Phased approach to information competence formation of future teachers of visually impaired

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Abstract:

The article deals with a phased approach to the development of information competence of future teachers of visually impaired, which was implemented in teaching students of «Special education (pedagogy for the blind).» General pedagogical and special literature about the introduction of the latest computer technologies in educational process of secondary and higher education was analyzed, as well as the level of development of this in Ukraine. The interpretation of the concepts of «computer training», «information and computer competence of tiflopedagog» and «readiness to use the latest computer technology by future teachers» was high lighted.

The content of training in computer technology was identified and justified for the future teachers of visually impaired, which is a system of information and disciplines of computer sphere, associated with the study of the multifaceted phenomenon of information technologies, as well as the patterns and characteristics of its manifestations in various spheres of professional work of teachers of visually impaired. The efficiency of a phased approach is shown on training of students of the Faculty of Correctional Pedagogy and Psychology of National Pedagogic University named after N.P. Dragomanov.

1. Introduction

Success in scientific and technological development of humanity, continuous improvement of information supply at all spheres of social production has made significant positive changes and at the same time give rise to legitimate problems in modern education.

Various aspects of the introduction of new computer technologies in educational process of secondary and high education have attracted the attention of many researchers. They have studied various aspects of the development of computer-based learning systems, the creation of methodological support of their use.

The question of improving the professional training of a special school teacher is relevant and modern. Researchers found that for the successful performance of teacher-therapist professional duties, regardless of the profile of the preparation must have an appropriate amount of medical, psychological and pedagogical knowledge, to be a highly qualified specialist in the field of special education and computer technology, doing constant self-education, to have a scientific outlook and high level of total culture, being able to make creative solutions at non-standard conditions.

Analysis of literature showed that the question regarding the training of teachers, speech therapists and their work with computers developed enough, although there are some studies that address the elements of the computer training of future speech therapists to work in a special school. Interpretation of educational issues from the perspective of computer competence of experts in the field of defectology makes it possible,

firstly, deeply aware of the nature and structure of the defect, the need for and means of differential diagnosis, and secondly, to identify and solve the problems of correction and defect compensation in the educational process is not only teaching but also computer technology, and thirdly, to predict the quality of life of the disabled, to develop their individual rehabilitation programs and others.

2. Theoretical background

Theoretical analysis of speech pathology in general and, in particular, visual impairment pedagogics literature indicates no development to determine the influence of the system of computer knowledge to prepare specialist of visually impaired to correctional work, the uncertainty of her status in the practice of the relevant faculties and institutes. There are no studies of content, structure and justification of the main components of the preparation of the future teachers of schools for children with visual impairments to use the latest computer technology as a component of the educational and professional programs. Not developed criteria and indicators of efficiency of mastering student visual impairment pedagogical system of computer knowledge. The basic principles of the study of computer science are not defined in the higher special education; there is no integrative curriculum, which reduces the level of computer competence of the future expert. The defectological higher education way out of the traditional boundaries of special schools and the need for modern conditions to train specialists for medical, psychological and educational centers, rehabilitation facilities, integrated and inclusive education institutions has deepen and expanded the contents of the computer training of future specialists in various disciplines of the educational field *Special Education*.

In the scientific literature there are different interpretations of the term "computer training", which is a compulsory part of the educational process and provides training professionals able to use the computer facilities effective and the latest information technologies to solve practical problems. On the other hand, it is known that the computer training of students – is a set of forms and methods, which give them an opportunity to acquire knowledge. With aim to distinguishing the content of this concept for a variety of educational activities of students, we have introduced the concept of "training future teachers of visually impaired to use the latest computer technology for special education" as a mandatory component of higher vocational education, the contents of which comprise the discipline of information and computer cycles, each of which is an organic part of formation the system of readiness for professional information and computer activities for future teachers of visually impaired at the field of defectology.

So, readiness to use the latest computer technologies we see as the ability of the future teacher of visually impaired to effective educational and correctional activities on the basis of application in their own learning process and to work with children who have a visual impairment, modern computer equipment and related techniques.

In our opinion, information and computer competence of visual impairment teacher`s activity – is the cumulative result of a complex and lengthy process of vocational and educational training. Accordingly, the readiness of the future teacher of visually impaired to use the latest computer technology in a special training – is a stable self-education, which combines a complex of personal qualities and professional knowledge and skills, is an important prerequisite for successful educational and correctional work and realization of the creative potential of the person.

3. Stages of computer training system

Taking into consideration the need to structure our professional training system, we developed stepwise computer training system for visual impairment specialist.

Consistency and continuity of computer training in the aspect of training visual impairment specialist-teacher has the following steps:
— the stage of basic computer training – the first high school, which involves the study of technical and computer training aids used in special schools, students of visualimpairment first course,
— phase of general social computer training – a second high school, which includes the study of students of II course of the latest computer technology

— the stage of a special computer training – the third high school, which covers a highly specialized computer training students of visualimpairment III – IV course,

— the stage of practical training – he fourth high school (master), which provides for the deepening of individual computer literacy during the passing of pedagogical practice in special education institutions for children with visual impairments,

— the stage of professional development – post-graduate retraining and advanced training, which involves the deepening of the process of individual professional skills of teachers of visually impaired.

The first stage of basic computer training covers the period of study of students of visualimpairment in the second semester of the first year of high school. At this stage, each student learns about the existing technical and computer means of teaching in secondary and special schools, their structure and methods of use in the educational process. Computer training provides for the creation in the first year the conditions for the effective application of the knowledge acquired during the training labs.

The second stage general social computer training covering a period of training of students in the first semester of the second year. At this stage, students gain knowledge and skills of modern information and computer technologies, which include the study of operating systems, applications, work in the telecommunication environment and in the Internet, etc. Also, students are provided with information on how this knowledge can be used in the educational process and correctional school for children with visual impairments. At the end of this stage the examination of computer science is held, which integrates all the knowledge and skills obtained by means of technical training and the latest computer technologies in an integrated system of information and computer knowledge.

The third phase covers the preparation of a special computer training of students of the third and fourth year and aims to prepare students for immediate use of computer knowledge and skills in teaching children with visual impairments. This makes possible to prepare students for the qualified carrying out lessons of different types at the time of passing practice in special educational institutions, taking into account the child's mental and physical state and its compensatory possibilities.

The fourth stage of practical training includes graduate students. Training at this stage has the scientific and methodological orientation, which is based on theoretical knowledge and practical skills obtained during the study of the various disciplines and involves the passage of student practice in special education institutions for children with visual impairments.

The fifth stage of post-graduate professional development covers already working teachers of visually impaired, who receive the second higher education and defectology students of refreshing courses for teachers, speech pathologists. Training at this stage, is based on the received while studying theoretical computer knowledge and practical skills, formed in the course of professional activity. Professional development involves the deepening of the professional skills of individual visual impairment teacher's means of computer literacy.

Based on the structural analysis of computer training we identified our interconnected and interdependent real content, methodological support, methods, means and forms of training at each of the stages of learning-visual impairment specialists to use the latest computer technology in special education, refined correctional and rehabilitative orientation.

Training in information and computer technologies of the future teachers of visually impaired provides an integrated approach to the design of the content and use of methods, means and forms of education and individual approach, which provides not only a comprehensive development of future visual impairment teachers information technology special education, but also the gradual formation their readiness for professional correctional and rehabilitation activities in accordance with their capabilities, abilities and academic achievements of each. Therefore, such training should be considered as a complete system based on personality-oriented and activity approach, organic combination of traditional and computer-oriented methods, integrated use of paper and electronic storage media, both traditional and computer-oriented learning tools, the introduction of both traditional and distance organization of the educational process. An important factor in the design process of vocational training on information and computer technologies of the future teachers of visually impaired is the integrated use of traditional and computer-oriented teaching aids on the principle of complementarity.

The first component in the complex process of preparing future teachers of visually impaired is to use the latest computer technology associated with creating training content and training and methodological support of teaching of computer sciences areas.

Course contents – is pedagogically grounded, logically ordered and fixed in the training documentation scientific information to be mastering [1]. It concretized the answer to the question: what kind of knowledge and skills necessary to select for learning and mastering student.

Analysis of curriculum, textbooks, teaching aids shows their excessive congestion information that is supplied in the form of knowledge. This is usually defined as a set of theories, laws, concepts, scientific and empirical evidences, is the projection of relevant scientific knowledge. The main means of acquiring knowledge can be a text (availability of computer technology only adds computer aids, simulators and monitoring programs), and the main task – is formation of students' strong systematic knowledge. Skills and abilities are secondary components, and the selection of practical tasks and objectives is random [3]. Under such circumstances, the student is constantly immersed in an artificially created a learning environment (both in form and content), and the determining factor in learning is rote.

On the basis of theoretical analysis is defined and justified by the content of training in computer technology of the future teachers of visually impaired that is discipline system information and computer cycle associated with the study of the multifaceted phenomenon of information technologies, as well as the patterns and characteristics of its manifestations in various spheres of professional work of teachers of visually impaired.

Under the content of training in computer technology of the future teachers for students with visual impairments in the study understood the training system of social experience, adequate state educational standards, curriculum, and the current level of theoretical knowledge, specific skills and practical skills in computer-information technology, learning and the acquisition of which lays the foundation for the formation of their readiness for professional information and computer activity that meets the needs of both society and the individual specialist.

In our opinion, one of the most promising directions of computer-information preparation of the integration of separate but interrelated disciplines due to the synthesis of traditional forms and methods of learning opportunities offered by modern educational technology.

The subject of the present review is a curriculum for full-time students who have studied in *Special education (educational levels)*. The curriculum subjects have been identified that can be integrated within the time allotted to study them, without loss of quality characteristics and objective indicators of the level of training.

A prerequisite for the successful assimilation of the new discipline can be supporting the knowledge of school course *Informatics* and the ability to work on a personal computer at the user level with the Windows family of operating systems and the package MS Office applications – Word Processor text, tabular processor Excel, Access database management system.

Knowledge, skills and abilities necessary for successful mastering of the new course, associated with the use of computer technology and the corresponding special software that before the introduction of the new discipline to turn out as a result of studying of disciplines of *New Information Technologies* (*BAT*) and *Technical means of training* (*TCO*), taught to students in the second year, and does not take into account the specifics of future professional activity of teachers of visually impaired.

Comparative analysis of thematic plans of disciplines *Technical training facilities* and *New Information Technologies* indicates that there is some duplication of training material at different quality levels, or at the level of the acquisition of skills of using information technologies and means to the use of modern computer technology in the process of correction, education and rehabilitation of children with visual impairments. The study of the content of these subjects showed that they do not provide students with the knowledge and skills necessary to use technical and computer training aids during lessons in special schools for children with severe disabilities.

The comparative analysis showed that the sense of the disciplines *TCO* and *NIT* similar. The essential difference between them lies in the emphasis on materials of lecture courses, and how to conduct methodical maintenance workshops.

Due to the fact that the ultimate purpose of studying the above-mentioned disciplines is the time between the students of sustainable skills to work with computers that meet the requirements of state standards, the ability to use modern teaching aids and computer technologies in special education, well-founded is the assertion of the possibility of integration of the two courses in one discipline. On the one hand, such union provides students with basic knowledge of modern computer technology, on the other – will provide sustainable developments necessary skills to use modern computer and information technologies in the process of correction, education and rehabilitation of children with severe speech disorders.

4. Research results

The proposed approach is aimed to improve the quality of future by creating and implementing integrated into the educational process of discipline *Information technologies and means of corrective training*, implemented by joint efforts of pathologists faculty members Correctional Pedagogy and Psychology of the National Pedagogical University (NPU) name M. P. Dragomanov (Kiev, Ukraine) and specialists in the field of information technology.

The effectiveness of the proposed phased approach was verified by experiment, carried out with the participation of 84 full-time students of the Faculty of Correctional Pedagogy and Psychology of National Pedagogic University named after Dragomanov, who were trained in the specialty *Special education (educational levels)*.

The experimental results confirmed the efficiency of the developed system of formation of professional readiness of the future teachers of visually impaired to the use of computer technology in the process of training. In particular, this trend is set to a high level of readiness formation of the students of the experimental group: from 57.37% of the students of the 3rd course and 67.48% graduate students (in the control group – respectively at 32.36% and 36.55%). The students, who are at an unsatisfactory level, were not revealed, although the percentage at the control group was respectively 7.94% and 5.21%.

5. Conclusions

Thus, the rapid development of modern computer technology requires the presence of a teacher, who has a high level of information competence. We propose the phased approach for the development of information competence, which enables a whole new improvement level of the future visualimpairment teachers training of computer technology usage in special education.

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