientists. The use of reasoned reality in teaching science in 4th grade provides unique opportunities for deeper and more exciting learning. This innovative technology promotes the development of interest in science, motivates students and forms a solid foundation for them in the field of natural sciences.

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## REFERENCES

- 1. Некрасова Семчук A. Н., Н. M. Классификация мультимедийных образовательных средств //Ярославский возможностей педагогический вестник. - 2012. - Т. 2. -Nº. 2. – C. 98-102.
- Александр 2. Уваров, Юрьевич. "Исследовательский подход в обучении естественным наукам за рубежом." Исследователь/Researcher 1-2 (25-26) (2019): 57-77.
- Islomovich, I. T. (2023). Analysis of the 3. practical situation of the management of education institutions higher uzbekistan and existing problems. The American Journal of Social Science and Education Innovations, 5(05), 74-78.
- 4. Третьякова, Галина Викторовна. "Когнити<mark>вный под</mark>ход В обучении иностранному языку как инструмент мотивационный для студентов." Сервис plus 15.2 (2021): 124-132.
- 5. Садыкова, Махаббат Каримовна, and Гулбаршин Турагуловна Аюпова. "Дистанционное образование в вузе." ББК 70 Ц75 (2020).
- Islomovich I. T. 6. Theoretical methodological basis of implementing the principles of academic independence to the management of higher education institutions //International Journal of Advance Scientific Research. - 2023. - T. 3. - Nº. 05. - C. 94-99.

- 7. Скрипкина, Ю. B. "Оценка образовательных результатов **участников** дистанционных эвристических олимпиад с позиций подхода." компетентностного Актуальные проблемы гуманитарных и естественных наук 6 (2011): 156-161.
- 8. Умирбекова, А. К., К. С. Ахметкаримова, and Р. Ш. Абитаева. "Инновационные профессиональной подходы К будущих учителей подготовке современном этапе." Вестник Кыргызского государственного университета имени И. Арабаева 4 (2019): 24-32.