

## METHODOLOGICAL FOUNDATIONS OF ORGANIZING "NATURAL SCIENCES" BASED ON THE "4K" MODEL.

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**Annotation.** This article provides extensive information about the goals, structure, and content of the New Generation textbooks based on the "4K" model and, in particular, the "Natural Sciences" textbook, which is being used in the 2024-2025 school year for students of the 1st-4th grade of general education schools. Also, the results of the survey on the general opinions of the students of the Pedagogical University and school teachers on the new textbook and their attitude to the textbook were announced. Overall, the textbook can attract students with a wealth of very interesting and challenging ideas.

**Key words:** Elementary class, "Natural sciences", "4K" Model, education, new generation textbooks, purpose of textbook creation, textbook structure, methods, questionnaire, achievement report.

All secondary schools in our country are teaching new generation textbooks, which are noteworthy for the new academic year, in accordance with the new generation textbooks. The style of these textbooks is not just a textbook, but a methodological textbook organized on the basis of the "4K" model. The purpose of this textbook is to teach us to read, memorize it or the patient, and also to teach students to see what the current era is looking for in the sciences. The new generation textbooks, which are based on the "4K" model, are designed to create new methodological systems for learning and teaching. What does the methodology organized on the basis of the "4K" model give us?

The Republic of Uzbekistan No. 726 dated December 28, 2022, the technical or production processes currently being implemented in the quality of textbooks and educational and methodological complexes create the need to review regulatory documents on the support, production, processing, and processing of the latest production of printing enterprises. Decree No. PF-6108 dated November 6, 2020 "On measures for the development of the new path of development of the Republic of Uzbekistan and the development of scientific and technological spheres" [Decree](#) No. PF-6108 dated November 6, 2020 Providing special permits for products provided for in the new path of development of the Republic of Uzbekistan. The requirements for the protection of the life and health of users, the preservation of the environment, software, the quality of the printed materials of the educational and methodological complexes have been sharply updated in accordance with the best practices and the requirements of [paragraph 1](#) of this decree. The optimization of curricula and standards has been identified as one of the main

directions of further development of the new development of education and science in Uzbekistan[1]. In accordance with this, taking into account the “4K” model with effective innovative production methodology (this is for the comprehensive development of children, the development of key competencies: creative thinking and critical thinking in students, creativity, teamwork and the development of many years of education), 24 new modern new generation lessons have been created for 1st graders. Given that quality education in schools depends on the textbooks that are being created, they must not only meet educational standards, but also interest students and arouse their love for science. The radically updated elementary school textbooks have pleased students, teachers, and parents. As always, we can also find critical opinions about them.

So, how do the modern new generation textbooks presented in the 2023/2024 academic year differ from their predecessors? To answer this question, let's get acquainted with the opinions of industry experts and draw conclusions about the new generation textbooks. — In accordance with Resolution No. 726 of the Cabinet of Ministers of the Republic of Uzbekistan, printed products for educational needs are produced on the basis of technical regulations. This new technical regulation is produced at a higher level than the maximum. This will make textbooks much more advanced in their performance. They fully meet the European standards of quality and high level. The weight, size, font of the textbook are regulated by the structure and production of these requirements, — said V. Hamidov, director of the Republican Scientific and Methodological Center for the Development of Education, taking into account both the psychology of children and the mental state of children in the production of textbooks. They widely use pictures and illustrations to write creative and thought-provoking works. Science shows that a child perceives information through images, in relation to texts. Therefore, the new generation of textbooks pays special attention to the image, along with texts, and also to colorful ones. There are five graphic characters in the new generation of textbooks. They also emphasize the importance of informal conversations with students during the lesson. The new generation of textbooks is about the vitality and teamwork, and in fact, it is not just about the seasons with natural sciences, but also about the study of animate and inanimate nature. Practical exercises also teach the owner how to make the right decisions with nature. For this, the student will need to be creative, communicative and logically critical. The book contains thematic games that teach students to be a team. Being able to express their opinions in a team is the main thing for children to become leaders. [2]. In recent years, there has been a lot of criticism on social media about the new textbooks. Some parents have complained that the textbooks for grade school students are too complicated for their children, and the practical exercises in them may not be easy for parents. What is the opinion of the industry? Our position as one of the world's leading experts in the field greatly benefits from this type of education and new textbooks! We will go over some common uses that doctors and parents may object to:

1. Teachers and parents often become accustomed to established methods of teaching and learning that are familiar to them. In the case of changing products, this requires them to step out of their comfort zone and adapt to new products. Some people cannot tolerate change and prefer things to remain the same, which is why they may resist new changes;

2. Educational innovation always seems scary to some, especially when it comes to changes in textbooks, radical updates. Teachers and parents are also expected to worry about whether new textbooks and teaching methods will adequately prepare students for their future careers. They are concerned that untested methods may cause students to face a number of learning challenges;

3. The introduction of new generation textbooks and teaching methods often requires a lot of research and revision of teaching skills. If teachers do not master these processes well, they may still be in great trouble. It may also be difficult to implement new methods effectively without guidance;

4. When a textbook is revised, the curriculum may sometimes differ significantly from the previous curriculum. Teachers and parents may also discuss the quality, reliability, and technical errors of the new textbooks if they believe that the new material is not inaccurate or that the theoretical knowledge provided is adequate. ,

5. Teachers and parents are often time-poor and accustomed to their own routines. New, new methods of teaching teachers and new production textbooks are being introduced, new lesson plans are being developed, new materials are being collected and new teaching strategies are being developed. This requires additional knowledge, work, energy, time and, most importantly, perseverance from the teacher. This is why many resistances can arise, because it is perceived as an additional burden;

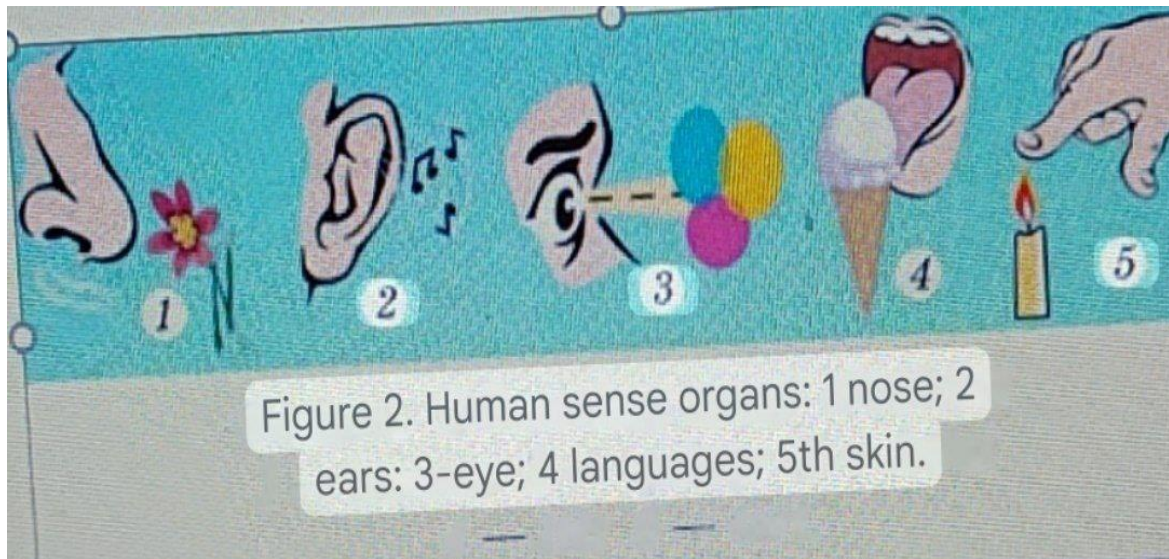
6. The school system and the old lessons were based on the same theoretical knowledge, which was always a new situation. It was not easy for students who were educated with such teaching lessons to achieve such a high level. However, it would not be an exaggeration to say that everyone liked it equally. Teachers had become very accustomed to the old textbooks or teaching methods that had been used for years, with their personal emotional support. Therefore, the new textbook is also perceived as a rejection of traditions for them;

7. The information related to the news, the volume is not large, the number of practical exercises given in it is large and diverse, the repetition of one another and the practical exercises are much more valuable than the old textbook lessons, that is, they can be of a much higher level, higher thinking and thinking;

8. Each lesson requires new methodological results from the teacher. The teacher needs to plan a lesson with different adjustments to avoid monotony and to provide the necessary visual aids for the lesson to be held on the basis of modern interactive tools. Because the textbook does not provide for such methods of instruction. It is also impossible to use it. The enterprise method is one of them: [3,4].



“Find the Place” method: In this method, the topic is explained to the children and, as a means of repetition, they are given cards with pictures divided into parts and they have to find the correct place in the picture. For example, the topic is: human sensory organs. [5].

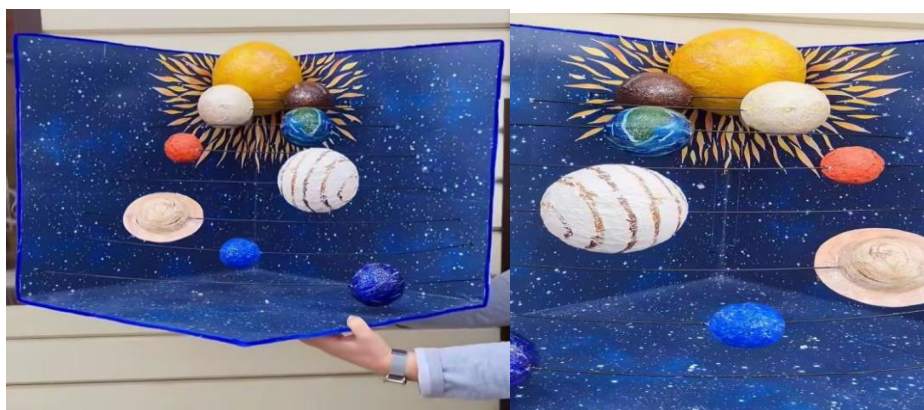


Children will need to place their senses in their places using the picture. Of course, if you use this as a team game, it will have a very active effect. It will also help to practice leadership. Here, students' attention will increase, and they will have the opportunity to understand the topic more deeply. That is, they can see the information and learn by touching it. In the "What next?" method, children will have to eat the layers of the



atmosphere in sequence. [5].

In the "Light House" method, students gain a sufficient understanding of the solar system and see the order in which all the planets in the solar system are located [6,7,8].



Strictly to the content according to start eating in natural sciences textbooks himself/herself strict content and demanding problems set students analytical to think , to do things to develop encourages . Emphasis on logical thinking. These textbooks often emphasize logical reasoning and deductive reasoning, which helps students navigate a systematic system when solving problems. Concrete to abstract: Bright classroom science textbooks use visual aids and manipulatives to help students visualize concepts before moving on to more abstract concepts. . These textbooks often incorporate real-life contexts and interdisciplinary connections, making science more engaging and meaningful for students. Systematic: The textbooks have a good progression of topics, ensuring a smooth transition from one topic to another and a solid foundation for later science courses. [3,4,5,6,7,8,] Therefore, such information is based on general storage. These countries are also selected because their achievements in education are quite noticeable on a global scale. In addition, we can use several advantages in school textbooks of many countries, based on which a new textbook for classes with a set of the most optimal options for decisions was introduced into the education system of our country and teaching was introduced based on the 4K model. So, we can safely say that in the 2023-2024 academic year, the production production for pilot classes in the “New Generations” was developed on the basis of methods that have passed several state protections and are considered the most effective today. , students are taught real-life lessons along with science, and students develop creative approaches to problems in any situation, solve problems through critical thinking and work together, and make the right decisions. In the 1st grade, when taking a science lesson based on the old textbook, students' habits were formed from the first lesson, the necessary rules and standards were recommended. This forced the more playful children to stay in the school environment after kindergarten. The reason is that not all children were able to quickly adapt to different conditions and, having not yet had time to get used to the new teacher, unfamiliar classmates and a row of desks, they experience strong excitement. In such a situation, the student is in a hurry and in an uncomfortable situation, can make ugly and wrong notes in the notebook. In addition, he feels that he is lagging behind other peers and his self-confidence is fading. Many such shortcomings and examples can be cited. Therefore, in the first grade, the student's previous skills, mutual acquaintances, oral speech, speech culture, self-control, thinking based on what he learned before (in kindergarten), understanding and understanding questions, thinking directly in accordance with the question, understanding questions and reasoning, and other qualities, all of which are related to natural sciences, which everyone has seen and heard many times, which plants or fairy-tale heroes are closely acquainted with, and the role of each hero and the work done by each hero, are included in the new textbook, which is currently considered thematic, based on the experiences of the world education system, and is based on the most advanced technologies, and includes:

Students' age physiology; work; personal; imagination; various interesting games; skills and abilities; help, help, tell, tell; see, experience, paint; creativity; critical thinking; problem solving; working together; thinking; communicating freely; increasing self-confidence; listening to and respecting the opinions of others; comparing and analyzing; making the right decisions; income about money, income; integration of disciplines; association; reality, vitality; practicality, etc., so that the student can apply the knowledge he has learned in class in real life. [9,10,11,12,13,14]

The new edition of the textbook on original sin natural sciences serves the following purposes:

1. Updated new generation textbook curriculum. Educational standards and curricula often reflect new, pedagogical developments and society over time. The new wave of science textbooks is designed to align with the latest curriculum trends and ensure that the content is relevant to teachers, students, and the education system.

2. Improved pedagogy. New generation lessons include increased student engagement, new levels of teaching methodologies, teaching strategies, and learning resources.

3. Focus on diversity and inclusion. The new version incorporates consideration of diversity and inclusion by cleaning up sensitive and inclusive content from protected information. It promotes inclusivity and equity in science teaching, including examples and scenarios that reflect diverse learners.

4. Clarity and Ease. The new generation textbook presents what is coming in a clear, concise, and understandable way, incorporating visual aids, diagrams, and interactive materials to facilitate comprehension, especially for students who learn best and most interactively through hands-on or visual exposure.

5. Teacher Support and Professional Development. New Generation teachers have received additional support, such as comprehensive lesson plans and professional development resources. This provides information on effective teaching strategies, common frameworks, and methods that will enable teachers to create high-quality lessons.

6. Technological integration, the use of technology in education, can be combined with interactive files, online resources, active platforms to enhance learning with more loading of new generation textbooks. Educational programs, simulations or learning systems can be used to enhance learning and provide immediate interactive feedback to students.

7. Beautiful designs. The new generation of textbooks incorporates feedback from teachers, students, and students, and approaches the content and design of the textbook with the necessary restraint. That is, colorful images, tables, graphs, and diagrams quickly attract the attention of students. This makes learning natural science even faster and easier.



8. Strengthening friendships. The tasks given in the new generation textbooks have the advantage of helping students work together as a team to solve production problems and find direct and easy solutions to problems, which helps strengthen friendships.

9. Related topics. Related topics based on the life of parks, ecological camps and zoos in our country, related to each topic in the new generation lessons, are a great incentive for students to carefully organize practical assignments on the main topic. From time to time, it creates a way to study a subject in connection with other subjects. There is integration of subjects.

10. Ready-made visual aids are also available, and semi-finished pictures that can be cut from the front pages of the textbook will further enhance the students' knowledge of visual aids.

11. All workbooks. In addition to the textbook, the production of workbooks that are suitable for students makes it easy and convenient for students. The workbook is an interesting and useful tool for students.

Structural parts. The textbook is divided into four parts for each quarter, and the natural sciences textbook has four parts for one academic year, and this textbook is implemented with step-by-step teaching work plans. This process also serves to keep the book tidy, and frees young students from the burden of carrying large books with them all year round. After students finish reading one part, they are eager to meet the next part, and they read with a great load. In this, we can also see a lot of convenience for students.

Using various modern pedagogical technologies, in order to ensure the quality of education, new generation textbooks, from simple to complex, requiring some critical thinking, are being developed, which are clearly aligned with the national curriculum of students, the specific physical and mental condition of students, the resources for mastering, and the production capacity of new textbooks based on the 4K model, which is in demand today. For this reason, teachers, students, parents and the wider community are asked to take this into account first and foremost. For this, the fact that the textbook is provided free of charge for students from the state budget also provides a great deal of relief for parents. Nevertheless, the objections and protests announced by some teachers and parents for new textbooks are a materialistic society, even distracting the minds of students, causing physical education and, in some sense, weakening the responsibility of students to master the subject. This is a sufficient reason for the full implementation of the main idea and goal of updating the lessons of the new generation. Because, growing up, they are not looking at the book in their hands, which they saw through the eyes of the bad generation, but are constantly influenced by the constant ringing in their ears of things like this new book around them, incomprehensible, difficult, this was not needed, why was it replaced, the old book was good, and students think, this book is not for me, how can I handle books of this kind, not for me, but can I handle them? I can read it, right? Naturally, he will be surrounded by questions like, "Let someone else do the task for me, I will do it even if I do not learn the lesson well and get a low grade." We know that this situation can lead to very serious consequences. Parents and some teachers

should understand one thing well. In every subject, in every society, in every country and in many other people, the achievements of people are not unique, they must be new, they must be the result of drawing, overcoming production, breaking out of their mold, and the creation of great labor and time. Of course, just as there are shortcomings in work, new textbooks are not without their drawbacks. For example, technical errors can be observed in their drawings, tables, graphs or writings. "These people are not the authors' mistakes, but the technician's. As we know, graphics and design work is a complex process. Therefore, there are some minor errors in the textbook. The errors will definitely be reviewed and, taking this into account in the next reprint, corrections will be made," commented Usmon Sharifkhodjayev, First Deputy Minister of Preschool and Early Childhood Education, in an interview with kun.uz studio[17]. For these errors in the textbook, it is not necessary to cite the statement of psychologists that "A person is visible to the eye as a dot on a whole A4 sheet of clean white paper." Because the new generation of textbooks, which have been created as a result of so much research, work, and collaboration, have been a great success for us. To completely abandon the textbook under the pretext of errors that look like dots on paper is a great loss, a big mistake. In general, it is the same as publishing a new natural science textbook. When every work is done for the first time, one inevitably encounters production. Repeatedly doing this work will develop skills and competencies in the student. It has been some time since we have been using new generation textbooks. Now teachers and students have become more familiar with the content of the textbooks. We hope that the textbooks produced by the students in the academic year will be fully installed and can be used without any practical help. Because smart and diligent intellectual children are considered the experts of their time. Children growing up in the 21st century in the age of technology and equipment should be recognized as much more skilled than adults. To know the extent to which the new generation textbooks are expected to increase their power, it is necessary to study them offline between students of the Faculty of Primary Education of TISU and online between teachers of general education schools of the Republic of Uzbekistan. You can familiarize yourself with the survey questions and.

T/r	Questionnaire questions	J1	J2	T <sub>+</sub>	T <sub>-</sub>	Oh <sub>+</sub>	Oh <sub>-</sub>
1	Are new generation textbooks acceptable to you?	Yes	No	268	32	75	25
2	natural To what extent do science textbooks meet your requirements (can you see technical errors)?	Good	Medium	270	30	78	22
3	Can the textbook interest students?	Yes	No	275	25	80	20
4	To what extent are students mastering the textbook materials in the book?	Good	Medium	250	50	70	30



5	How would you rate your lesson on the topics in the book?	Good	Medium	273	27	72	28
6	Parents' attitude to the book and the textbook topics?	Good	Medium	262	38	68	32
7	Were there any products that you had to read about yourself before you presented some of the materials in the textbook to the students?	Yes	No	261	39	82	18
8	Can you say that the textbook is a success for innovation and the 4K model?	Yes	No	290	10	92	8
9	Can textbooks help us solve problems that people encounter in real life?	Yes	No	295	5	90	10
10	Do you think this book would be better if teachers could explain the new textbook materials to students in an easy way and they could fully absorb it?	Yes	No	298	2	95	5
11	Answers total marks %	-	-	91.4	8.6	79.7	20.3

In the table about characters Explanation : J 1 – first answer option ; J 2 - will be answer option ; T<sub>+</sub> – students development answers number ; T<sub>-</sub> – students about answers number ; O<sub>+</sub> – teachers development answer those who gave number ; O<sub>-</sub> – teachers about answer those who gave number . Of the 300 students who participated in the survey, 91.4% of them passed the exam. 79.7% of the teachers in the general education school, who took their own teachers, passed the exam. It is clear that school teachers, even if they are re-creating new generation textbooks, are ready to support them. Therefore, as a researcher working on the topic of organizing natural sciences based on the 4K model, I propose to organize short training courses, seminars, and professional support classes for teachers and educators who are experiencing difficulties in teaching new textbooks, as well as their implementation by textbook authors. To provide another convenient way to find solutions to such problems encountered in the textbook, we have formed a working group with the participation of students of the Faculty of Primary Education of TISU, and have studied the presentation of all topics, practical and theoretical methods in new subject textbooks for grades 1-4. We can say that the textbook is very interesting, rich in variety, and has a unique content that can attract the student. In the future, we plan to present the answers to the developed practical and theoretical tasks, the results of practical exercises as a methodological guide for teachers and parents.

## REFERENCES

1. <https://lex.uz/uz/docs/-6330358>. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 726 dated 28.12.2022. On control of the general technical regulations for the purchase of printed matter and food products for educational needs.
2. <https://daryo.uz/2023/10/14/new-generation-textbooks-advantages-of-primary-grade-textbooks-and-public-objections-about-video?ysclid=ls37acjyhg899381826>
3. [https:// www.tabiiy-fanlar.uz](https://www.tabiiy-fanlar.uz)
4. [https:// uzedu.online](https://uzedu.online)
5. [https:// in-academy.uz](https://in-academy.uz)
6. [https:// www.oriens.uz](https://www.oriens.uz)
7. [t.me//Dars-development-new](https://t.me/Dars-development-new)
8. [t.me//ikkinchinisinf2-Kisan](https://t.me/ikkinchinisinf2-Kisan) File Database
9. ResearchGate <https://www.researchgate.net> › 367...Avezov MM Natural Sciences. 2nd Grade Exercise Book (Textbook)
10. KTSuyarov, ZYTillayeva, ZBSangirova, MKYuldasheva, MMAvezov, MXBaymuratova, DSAzamatova, MTUmaraliyeva, UELimuhammedova, SG'. Khasanova, DTHasanova, DQTurdiyeva, Phillipa Gardom Hulme-Hulme. Respub markazi 20,
11. UBAydarova 2nd grade natural science textbook, Novda Publishing House, Tashkent – 2023 Part 1.
12. METoirova 3rd grade natural science textbook, Novda Publishing House, Tashkent – 2023 Part 1.
13. METoirova 4th grade natural science textbook, Novda Publishing House, Tashkent – 2023 Part 1..
14. <https://youtu.be/ZoGtnHbhQWg> . An interview about the questions, mistakes, and hope for good lessons that interest the new generation.