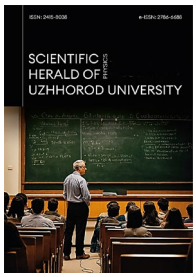
Scientific Herald of Uzhhorod University
Series "Physics"
Journal homepage: https://physics.uz.ua/en
Issue 56, 431–438
Received: 26.10.2023. Revised: 21.01.2024. Accepted: 07.03.2024



DOI: 10.54919/physics/56.2024.43lot1

Organisational and pedagogical conditions for the use of computer programmes in teaching foreign language to children with musculoskeletal disorders

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Abstract

Relevance. The issues of development and improvement of organisational elements in the process of providing educational services to children with musculoskeletal system disorders are not only relevant, but extremely important for consideration. The main advantage is the ability to use computer technologies, since they facilitate and accelerate the study of individual topics and provide comfort in the process of mastering new knowledge. As for learning a foreign language, this discipline is somewhat specific, since it requires students not only theoretical knowledge but also practical reflection, and consists in communicating with a native speaker.

Purpose. The purpose of this study is: to analyse the current situation on the integration of computer technologies into the educational process of students with musculoskeletal system disorders; to identify the main organisational and pedagogical conditions for their use in the daily activities of educational institutions; to determine the main shortcomings in the possible form of education; to introduce methods for their development and improvement to obtain the greatest effectiveness in the field of foreign languages.

Methodology. The topic is based on the investigation of the educational services for children with musculoskeletal system disorders, therefore, the study used functional and methodological approach, logical analysis, comparative analysis, analysis of scientific literature, synthesis, and deduction.

Suggested Citation:
Rakhimova M, Orazayeva G, Sydykzhan A, Yessenaman S, Degtyareva X. Organisational and pedagogical conditions for the use of computer programmes in teaching foreign language to children with musculoskeletal disorders. *Sci Herald Uzhhorod Univ Ser Phys.* 2024;(56):431-438. DOI: 10.54919/physics/56.2024.43lot1

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Results. The result of the study is the identification and implementation of theoretical and practical foundations for the use of computer programmes in the process of learning foreign languages by students with musculoskeletal system disorders, and the impact of such innovative technologies on the entire educational process.

Conclusions. The research aims to explore the mechanism for integrating curricula and methodologies that will increase access to learning materials and the assimilation of theoretical knowledge into practice, introducing practices that will improve and make this process more effective.

Keywords: education; student; teacher; computer technology; inclusive education.

Introduction

The educational process is a particularly important and indispensable element of the modernisation of the state and society, as it affects cultural, spiritual, intellectual, social, and economic areas. They are prioritised according to the importance of the goal and the tasks assigned to them, interacting with the rational development of the individual, studying them as a person and the highest value in society, and improving their skills and abilities, individual qualities, and attributes. Modern social processes consist in approaches that stimulate the creation of new social systems considering current socio-economic conditions. Because of this, educational programmes are aimed at interacting with children with musculoskeletal and other disorders, that is, children with special needs [1]. The introduction of the so-called inclusive education, a comprehensive process that aims to meet the diverse needs of all children by expanding their participation in learning, cultural activities, and social life. This process is associated with changes in the content, approaches, strategies and structures of education. In addition, the issue of mastering foreign languages is now on the agenda, as it concerns the integration processes of the country into the international arena, as well as for personal development to be able to establish contact with other people or using these skills in professional activities.

However, analysing the current state of information and technical support of programmes for learning foreign languages, it can be argued that they are insufficiently developed, since they do not use all the opportunities that society provides them [2]. In particular, it is important to highlight computer technologies and programmes among them, since they allow students to have a list of advantages and opportunities to study and improve their linguistic skills. In addition, an important element of such provision is the opportunity to practice, that is, to back up theoretical knowledge with practical skills. Thus, it speeds up the whole process of learning that or another foreign language. The use of all these advantages for teaching children with special needs, including those with musculoskeletal system disorders, is a reflection of both objective and subjective requirements aimed at ensuring the right to education for all citizens without exception. In the course of the study, modern computer programmes that are used abroad and show positive results were considered [3]. The main goal of the organisational and pedagogical system is not only to obtain perfect knowledge of students with special needs, but also their comprehensive development, since this condition is necessary for their future socialisation and the use of acquired skills.

That is why the introduction and application of computer technologies in the process of mastering foreign languages is a priority among modern educational methods [4]. At that time, the introduction of all these innovations is a complex, ambiguous, diverse process, since in its sense it accommodates a large number of relatively independent theoretical and practical scientific materials. The issue of analysing and creating regulatory, psychological and pedagogical, socio-psychological foundations is relevant. The main organisational and pedagogical conditions for the high-quality provision of educational services to children with special needs are the adaptation and adjustment of curricula and plans, modification of methods and forms of education, rational use of available resources, partnership with society in matters that relate to the individual needs of children with special educational needs. Important in the study is the process of identifying and consolidating ways for the possible practical application of the acquired skills and knowledge, in particular, in a foreign language [5]. The aspect of this topic concerning the establishment of a connection between the use of computer programmes and the effectiveness of learning foreign languages by students with musculoskeletal system disorders remains previously overlooked by researchers, which is the direct subject of this study.

The purpose of this study is to analyse the current situation on the integration of computer technologies into the educational process of students with musculoskeletal system disorders; to identify the main organisational and pedagogical conditions for their use in the daily activities of educational institutions; to determine the main shortcomings in the possible form of education; to introduce methods for their development and improvement to obtain the greatest effectiveness in the field of foreign languages.

Materials and Methods

During the consideration of this topic, several methods were used to investigate the use of computer programmes in the process of learning foreign languages by children with musculoskeletal system disorders. First, it is necessary to identify the main goals and areas of study, which can be done based on the functional and methodological approach, the importance of which lies in the fact that it allows forming the functions and tasks of this study, that is, to make it structured. Based on the method of logical analysis, namely, logical premises and conclusions, it is possible to concretise the results obtained quickly and perfectly, in addition, the study will be formed qualitatively and logically. Moreover, the method of comparative analysis was used in the process of investigating this problem, namely, the basic concepts and techniques related to the organisation of the educational process of students with limited abilities and special needs.

A possible solution to this issue is considered using the experience of other countries.

The synthesis allowed combining and linking the factors identified during the study that affect the process of learning foreign languages by attracting computer technologies. It is advisable to pay attention to the method of deduction, since it reveals this question from the general to the particular, namely, from the broad concept of "education" to the narrow "learning foreign languages using computer programmes" by the method of a logical chain. The most thorough of the presented methods is the analysis of scientific literature, which includes textbooks, scientific dissertations, research papers and theses, which, in turn, allows getting acquainted with the opinions of the researchers on this topic. Thus, the following tasks can be formed:

- to investigate and analyse the effectiveness of current education systems aimed at students with musculoskeletal system disorders;
- to highlight the areas and methods for the introduction of computer programmes in the process of learning foreign languages;
- to develop basic concepts in the organisational and pedagogical sphere, considering the main innovative technologies;
- to consider the advantages and disadvantages of the application of certain software practices and conditions and with the involvement of innovative computer programmes and technologies, develop priority areas and ways to improve this process with the involvement of international standards and methodologies.

The final step forms the main results of the study. A clear, structured plan was developed to meet the organisational and pedagogical conditions for teaching children with musculoskeletal system disorders, as well as modern information technologies were involved for learning foreign languages, their practical development and improvement.

Results

Conducting the educational process with children with special educational needs is a relevant issue in all states, regardless of their level of development, since the right to education is one of the priority rights granted to humanity and should be provided to everyone without exception. However, even more important is the process of solving issues related to organisational and pedagogical conditions, the satisfaction of which would allow the above-mentioned category of children to be full participants in the educational process and receive high-quality knowledge. In addition to material conditions, psychological and pedagogical ones are also a priority, since they ensure the creation of an optimal environment for the assimilation of students with special educational needs of both diverse and general educational programmes and concepts, in accordance with modern educational standards, which consist in sufficient emotional and personal development [6]. The experience of various public and private educational institutions with children indicates that, for example, students with mental retardation make up the largest percentage among children with special educational needs and that such classes are heterogeneous and irrational. The same can be stated for students with musculoskeletal system disorders, because in normal conditions they face the problem of a lack of cognitive skills, and also experience certain complications in the assimilation of curricula and techniques.

For the effective and safe development of the necessary knowledge and skills by children with special educational needs, adapted curricula and concepts should be used, considering important special conditions, which are certainly a direct mechanism for obtaining the most positive result. For timely and high-quality achievement of goals and obtaining the necessary results, modern pedagogical and educational methods are used in the process of learning foreign languages by children with special educational needs. The main one among them is the technology of correctional and developmental learning, which consists in the ability to change and be mobile to provide educational services to every child. In a discipline such as English, each child is individually provided with materials and tasks, most of which they complete in hard copy, which in turn does not interfere with the lesson and allows the teacher to work with several students at once [7]. Considering various methods and practices, then the main and necessary for use in daily academic work, including in foreign language lessons, are: personality-oriented; self-control techniques, to increase the level of assimilation of lexical material; performing group tasks with different levels of complexity, in order to later detect errors and to disassemble them together; the use of gaming technologies; the use of advanced learning tools, etc.

The personality-oriented method consists in the fact that the teacher focuses on the full-fledged human personality of a child striving for maximum self-realisation and development, so the child is interested in gaining new experience and knowledge, and most importantly, has the desire and opportunity to apply the acquired skills in the future. For example, in English or other language lessons, this method is reflected in the form of considering specific special features of the child, as well as the use of their subjective social experience and previous knowledge to improve them to a perfect level. As for the use of self-control techniques, then a practical example of this is: choosing among all the presented words, possible combinations; working with synonyms and antonyms; finding the necessary words from the list corresponding to a given topic and vice versa; creating crosswords and quests with them in the middle of the group, etc. However, the method that deserves the most attention is the use of gaming technologies. Its priority is conditioned by the fact that children's consciousness and subconsciousness perceive complex things better in the form of a game, because children do not memorise specific aspects, but immediately learn new knowledge and skills in practice.

A practical example may be the following tasks: the development of diction in the form of a task or puzzles; creating your own rules to realise the significance and importance of a particular topic; attracting signs of competition, which changes the nature of the task to a game. The involvement of gaming technologies is effective at different stages of the educational process, for example: a regular lecture, which mainly reveals theoretical aspects, can be interpreted into working with the text and add more interaction with students to focus their attention on a

specific topic and interest them to learn it [8]. A teacher can also use the demonstration method, immediately involving both auditory and visual senses. Ultimately, the most effective will be the performance of various tasks, since when solving any issue, the knowledge gained is reproduced, which allows the student to consolidate it, as well as to identify mistakes and inaccuracies and work on correcting them. As for the games themselves, it is still better to use them in the middle or at the end of the lesson, when children begin to get tired of receiving information and thus it is this activity that will help them to distract and relieve tension.

In foreign language lessons, this method is especially useful, because during the game, children do not hesitate and demonstrate maximum efficiency, so the teacher can determine the individual characteristics of each student, their level of knowledge and mistakes to work on them in the future. In addition to the above-mentioned lexical games, the use of grammatical games will also be effective in learning foreign languages. Grammar is the foundation of any language discipline and its aspects are very important for obtaining a successful result at the end of training, these games include: "Verbs in pictures", "Transformation", "Guess", etc. [9]. Spelling exercises, as well as tasks for learning the alphabet and improving reading skills are important elements for improving and modernising the educational process. In the provision of educational services for children with disabilities, including those with musculoskeletal system impairment, significant emphasis is placed on health-preserving technologies. Usually they are aimed at those muscle groups that get tired faster, for children with a violation of the musculoskeletal system, these are fingers and hands. Therefore, it is important during the lesson to allocate time to warm up the arms and limbs, as well as the neck, which helps to disperse the blood and relax the child. In order to focus on the lesson on the contrary and add activity to the students' activities, a teacher can use rhymes, poems, and songs based on movements or involving some parts of the child's body.

An important condition for choosing tongue twisters, poems or other texts is to consider the topic of the current lesson and cooperate it with the work of art. In foreign language lessons, in particular English, the use of such a method as listening will not only focus attention and interest the class, but also help to better memorise some expressions and take them by ear, that is, to learn their correct pronunciation [10]. The main methods that were used earlier and now were mentioned above, but it is worth paying special attention to computer programmes. This is a method that is completely different from the previous ones, since it can involve all the senses at once. Computer programmes provide students with opportunities to receive any information, exchange it and work with it, to use it in further education. The positive experience of such programmes is that they are quizzes, tests, contests, and exercises to improve grammatical and other knowledge, respectively, in the chosen foreign language. The types of programmes whose content consists in online communication with other children around the world are also important, because this directly has a significant positive impact on the skills and level of knowledge acquired by children. That is why the introduction of such programmes and technologies is necessary to improve the educational process for children with musculoskeletal system disorders [11].

Discussion

The involvement of modern innovative technologies and software in the correctional and developmental education of children with special educational needs, including the impaired musculoskeletal system, stimulates an increase in the effectiveness of the educational process and the quality of knowledge acquired. It also ensures the implementation of a personality-oriented approach, which consists in the individualisation and differentiation of education. For a doctrinal understanding of the effectiveness and general mechanism of such education, it is necessary to refer to the opinion of researchers, among whom it is believed that the step-by-step method is a priority in the education of children with special educational needs. That is, it consists in a rational presentation of the material and tasks, involving other methods and techniques aimed at the overall development of the student, as well as the development of the individual properties of the child as a person. In addition, it is noted that a necessary condition is to provide an individual training plan for each student and compare it with others so as not to achieve a big difference. Thus, do not lose the opportunity to work in groups, that is, simultaneously with other students [12]. It is established that in order to get the maximum result in the field of foreign languages, it is necessary to use all possible modern technologies, that is, Internet resources and appropriate computer programmes. This will modernise the educational process, that is, make it relevant, accessible, and most importantly comfortable for all applicants for educational services [13].

The use of computer innovations will minimise the obstacles to obtaining a quality education for children with musculoskeletal system disorders, since the use of such programmes allows them to study remotely. This makes life much easier for such students, focuses their attention directly on learning a foreign language and the educational process, and provides a number of advantages that are extremely relevant today. In order to determine the feasibility and necessity of involving computer programmes in education, it is necessary to prioritise the study of foreign languages, which leads to its importance for citizens [14]. Since language is a means of communication, it corresponds to the above principles that have been formed around foreign languages, because, indeed, it is a connection with each other. Therefore, the need to modernise this particular area of education is quite urgent. In addition to public interests, learning foreign languages certainly affects the professional career of any specialist, regardless of the branch of their professional direction. Any training is a complex and multifaceted process [15; 16]. This is conditioned by the fact that a person has to master what was previously unknown to him or improve the knowledge gained. However, the dynamic nature of any science or discipline complicates this process. Each of them is constantly developing in accordance with social conditions and needs; it is this property that requires students to quickly and fully study the material.

As for the involvement of foreign language computer programmes in the lessons for children with special educational needs, this definitely improves the dynamism and efficiency of the educational process. With the help of a computer and its capabilities, the process of information perception is accelerated, and the process of consolidation is strengthened. For children with musculoskeletal system disorders, logical and creative skills are being actively improved, oratorical skills are being developed, as well as independent research of their own work [17; 18]. In addition, such computer programmes do not require the use of a large number of movements, which greatly facilitates learning for the above-mentioned category of students. The infusion of computer technology into the learning process facilitates access to information and thus increases the volume to which the student gets access [19; 20]. Because, speaking of programmes that are analogues of ordinary libraries, a child can easily get the necessary materials without having to move around. Analysing the current market of multimedia products, it can be argued that it is at a high level and includes materials of various kinds, that is, both free and paid. At the same time, such a large number of databases and programmes is an obstacle to obtaining high-quality information, exercises, etc. Because of the excess of such products, it becomes more difficult to find something really useful.

That is why the allocation of computer programmes and databases in the curriculum will narrow down the list of all possible resources and provide the student with high-quality materials that will be useful and effective during their studies. An important advantage of computer programmes is that they are constantly updated and provide high-quality information, rules, and tasks. If it is the usual, printed materials, then the student will have to do their own research, tracking changes in grammar, vocabulary, and phonetics, and new, paid textbooks will have to be bought all the time. All this slows down the process of learning foreign languages, and for students with musculoskeletal system disorders they create a number of obstacles to acquiring this knowledge [21; 22]. An important step is to consider the place and role of computer software in the process of learning a foreign language. Thus, given the conditions of the present, to some extent, the computer can even replace the teacher. However, this approach is too idealistic, so it is worth considering it as an auxiliary tool, that is, as a number of other technical means. However, the computer differs from this list in that it contains video, audio, and text information at once. The computer also provides an opportunity to communicate with other people in the "live" mode. This is what gives communication a lively effect despite the distance between the interlocutors, since it is supported by the use of a camera and microphone, which is especially important for children with movement restrictions, because such communication does not require them to move [23].

It is possible to distinguish the following functions carried out by computer technologies, including programmes in the process of learning foreign languages: informational, training, control and corrective, communicative, organisational and stimulating [24; 25]. As for the informative function, it has a primary character, that is, it reveals the main purpose of the computer and its programmes – the preservation and transmission of information. Thus, this function is one of the fundamental ones in the study of foreign languages, since this branch of science provides for operations with a large number of resources, in addition, it allows saving it for future use. The next is the training function, it also plays an equally important role in the learning process, since it is revealed in the use of programmes to assimilate the acquired knowledge and check the quality of their reproduction. This function has many advantages, since it allows testing knowledge at any time, with an unspecified time frame (unless otherwise provided by the task), in a calm environment with possible error handling after verification (if any) [26]. The control and correction function also has a primary character, since it is somewhat more serious than the training one, since it consists in passing a general test to accurately verify the knowledge and skills acquired during training [27].

Its advantages include the provision of differentiated and individual approaches in the implementation of such control; the comfort of its passage; receiving feedback in the form of errors; maximum objectivity and impartiality of the result obtained. Considering the communicative function, then its name directly reveals the very content of this provision, that is, it consists in the ability to conduct a dialogue in international chats, communicate in real life with foreigners, etc. The latter is organisational and stimulating, because computer programs facilitate the independent distribution of training, in particular, the study of foreign languages, and stimulate the learning of new information or the improvement of already acquired skills for their effective use in the future. Thus, having investigated the functions implemented by computer programmes in the field of learning foreign languages, it can be argued that these advantages and the opportunities they provide are gaining more and more publicity and dissemination every day, especially for children with special educational needs, including musculoskeletal system disorders. Since this greatly facilitates and makes the entire learning process more comfortable, and also focuses the student's attention directly on mastering the discipline, rather than on procedural elements [28-30].

In turn, the development of computer technology is conditioned by its increasingly widespread use in teaching, and is also quite dynamic and noticeable, since most of these tools already have control programs and modules installed [31; 32]. Thus, the students get the opportunity to perform a list of operations automatically, without the intervention of a teacher or other specialist. In particular, accepting and establishing the student's answers, this action is extremely useful for both the student, since they can immediately see mistakes made and recognise the result, and the teacher, because their time is saved and workload is reduced. Next, the correct answer is checked and set, the result is generated, and the message is sent to the student (possibly in various ways: a demonstration on the screen, an e-mail message, etc.). Thus, this whole algorithm is carried out in a few seconds, which has a positive effect on the knowledge test, since it is error-free and fast [33; 34]. On the part of the teacher, their professional activity is supported by computer technology, as elements of activities carried out with the involvement of various means necessary to achieve the goals and objectives.

This speeds up the work, because to create test or control papers, the teacher can use ready-made schemes or algorithms, thereby minimising the time for their preparation and printing. In addition, the involvement of such innovations in the educational process will relieve teachers and focus their attention directly on the process of transferring knowledge to students, rather than preparing for it. Such tools include certainly promising generative programmes and expert systems of various types. Considering tools intended for students, they find their expression directly in the form of computer software, as a means to obtain information materials and practical support during the study of foreign languages. Moreover, teachers can use computer devices as an element or means for their professional or scientific activities. It is important to note that in the field of learning foreign languages, there is a whole list of varieties of software aimed directly at mastering another language.

The most common are programmes of a general nature, which allow mastering all types of speech activity, that is, reading, speaking, listening, and writing, such programmes include HelloTalk, FluentU, Johnnygrammar'sWord Challenge, PuzzleEnglish. Thus, for the smooth and effective operation of such programmes, a necessary requirement for the teacher is the development of the most common types of software, the development of skills to analyse programmes at the technical, ergonomic, psychological, pedagogical, and interactive levels. In general, computerised or distance learning is not inferior to conventional education, since in some indicators it surpasses it with its mobility, speed, and quality. However, in no case should the concept of a teacher be destroyed, since it remains the main subject in the educational process, and computer programmes, in turn, only improve this process [35].

Conclusions

Based on the results that were established in the course of the study, it can be argued that there is indeed a direct relationship between the effectiveness of learning foreign languages with the introduction of computer programmes into curriculum. Such integration has an extremely positive effect on both the teacher and the student, by facilitating and unloading this process, that is, transferring, receiving, mastering, and reproducing the acquired skills. Such modernisation is especially important and a priority for children with musculoskeletal system disorders. This allows them to avoid a number of obstacles to obtaining high-quality knowledge, since their main focus is on the procedural properties of learning, and not on the direct process of obtaining education. In addition, the use of computer programmes is extremely relevant, since it allows reflecting theoretical knowledge gained in practice in the form of performing tests or communicating with children from other countries.

An important advantage of computer technologies over established printed resources is their constant updating and relevance, since additions and changes must be made directly by the student. Considering children with special educational needs, including injuries of the musculoskeletal system, then the use of such innovative technologies is not only desirable, but also useful and necessary because it will significantly improve the learning conditions, make them more comfortable and to some extent accessible. It is established that it is necessary to use techniques, concepts, and practices that are revealed in a playful way. It is also compulsory for the above-mentioned category of people to exercise those parts of the body which are the most fatiguing, in the case of musculoskeletal disorders, to warm up the fingers, neck, and head. The introduction of such innovative, modernised reforms will improve the overall state of the entire education system, especially in the sphere of providing services for children with special educational needs.

Acknowledgements

None.

Conflict of Interest

None.

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Організаційно-педагогічні умови використання комп'ютерних програм у навчанні іноземної мови дітей з порушеннями опорно-рухового апарату

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Анотація

Актуальність. Питання розвитку та вдосконалення організаційних елементів у процесі надання освітніх послуг дітям з порушеннями опорно-рухового апарату є не тільки актуальними, але й надзвичайно важливими для розгляду. Основною перевагою є можливість використання комп'ютерних технологій, оскільки вони полегшують і прискорюють вивчення окремих тем та забезпечують комфорт у процесі засвоєння нових знань. Що стосується вивчення іноземної мови, то ця дисципліна є дещо специфічною, оскільки вимагає від студентів не лише теоретичних знань, а й практичної рефлексії, і полягає у спілкуванні з носієм мови.

Мета. Метою даного дослідження є: проаналізувати сучасну ситуацію щодо інтеграції комп'ютерних технологій у навчальний процес студентів з порушеннями опорно-рухового апарату; виявити основні організаційно-педагогічні умови їх використання у повсякденній діяльності навчальних закладів; визначити основні недоліки у можливих формах навчання; запровадити методи їх розвитку та вдосконалення для отримання найбільшої ефективності у сфері іноземних мов.

Методологія. Тема ґрунтується на дослідженні освітніх послуг для дітей з порушеннями опорно-рухового апарату, тому в дослідженні використано функціонально-методологічний підхід, логічний аналіз, порівняльний аналіз, аналіз наукової літератури, синтез та дедукцію.

Результати. Результатом дослідження є визначення та впровадження теоретичних і практичних засад використання комп'ютерних програм у процесі вивчення іноземних мов студентами з порушеннями опорно-рухового апарату, а також вплив таких інноваційних технологій на весь навчальний процес.

Висновки. Метою дослідження є вивчення механізму інтеграції навчальних програм та методик, що дозволить збільшити доступ до навчальних матеріалів та засвоєння теоретичних знань на практиці, запровадити практики, які покращать та зроблять цей процес більш ефективним.

Ключові слова: освіта; студент; викладач; комп'ютерні технології; інклюзивна освіта.