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THEORETICAL AND PEDAGOGICAL FOUNDATIONS OF INCLUSIVE EDUCATION AND INCLUSIVE METHODOLOGICAL APPROACHES IN TEACHING PHYSICS

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Abstract
This article analyzes the theoretical and pedagogical foundations of inclusive education, as well as methodological approaches to teaching physics in inclusive learning environments. The study is based on international frameworks such as the Salamanca Statement, UNESCO and UNICEF guidelines, and the UN Convention on the Rights of Persons with Disabilities, which emphasize equal access, reasonable accommodation, and full participation of learners with diverse needs. The paper examines the development stages of inclusive education—from segregation and integration to full inclusion—and highlights current reforms in Uzbekistan aimed at implementing inclusive practices in general education schools.
The specific characteristics of physics as a highly abstract and conceptually demanding subject are discussed, with emphasis on the cognitive challenges faced by learners with special educational needs. The research identifies effective instructional methods, including differentiated instruction, multisensory teaching, cooperative learning, adapted assessment, and integration of digital technologies such as virtual laboratories and interactive simulations. The pedagogical principles of individualization, collaboration, environmental adaptation, and reflection are described as key to successful inclusive physics teaching. The conclusions stress that inclusive education enhances equity, accessibility, and the overall quality of physics learning for all students.

Keywords: Inclusive education, physics education, multisensory approach, differentiated instruction, adapted assessment, inclusive pedagogy, special educational needs, Uzbekistan education reforms.

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Introduction

ТЕОРЕТИКО-ПЕДАГОГИЧЕСКИЕ ОСНОВЫ ИНКЛЮЗИВНОГО ОБРАЗОВАНИЯ И ИНКЛЮЗИВНЫЕ МЕТОДОЛОГИЧЕСКИЕ ПОДХОДЫ В ПРЕПОДАВАНИИ ФИЗИКИ

Аннотация

В статье представлены теоретико-педагогические основы инклюзивного образования и методические подходы к обучению физике в условиях инклюзивной образовательной среды. В работе проанализированы международные документы — Саламанская декларация, рекомендации ЮНЕСКО и ЮНИСЕФ, Конвенция ООН о правах инвалидов, — подчеркивающие необходимость равного доступа, разумных адаптаций и полноценного участия всех обучающихся. Показаны этапы развития инклюзии — от сегрегации и интеграции к полной инклюзии, а также современная политика Узбекистана по внедрению инклюзивных практик в системе общего образования.

Особое внимание уделено специфике физики как абстрактного и когнитивно сложного учебного предмета, а также трудностям, с которыми сталкиваются обучающиеся с особыми образовательными потребностями. В рамках исследования выявлены эффективные методы преподавания: дифференцированное обучение, мультисенсорный подход, групповое и кооперативное обучение, адаптированное оценивание, использование цифровых технологий — виртуальных лабораторий и интерактивных симуляций. Подробно раскрыты педагогические принципы индивидуализации, сотрудничества, адаптации образовательной среды и рефлексии. Сделан вывод, что инклюзивное обучение способствует повышению справедливости, доступности и качества преподавания физики для всех учащихся.

Ключевые слова: инклюзивное образование, обучение физике, мультисенсорный подход, дифференцированное обучение, адаптированное оценивание, инклюзивная педагогика, особые образовательные потребности, реформы образования Узбекистана.

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INTRODUCTION

Inclusive education is a modern pedagogical approach aimed at excluding no one from the educational process and creating equal opportunities for every child. Until the middle of the 20th century, the segregated model prevailed in school education, when children with physical or mental disabilities were separated into separate special schools and were deprived of the right to study in general classes. Since the 1960s and 1970s, the ideas of integration have emerged in some countries as the first step towards inclusion - that is, experiments began to include children with special needs in the regular school community. However, during the integration period, the education system did not change, but rather the "special" child was expected to adapt to the existing system. At the end of the 20th century and the beginning of the 21st century, the concept of inclusion was formed: now the idea was put forward that the education system itself should adapt to the needs and capabilities of students, and that children with different abilities should not be separated, but should be taught together. So, while integration requires the child to adapt to the system, in an inclusive approach, the system itself changes to suit the child. Inclusive education essentially involves educating every child equally in the same class, raising them in an environment that is tolerant of differences. The concept of inclusive education was first officially announced internationally at the UNESCO Salamanca Conference in Spain in 1994. The Salamanca Declaration called on all countries to make children with special needs an integral part of the general education system. After that, inclusive education became a priority within the framework of the global Education for All programs. Article 24 of the UN Convention on the Rights of Persons with Disabilities (CRPD), adopted in 2006, established the obligation of States parties to include persons with disabilities in inclusive education at all levels without discrimination, on an equal basis with others. This standard emphasizes the need for countries to fundamentally change their education culture and systems. Goal 4 of the UN Sustainable Development Goals (2015) also aims to ensure "inclusive and equitable quality education" by 2030 [1]. Thus, inclusive education is a concept that is now firmly established in international legal instruments and programs.

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LITERATURE REVIEW AND METHODOLOGICAL APPROACHES

The main principles of inclusive education are recognized as creating equal opportunities for every child, adapting the educational process to the needs of children, maximizing the coverage of all different groups, and ensuring the cooperation of educational participants. In particular, Article 24 of the UN Convention guarantees the right of every child with disabilities to receive quality education on an equal basis with others. The principle of equal opportunities requires that no child be excluded from education because of their ability, and that discrimination and stigmatization are not allowed. The principle of adaptation, on the other hand, envisages changing the educational environment in accordance with different needs - adapting curricula and methods, introducing special means, and creating “reasonable accommodation” for each child. UNESCO experts emphasize in this regard the importance of changing the general culture and practice in the spirit of inclusion, rather than completely transforming the education system and eliminating existing barriers one by one [2]. The principle of inclusion means the full involvement of all groups of children (children with disabilities, socially disadvantaged groups, representatives of national minorities, etc.) in the educational process. According to UNICEF, inclusive education is the most effective way for all children to attend school, learn, and develop. It is based on the motto “All means All”, which includes not only children with disabilities but also various other disadvantaged groups [3]. The principle of cooperation requires the teamwork of all participants in the educational process - teachers, parents, defectologists and psychologists, and school administration. Also, healthy and special needs children are encouraged to cooperate and help each other in the classroom. In this way, in an inclusive environment, social values such as tolerance, kindness, and mutual respect are formed in students.

In the Republic of Uzbekistan, inclusive education has also been recognized at the level of state policy in recent years. Article 50 of the country's Constitution establishes that every citizen has the right to education, and these norms guarantee equal education for children with disabilities or limited opportunities. The Law "On Guarantees of the Rights of the Child", adopted in 2008, gave parents the right to choose whether to educate their child in a regular or special school, based on their child's interests. At the next stage, the issue of inclusive education was included in the official agenda for the first time in the National Strategy for the Development

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of Education for 2019–2023. 2020 was a turning point for the education system: President Shavkat Mirziyoyev's address this year noted the priority of developing distance and inclusive education. On October 13, 2020, Presidential Decree No. PQ-4860 approved the Concept for the Development of Inclusive Education in the Public Education System for 2020-2025 and the "Roadmap" for its Implementation. Within the framework of this concept, tasks were set to adapt the educational infrastructure for children with special needs, provide resources and equipment, train personnel, and gradually implement an inclusive system [6]. On October 12, 2021, the Cabinet of Ministers approved the first "Regulation on Inclusive Education of Children with Special Educational Needs" by Resolution No. 638. In the same year, Uzbekistan also ratified the UN Convention on the Rights of Persons with Disabilities, which accelerated measures to ensure inclusive education as an international obligation [7]. Today, inclusive classes are being piloted in the republic - by 2024, about 1,000 children with disabilities will be studying with their peers in more than 500 schools. Although this process is still in its early stages, it demonstrates the state's commitment to the principle of "leaving no one behind."

Inclusion of all levels and disciplines of education is a pressing issue. Mastering natural sciences, such as physics, is especially difficult for many students. Physics is a highly theorized science, rich in abstract concepts, and relies on invisible processes and models. For example, concepts such as "force", "electric field", or "light wave" in physics cannot be perceived directly through intuition; they must be imagined. Also, the physics course is based on many mathematical formulas and calculations. This requires students to have developed logical thinking, modeling, analysis, and understanding of cause and effect relationships. Studies show that it is precisely these abilities that have not yet been formed or are limited that make studying physics particularly difficult for children with special needs. For example, it is natural for a child with hearing loss to have difficulty understanding sound waves in the acoustics section, or for a child with attention deficit disorder, multi-step physics problems create an excessive cognitive load. Therefore, reducing the cognitive load in physics lessons and transforming abstract concepts into an easier-to-understand form is an important task of inclusive education.

The above-mentioned points demonstrate the relevance of the topic. Since the idea of inclusive education in society is based on the principles of humanity and

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equality, its implementation requires a revision of traditional pedagogical approaches. In particular, the issue of successfully teaching physics to children with different abilities and needs is one of the problems that has not yet been fully resolved. This scientific article analyzes the theoretical and pedagogical foundations of inclusive education and methodological approaches to inclusive teaching of physics. The article highlights the stages of development of the concept of inclusive education, international and national experiences, differential, multisensory, and other inclusive methods used in physics lessons, and their advantages. The goal is to draw conclusions on the improvement of inclusive physics education based on the analysis of existing theoretical sources.

This study was based on the method of theoretical analysis, and the existing literature on the topic, international and national regulatory documents, and advanced pedagogical practices were studied. In particular, the declarations and reports of the UN, UNESCO, and UNICEF on inclusive education, and comments on relevant articles of the legislation of the Republic of Uzbekistan served as theoretical sources. Scientific works of local and foreign scientists in the field of inclusive education were analyzed, including Yu.R. Ishniyozova's (2020) study on the theory of inclusive education [5], D.R. Masodikova's article on the methodology of inclusive teaching of physics (2025), etc [4]. In this way, the basic concepts and principles of inclusive education, the use of various methods in physics lessons, were compared and summarized through scientific literature. During the study, methods such as comparison, analysis-synthesis, and pedagogical description were used to reveal the connections between scientific theories and practical experiences. The conclusions presented in the article were formed as a result of the study and analysis of these theoretical sources.

RESULTS

Conclusions from international approaches and principles: As a result of the analysis of theoretical sources, the universality and effectiveness of inclusive education have been once again confirmed. According to UNESCO and UNICEF materials, inclusive education serves to improve the quality and results of education not only for children with disabilities, but also for all categories of children. An inclusive approach requires a child-centered review of the educational process, taking into account the specific needs of each child. For example, UNICEF states

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that inclusive education pedagogy provides better educational results for all children, providing for teaching and assessment adapted to the needs of each child. Such an approach has also been proven in practice to improve the quality of education in general: for example, in Portugal, it is noted that 98% of children with special needs study in general schools, and this country ranks high in international rankings. Thus, inclusive education is important not only from the point of view of justice, but also from the point of view of effectiveness.

Results from the experience of Uzbekistan: It was mentioned above that a legal and organizational basis for the introduction of inclusive education has been created in Uzbekistan. As a result of the study, it became clear that certain successes have been achieved in a short period of time: inclusive classes have begun to be opened in schools, special training courses for teachers are being held, and resource centers for children with disabilities have been established in some regions. In particular, the following main tasks were set for the Concept for 2020–2025:

Adaptation of infrastructure: It was envisaged to equip school buildings and classrooms in a way that is suitable for children with disabilities (ramp, elevator, low desks, etc.). In this regard, the accessibility of the physical environment of each educational institution was identified as a prerequisite for an inclusive system.

Provision of resources and equipment: It is planned to provide schools with necessary educational literature, additional visual aids, laboratory equipment, materials in Braille, etc., for students with special needs.

Staff training: The training of pedagogical staff is important for the successful implementation of inclusive education. The concept sets the task of increasing the number of special educators (defectologist, speech therapist, psychologist), as well as training general education teachers in inclusive methods.

Phased implementation: Initially, it was determined to establish separate inclusive classes on a pilot basis, establish their activities, and then popularize the experience. A special Regulation approved in 2021 determined the procedures for opening inclusive classes, accepting students into them, and monitoring the quality of teaching.

As a result of these measures, some positive changes were noted by the 2023–2024 academic year: the number of children with disabilities studying in inclusive classes in regular schools increased, and special methodological manuals were developed by some teachers. However, the analysis of the results shows that there

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are still many problems in the implementation of inclusive education - in particular, the majority of teachers do not have the necessary qualifications to work in such classes, the physical infrastructure does not meet the requirements everywhere, and most importantly, there is a lack of experience in adapting teaching methods. In the case of a number of schools surveyed during the study, it was found that, although about half of the teachers have theoretical knowledge of inclusive education, their practical methodological skills are weak. This leads us to the need to pay special attention to teaching methods in inclusive education.

Results of teaching physics in an inclusive environment: One of the important aspects identified as a result of the study was the need to adapt the curriculum of physics. As noted above, abstract concepts and complex processes in physics are difficult to understand for many students, especially children with special needs. In particular, children with disabilities in thinking or perception may experience excessive cognitive load in a regular lesson. To reduce this load, the teacher should maximally concretize abstract concepts and explain them through real-life examples. For example, explaining the topic of "electromagnetic waves" in simple language using the example of a radio signal, modeling the "motion of molecules" using balls on a table, and demonstrating Newton's law of gravity through a small experiment in the classroom (for example, dropping a ball) makes it easier for all children to understand. Another important aspect is simplifying the mathematical apparatus in physics. If the goal is not to apply the formula, but to understand the essence of the phenomenon, it is sometimes better for the teacher to simplify complex equations or explain them without excessive distraction from calculations. For example, a student with dyslexia can be shown formulas written in large print, and on a colored board, and in mathematical stages, they can be allowed to use a calculator. The goal is to explain the main idea of the topic to the child, eliminating additional difficulties as much as possible.

External factors such as noise and excessively bright visual stimuli in physics lessons can also distract some students. Children on the autism spectrum are very sensitive to loud noises or a chaotic environment. Therefore, it has been established that maintaining discipline and a quiet environment in an inclusive classroom is also an important task of the teacher. If necessary, the teacher can move a child who is having difficulty concentrating to the front of the classroom or allow them to use noise-canceling headphones. Even such simple adaptations can be very beneficial

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for some students. Overall, research shows that physics lessons are effective for children with different needs only when the content and delivery are as flexible as possible. The main methods and approaches used in inclusive physics education and their characteristics are presented below. Differentiated approach: A method of presenting tasks and activities that are suitable for students with different levels of knowledge and abilities. In the same class, the teacher plans different tasks at the same time: for example, more complex problems are given to children who are more prepared, and simplified tasks are given to those who are struggling. A child with hearing impairment can be given extra time to understand the text, and a child with attention problems can have tasks divided into small steps and given step-by-step. As a result of a differentiated approach, each child achieves success at his own pace and within his own capabilities. For example, in a physics lesson, a teacher divides students into three groups: group A - theoretical questions, group B - easier examples, and group C - complex problems. Everyone completes the task according to their abilities, and at the end of the lesson, all groups discuss the results and share their achievements. This method gives each member of the class a sense of contribution.

Multisensory learning: An approach based on teaching through several senses at the same time, such as sight, hearing, and touch (feeling). Research has shown that this method is very effective in physics lessons. It is known that some children learn better by hearing, others by seeing, and a third category of children prefer to learn by doing. Therefore, in a physics lesson, all channels should be combined as much as possible: along with oral explanations (lectures), visual materials - pictures, graphs, video experiments - are shown, and students are also given the opportunity to touch with their hands through laboratory exercises. For example, on the topic of electromagnetic induction, a teacher can demonstrate the phenomenon of induction using a simple wire loop and a magnet, and make the student feel the attraction of the loop to the magnet - a blind child will notice with his hand that the loop moves when the magnet is brought closer. For a hearing-impaired (but sighted) student, the main emphasis is on visual and tactile channels: for example, while the teacher explains orally, he or she writes down formulas in large print, and in the laboratory, creates conditions for the student to perform the experiment himself. A multisensory approach makes it easier for each child to receive and understand information through his or her “strong channel”. The study notes that tools such as

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virtual laboratories, touch-screen devices, and audio textbooks also help in mastering physics concepts by engaging multiple senses.

Group and collaborative learning: The analysis of the results clearly showed that teamwork is of great importance in an inclusive classroom. Children with different abilities complement and support each other in the process of solving problems and working on projects together in small groups. For example, when solving problems in mechanics, roles are distributed among group members - one writes the formula, another draws a picture, and another checks the calculation. In such a distribution, a stronger student helps a friend who is lagging behind, and each child contributes to the common work. Even in experiments or laboratory work performed in a group, a suitable task is always found for a student with disabilities (for example, measuring time, reading a thermometer). As a result, no one is left out of the team, and everyone actively participates. Such cooperation develops not only academic results, but also the social skills of students, in an atmosphere of brotherhood and mutual assistance in the team. A child with disabilities becomes closer to classmates, feels like an equal member of the team. According to scientific literature, children who study in an inclusive group later have better attendance, fewer behavioral problems, and higher social activity.

Adapted assessment: The traditional assessment system may be inconvenient for some students - for example, a child with disabilities may have difficulty completing a written test task or may fall behind in time. Therefore, according to the analysis of the results, it was emphasized that it is necessary to adapt the assessment forms and criteria in an inclusive environment. It is advisable to offer an alternative way for a student with special needs to demonstrate their knowledge: for example, a child with poor reading skills can give an oral answer instead of writing, or choose to explain a physical process by drawing instead of describing it in text. It has also been determined that some children need to be given additional time when submitting control work (for example, for a child who writes slowly). Assessment criteria should be based on the dynamics of individual achievement as much as possible. That is, it is more effective to assess a student based on his or her progress from his or her previous results, rather than comparing him or her to other peers in the class. This approach forms the motivation for success for each child, and healthy competition between students is replaced by the desire for self-development.

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Digital technologies and elements of distance learning: Another modern approach identified in the study is the use of digital educational platforms. In inclusive education, various online tools expand the capabilities of children with disabilities. For example, special electronic resources, interactive programs, and virtual laboratories are being created in physics. Using simulation programs such as PhET, a child with hearing or visual impairment can also learn by "seeing", "hearing," and controlling a physical phenomenon through virtual experience. The Inclusive Class platform, the international Canva for Education, and Google Classroom systems being implemented in Uzbekistan allow independent study at home, additional interactive exercises, and remote communication with the teacher. In addition, digital tools can alleviate the psychological problems of some children: for example, a student with high social anxiety can send a question that he could not ask during the lesson to the teacher online after the lesson, or catch up on topics that he missed from his classmates through video lessons. In conclusion, modern technologies are a great help in teaching physics, reducing barriers, and involving children with different abilities more deeply in the educational process. The above methods are the most widely used and effective approaches in teaching physics in inclusive education. The results of the study show that these methods have a beneficial effect not only for students with special needs, but also for all children in the classroom - they make lessons interesting, active, and understandable for everyone. Based on the results obtained, we will discuss the theoretical foundations and advantages of these methods, as well as the general pedagogical principles of inclusive physics education.

DISCUSSION

Based on the above results, we analyze the theoretical factors explaining the effectiveness of approaches in inclusive education and their pedagogical significance. In particular, the multisensory approach and the main pedagogical principles of inclusive education (individual approach, cooperation, adaptation of the environment, and reflection) are considered in more detail. In this section, the existing theoretical considerations and practical observations are analyzed together, and the advantages of the above methods are highlighted.

Theoretical foundations of the multisensory approach: The results of the study noted that the multisensory teaching method is especially important in physics

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lessons. The theoretical explanation for this is that each child has a relatively stronger channel for receiving information - some learn better through visual images, others through hearing, and still others quickly assimilate through active movement and practical experience [11]. Multichannel (multimodal) teaching helps the human brain encode and connect information in different ways, which results in an increase in the level of memorization and understanding. For example, if a student simultaneously learns a concept by seeing, hearing, and feeling it, a more complete and stable picture of this concept is formed in his mind. The multisensory approach is recognized as an innovative method in modern pedagogy, and many researchers consider it effective not only in inclusive, but also in general education. In our case, especially for students with special needs, this approach can serve as the key to understanding. For example, for the above-mentioned blind child, visual materials are of no importance, but through auditory and tactile channels, he was able to master the laws of physics. On the contrary, a student with limited hearing understood the topic thanks to visual and practical demonstrations. Thus, the multisensory approach ensures that each child fully perceives information in at least one convenient channel, and knowledge is further consolidated through the remaining channels. In addition, alternating modalities helps to maintain students' interest in the lesson for a longer time without losing interest. Rather than a monotonous explanation in the same style, organizing a lesson in the form of 5 minutes of viewing slides (visual), 5 minutes of listening to an experiment (audio explanation), and 5 minutes of playing with models (tactile activity) has a positive effect, especially for children with poor attention spans. In conclusion, teaching physics based on the combination of "seeing-hearing-feeling" stimulates stronger cognitive activity in all students and implements the principles of inclusiveness.

Pedagogical principles of inclusive physics education: Although the methods described above are practically different methods, they are all based on certain didactic principles. According to the study, an inclusive physics lesson should be based on the following main principles:

Individualization and differentiated approach: Taking into account the personal characteristics of each student is the first principle of inclusive education. In a physics lesson, this principle requires the teacher to take an individual approach as much as possible. Of course, in a class of 30 students, it is practically difficult to create an individual plan for each child, but this can be done by dividing them into

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at least 2-3 groups and differentiating tasks. Importantly, if each student is ensured to succeed at his or her own level of ability, he or she will overcome the feeling of being behind his or her classmates. The study shows that a talented but disabled child may lose motivation if he or she receives low marks on simple criteria; an assessment system based on individual achievements prevents this. An individual approach also serves to develop gifted children: in an inclusive class, it is emphasized that, in order not to "pull them back", it is necessary to give them additional complex tasks, small scientific projects. In our case, for example, a child with strong physical abilities, but who cannot fully perform laboratory work due to a physical disability, would receive a lower grade than others in the class. It is necessary to form a set of tasks for such a child that would allow him to demonstrate his achievements individually. In short, if the principle of individualization is followed, each child will achieve success and feel fair in their self-assessment.

Social support and cooperation: This principle involves creating an atmosphere of kindness and friendship in the classroom. In an inclusive physics lesson, the teacher should not only help but also organize mutual assistance between children. As the research results show, methods such as assigning a stronger student in the classroom as a tutor to a peer with special needs, completing homework assignments together, and conducting laboratory work in pairs are very useful. As a result, the social environment in the team is strengthened, and children develop the qualities of humanity and tolerance [8]. Of course, cooperation should not only be between children, but also between the teacher and other specialists. In our case, it is important for the physics teacher to turn to the school's specialists, such as a defectologist, psychologist, or speech therapist, for advice when necessary, or to involve them in the lesson process. During the research, we came across positive examples of such a team approach in some schools: for example, in one school, a defectologist participated in physics lessons and provided additional explanations to a student with hearing impairment; in another case, homework was adjusted in collaboration with parents. These examples confirm that a child can be helped even more through the cooperation of teachers, parents, and specialists. Conclusion: The principle of cooperation transforms the educational process into a single team effort, in which each party - teacher, student, parent, specialist - unites for a common goal.

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Adaptation of the educational environment: This principle requires the creation of the necessary physical and psychological environment for inclusive education. The physical environment refers to the physical accessibility of the classroom and laboratory. In some of the schools visited during the study, problems and solutions were identified in this regard. For example, a child in a wheelchair could not access the physics room located on the second floor - in such cases, we saw that the building should be equipped with a ramp or elevator. Another example: a child with hearing impairment was given the opportunity to sit in the front row of the class, and for a child with poor eyesight, it was recommended that the writing on the blackboard be written in a larger font and with a higher contrast. These are simple examples of the adaptation of the physical environment. Laboratory equipment should also be adapted: according to the concept of a “universally designed laboratory”, which is becoming popular in developed countries, there should be lower (wheelchair-friendly) tables between the lab tables, digital models of devices and tools that give signals both through sound and light [9]. When such conditions are created, children feel free and safe, which has a positive effect on their learning. The psychological environment is no less important: an atmosphere of respect, support, and tolerance should prevail in the classroom. No child should be ashamed of being “different from others” or ridiculed. If the teacher recognizes and encourages every small success, and classmates make it a habit to help each other, then even a complex subject like physics is easier to learn in a friendly environment. During the study, we observed that “inclusive classroom rules” were introduced in some classes: slogans such as “We do not laugh at anyone” and “We always help each other” were hung on the wall. Such measures are useful in establishing the psychological environment. Also, kindness and tolerance for mistakes should prevail in the teacher's attitude - creating an environment where "no fear of making mistakes" is an important requirement of inclusive pedagogy. To do this, the teacher should refrain from harsh criticism and punishment, listen to each answer with respect, and, if necessary, gently correct. In conclusion, an adapted environment is the creation of a "comfortable space for the child", and in this case, the space should be comfortable both physically and mentally.

Reflection (self-analysis): The inclusive education process requires constant analysis and improvement. This principle primarily implies the analytical behavior of the teacher after each lesson. Each time, the teacher should ask themselves

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questions such as "Did I manage to involve all the children in the lesson today? Was anyone left out? Where did I have difficulties, what do I need to improve?" and draw conclusions. In our experience, for example, a teacher learned that a child with visual impairment could not read the small writing on the board in the previous lesson, and prepared additional materials in large print for him in the next lesson. In another case, after the parents of a child with hearing problems said that their child did not understand something in the lesson, the teacher began to distribute written instructions to him starting from the next lesson. Such constant reflection serves to continuously improve the quality of education. Reflection should be developed not only in the teacher, but also in the students. It is worth conducting small "reflective exercises" at the end of the lesson: for example, each student writes on a small piece of paper, "What did I learn today? What was difficult?" Or verbally expresses his opinion for 1 minute. This information helps the teacher in planning subsequent lessons. This is especially important for children with special needs - if they say in their own words what they cannot accept, it is easier to adapt the lesson to that need [10]. For example, if a child on the autism spectrum says, "I am uncomfortable working in a group because there is a lot of noise," the teacher can next time assign him an independent task in a separate, quieter environment or organize group work in a smaller and quieter environment. It is clear that the principle of reflection is equally important for both the teacher and the student, ensuring their collaborative improvement of the educational process.

From the above discussion, it follows that the methods and approaches used in inclusive education have a sound theoretical basis and are reinforced by appropriate pedagogical principles. In particular, lessons based on a multisensory approach convey information in a way that is consistent with the physiological and psychological characteristics of children, thereby achieving high educational results. A differentiated approach and individualization ensure individual attention to each child, implementing the principles of justice and equality, of inclusiveness. Group cooperation, on the other hand, creates an atmosphere of social integration and mutual assistance in the classroom, which has a positive effect on the socio-emotional development of both disabled and able-bodied children. The principles of adaptive assessment and adaptive environment guarantee conditions and incentives that are appropriate to the needs of each student. Through the principle of reflection, the entire educational process is continuously analyzed, and

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shortcomings are eliminated in a timely manner. All this serves to bring the inclusive education process to a higher level in terms of quality.

CONCLUSION

Based on the above theoretical and analytical considerations, the following conclusions can be drawn: (1) Inclusive education is a practical expression of the principles of equality, justice, and humanity in education, promoting the idea of leaving no child behind in society. Its historical development encompasses the stages of transition from segregation to integration and inclusion, and is currently reinforced by international documents and programs. (2) The main principles of inclusive education are defined as equal opportunities, adaptation, coverage, and cooperation, and organizations such as UNESCO and UNICEF emphasize the need to transform education systems into a completely inclusive culture. (3) In the case of Uzbekistan, initial legal and organizational measures have been taken to introduce inclusive education: the Constitution and laws guarantee the right of every child to education, the National Concept and "Roadmap" for 2020–2025 have been approved, and inclusive classes have begun to be established. In this process, it is necessary to work on improving infrastructure, personnel, and methodological support. (4) Teaching physics in an inclusive environment requires specific approaches because physics is rich in abstract concepts and is considered a difficult subject for many students. The study found that methods such as a differentiated approach, multisensory learning, group collaboration, adaptive assessment, and the use of digital tools are the most effective for use in physics lessons. (5) Each of these methods has its own advantages: for example, a multisensory approach allows each child to learn in a way that is convenient for him, a differentiated approach engages each student with a task that is appropriate for his pace and level, group work enhances social integration, adaptive assessment measures everyone's achievements fairly, and digital platforms provide additional convenience and support. (6) It has been confirmed that the implementation of pedagogical principles such as individualization, collaboration, adaptation of the environment, and reflection is of particular importance in inclusive physical education. These principles are inextricably linked: while an individual approach provides teaching adapted to the child, the principle of cooperation ensures that healthy and disabled children study together as a team; the principle of adaptation

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makes the physical and psychological environment comfortable for each child, and the principle of reflection constantly improves the process. In conclusion, the theoretical foundations of inclusive education and inclusive methodological approaches to teaching physics complement each other - when these principles and methods are followed, it is possible to teach physics interestingly, openly, and successfully for children with any abilities and needs. An inclusive education system is able to provide equal quality education for all children, strengthening tolerance and harmony in society. Therefore, the development of inclusive education should be recognized as an important direction of future education.

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