

The Preparation of Specialists for the Realization of Individual Education Path of Children with Special Educational Needs: Neuropedagogical Aspects

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Abstract: *The urgency of the chosen research area is determined by the need to train specialists to work in an inclusive environment. The psychological and pedagogical literature on the functioning of inclusive education is analyzed and the current problems of this process are identified, which require solutions: the absence of principles of psychological and pedagogical support of children in the system of inclusive education; the lack of recommendations for involving parents in the educational process; unpreparedness of high institutions to prepare specialists to work in the conditions of inclusion; the need to update the system of professional training of future teachers taking into account the peculiarities of inclusive education; insufficient study of foreign experience, etc.*

Based on generalizations of theoretical analysis and own practical experience the ways of improvement of preparation of specialists for realization of individual educational path of children with special educational needs are substantiated: the improvement of educational programs of preparation of future specialists for work in the inclusive environment, renovation of the training methods of future teachers factor into neuropedagogical aspects, and also to make opportunities for professional self-improvement of specialists working in an inclusive environment during their professional activities.

The need to take into account neuropedagogical aspects to ensure effective training of specialists to implement the individual educational path of children with special educational needs is based on the specific features of inclusive education, which requires knowledge of cognitive neurology, differential psychophysiology, neuropsychology and the formation of relevant skills.

It seems promising the creation of a pattern for training specialists to implement the individual educational path of children with special educational needs, as well as the organization of a pedagogical experiment to test its effectiveness.

Keywords: *A professional training, institutions of higher education, an inclusive education, the improvement of educational process, an educational program, a psychophysiological development, neuropedagogy.*

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1. Introduction

The right of persons with disabilities to participate fully in public life is recognized by The Convention on the Rights of the Child and the Declaration on the Rights of Persons with Disabilities, adopted by the United Nations General Assembly. Every state, focusing on national peculiarities, legally regulates the functioning of inclusive education within the right for education of children with disabilities in comprehensive educational institutions and realized. Therefore, there is a need not only to develop new pedagogical approaches that will allow children with special educational needs to fully participate in the educational process and to integrate into the pupils body (Adascalitei, 2020), but also to prepare a new generation of teachers who can effectively pursue professional activities in an inclusive environment.

We agree with the statement of N. Pakhomova (2017, p. 374) concerning the need to improve the professional training of future teachers who will continue to work in an inclusive environment and create conditions for successful learning, development and socialization of children with special educational needs. Such training should include not only the study of professional disciplines, but also the consideration of medical-biological, psychological, managerial and legal aspects of professional pedagogical activity in the context of inclusive education. After all, only a teacher directs the educational process of the class (group) to achieve educational goals and within it builds an individual educational path for children with special educational needs.

The aim of the scientific work is to analyze the national and foreign practice of functioning of an inclusive educational environment, as well as to determine the conditions for training specialists to implement the individual educational path of children with special educational needs.

2. The training of specialists to work in an inclusive environment: neuropsychological aspect

The practice of introducing inclusive education in European countries started in the 1970s. Our study is based on the interpretation of the content of inclusive education as a complex process of ensuring equal access to quality education for children with special educational needs by organizing their education in secondary schools, taking into account the individual characteristics of educational and cognitive activities of such children (Kolupaieva (ed.), 2012, p. 27).

The issue to train specialists for professional activity in an inclusive environment was studied in scientific publications both domestic (Aharkova, 2019; Malyshevska, 2016; Chaikovsky, 2011), etc., and foreign (Amatori et al., 2020), Avramidis and Norwich (2002), Florian (2014), Świtala (2020) and other scientists.

But, there is no consensus among the scientific community to determine the optimal conditions for inclusive education and training in an inclusive environment.

Scientific papers of Avramidis and Norwich (2002) are pointed onto determining the attitude of practicing teachers towards inclusive education. Based on the statistical survey, scientists have identified a number of factors that influence the formation of a positive attitude of teachers to inclusive education (psychophysiological state of a child, the nature of violations of his/her educational activity, support, parents' reaction onto the learning process, etc.).

Amatori, Mesquita and Quelhas (2020, p. 84) comparing the inclusive education systems of Italy and Portugal, emphasize the importance of appropriate qualifications of teachers for the successful education of children with special educational needs. In their study, they proposed ideas for improving inclusive education, grouped into three levels: reviewing the content of general education to ensure the inclusion of children with psychophysiological disabilities, providing appropriate support for children with special educational needs, and individual correctional work. Similar results were found by Bajrami (2019), conducting a comparative analysis of inclusive education in nine countries of the European Union (Austria, Belgium, Estonia, Cyprus, Latvia, Slovenia, Iceland, Finland and Norway) and three countries in the Balkans (Montenegro, Macedonia and Kosovo). Researchers Kola-bezka (2018) and Świtala (2020) studied the features of the inclusive environment in Poland, outlined the range of tasks that need to be addressed in the near future (improving the training of specialists to work in an inclusive environment, strengthening social integration of children with psychophysiological disabilities, development of the inclusive training programs, etc.).

Florian (2014) investigating a critical review of modern practice of inclusive education, came to the conclusion that to ensure its effectiveness it is necessary to develop new methodological tools. Mitchell agrees with this conclusion (2015, p. 11) and he proposes to ensure inclusive education by building an individual educational path of children with special educational problems, taking into account the complexity of educational institutions and a number of other interdependent indicators. Chhabra et al. (2018) in their

scientific publications promote the need to uphold the rights of all children, regardless of their abilities, the practice of active participation in all spheres of society. Schuman (2017) considers the early inclusion of children with special needs in the general educational environment as a concept, based on the need to support the rights of every child.

Chaikovsky (2011, p. 16), investigating the experience of implementing inclusive education in Ukraine, stressed that at present time it covers only children of preschool and primary school age. Further development of the inclusive learning mechanisms requires analysis and adaptation of positive foreign experience.

The analysis of scientific sources has allowed to identify the main problems in the organization of inclusive education and training for working with children with special educational needs that require solutions:

- deficiency of principles of psycho-pedagogical support of children in the system of inclusive education. This involves the interaction of all specialists who work in an inclusive environment: primary school teachers, subject teachers, psychologists, speech-language pathologists etc. Moreover, psychological support should be provided not only to children with special educational needs and their parents, but also to teachers who work in an inclusive environment. Such support should be organized in order to overcome existing stereotypes about people with psychophysical disabilities and professional burnout;

- deficiency of clear recommendations for involving parents in the learning and mentoring process. Children with special educational needs require increased attention from both a teacher and parents. Only the cooperation of all stakeholders will minimize the possible negative consequences of the education of children with special needs in secondary schools and ensure the effectiveness of this process;

- unpreparedness of high institutions to train specialists to work in the conditions of inclusion. This unpreparedness is partly due to the deficiency of practical experience in working with children with special educational needs, and partly to the novelty of this area of research. In this context, we agree with Kuzmenko (2019, p. 25) that the changes taking place in the structure of special and general education require from tutors of high institutions to increase their professional competence, taking into account the peculiarities of inclusive education. Merryfield (2000) argues that another important reason for this situation is the deficiency of awareness of the importance of inclusion among university educationists and their real impact on the professional activities of future specialists in an inclusive environment.

- the necessity to create an innovative system of training of future teachers for professional activities in the context of inclusion. Demchenko (2016) and Donets (2021) emphasized the priority of developing proper scientific-theoretical and practical bases of professional training of future specialists to work in an inclusive environment;

- insufficient study of foreign experience in the implementation of various types and forms of professional development of teachers working with children with special needs, and its adaptation in the educational space of Ukraine (Zakharchuk, 2009; Yukhymets & Savchuk, 2012).

In any case, the solution of the proposed problems should begin at the stage of preparation of specialists for work in an inclusive environment. Stayton and McCollun (2002) considered the existing models of training of future teachers, their advantages and shortcomings:

A. the Infusion Model. According to this model, in the process of obtaining a specialty, students choose several disciplines that relate to the organization of learning in an inclusive auditory.

B. the Collaborative Training Model, according to which separate sections and courses related to inclusive education are integrated into the educational programs of specialists in the areas of “Pedagogy” and “Special Pedagogy”.

C. the Unification Model, which is entire focused on conducting of professional activities in an inclusive environment.

According to Plichta’s (2012) scientific viewpoint the main task of professional training of future teachers to work in an inclusive environment is the formation of methodological and practical-moral competencies. Moreover, the content and ways of forming methodological or instrumental competencies of inclusive teachers are widely opened, but the development of practical and moral requires fundamental development, because a teacher must understand the atypical behavior and features of interaction of children with special educational needs.

Kyrsta (2015, p. 55) investigating the peculiarities of primary school teachers training for work in an inclusive environment emphasizes that a teacher have to master by learning technologies, to be able to solve the problem of socialization of children with special educational needs, to know the specifics of educational programs that are principal for construction of individual educational path of such children. Babakova (2014, p. 625), Angel-Alvaradoet and Álamos (2018), Gagné (2009), Utts and Heckard

(2015) also confirm the need to form psychological and moral readiness to work with special children.

Psychological readiness of specialists to work in an inclusive environment requires a tolerant attitude towards children with special educational needs, their positive perception regardless of psychophysical development, awareness and acceptance of their own emotions, the ability to cope with them, the ability to work with parents of such children. Aharkova (2019) investigating the preparation of future educators and primary school teachers to work with children with special educational needs, argues that nowadays there are all opportunities to include different categories of pupils in the general educational process, and the teacher's task is to find the most favorable option for each special child to establish their interaction with peers.

For further research, we accept the concept “individual educational path” in the interpretation of Yarmola (2018) as an individual way of realizing the personal potential of a pupil (student), which is formed taking into account his/her abilities, interests, needs, motivation, capabilities and experience.

The building of an individual educational path taking into account the characteristics of a particular child requires from teacher to understand the pedagogical, psychological and social aspects of interaction with him/her, as well as the use of special teaching methods that will be effective in this case. For each pupil with special educational needs, the creation of an individual educational path will involve the selection of a certain amount of educational information, a set of concepts and actions to master a topic or discipline. Technologies and methods of teaching, ways of organizing the educational process are also varying.

Therefore, according to abovementioned we believe that providing effective training for the implementation of individual educational path of children with special educational needs and resolving contradictions is possible by taking into account the neuro-pedagogical aspects of this process (Demchenko, et al., 2021; Prots et al., 2021; Kosholap, et al., 2021).

We agree with the opinion of Vozniuk (2019a) that in the modern development of society to ensure effective training of specialists requires to use modern achievements of pedagogy and psychology, the combination of which has made within a new science – neuro-pedagogy. From the point of view of neuro-pedagogy to improve educational programs to prepare specialists for work and in an inclusive environment, it is necessary to take into account knowledge of cognitive neurology, differential psychophysiology, neuropsychology, data on brain organization of mastering various types of educational material, etc. (Khok, 2010, p. 104).

First of all, this approach requires the inclusion in educational programs of a set of special psychological and pedagogical disciplines that will allow for future specialists to develop skills and personal qualities to choose the optimal strategy of behavior in an inclusive environment, introduce and use effective pedagogical technologies for teaching children with special educational needs, to project their individual educational path.

The formation of a single gnostic-perceptual complex of the future specialist influences onto the level of development of representative systems, social perception and determines the formation of a person's empathic ability, the ability to understand the motives of another person, the ability to stand on his/her point of view. The above mentioned aspects are very important for specialist who will work in an inclusive environment (Vozniuk, 2019b, p. 6).

Identical position was proposed by Nilholm (2005), who argued that introduction of inclusive education contributes to the emergence of conflicts between the requirements and needs of some pupils and the teacher's task is to find a compromise using pedagogical methods and appropriate resources. Any activity of a teacher in an inclusive environment is reduced not only to the transfer of knowledge to pupils, but also to the formation of certain social consequences. These two tasks often conflict with each other (Norwich & Lewis, 2005).

3. The conditions the specialists training to implement the individual educational path of children with special educational needs

Scientific researches of improvement of inclusive education have led to the emergence of various models of the future teachers training to work with children with special educational needs.

Inclusive education is based on the combination of general and correctional education. Parents of a child with psychophysical disabilities in accordance with the law can choose an educational institution, and therefore teachers who work in institutions with inclusive education need to develop skills to work in an inclusive environment. There is no doubt that such skills should be developed more earlier at the stage of professional training. In order to perform professional duties, taking into account the peculiarities of inclusive education of pedagogical staff, it is necessary to master the basics of special pedagogy and psychology, to understand the peculiarities of education and upbringing of children with psychophysiological development. In addition, the ability to select and combine methods of pedagogical influence for the successful implementation of the educational and correctional process is important.

According to the analysis of the theory and practice of the specialists training to work in an inclusive environment, as well as practical experience in training such specialists, we outline the conditions for its improvement to ensure the formation of teachers' ability to implement individual educational path among children with special educational needs:

a) The improving of the educational programs training of future specialists to work in an inclusive environment.

The conducted analysis of the content of professional training of high institutions showed that in the educational program of the bachelor's degree in the field of "Special Education" the study of courses is provided as "Correctional Psychology", "Correctional Pedagogy", "Fundamentals of Inclusive Education", "Organization and methods of teaching among persons with psychophysical defects". In general, the share of such disciplines is 18-30%, depending on high institution and specialization. Students who study according to specialty "Inclusive Education" learn such disciplines as "Fundamentals of Inclusive Education", "Fundamentals of Pedagogical Skills of Primary School Teachers", "Inclusive Pedagogy", etc. In general, the share of disciplines that have some potential for the formation of skills in an inclusive environment is 8-22%, depending on high institution.

The education of these disciplines in general has a positive effect on the training of specialists to work in an inclusive environment, however, as their own experience shows, at the technological level, future teachers are not sufficiently qualified for such work. First of all, there is a deficiency of ability to include effectively children with different nosologies in the educational process; there is no experience of professional cooperation with various specialists of other branches in an inclusive educational environment, etc.

The mentioned tendency is typical only for the specialization "Inclusive Education", and for others - 1-2 disciplines are in educational programs with purpose to introduce for students with features of work in the inclusive environment. However, this does not exclude the possibility that a teacher who does not have the appropriate specialization will not work with children with special educational needs in the future. Moreover, the specialization "Inclusive Education" exists only for educational programs for preschool and primary school teachers. Future teachers who will work with middle or high school children are deprived of the opportunity to get knowledge and skills to work in an inclusive environment at the stage of professional training.

On-the-job-internship programs have certain opportunities to prepare future specialists to work in an inclusive environment. In particular,

students should analyze certain pedagogical situations, to develop ways to solve ones, taking into account the characteristics of a child with special educational needs, etc. However, the analysis of the reporting documentation on pedagogical internship gives reason to claim that most future teachers are involved in working with a classroom without children with special educational needs, which ultimately does not contribute to the formation of the ability to implement their individual educational path.

In searching ways to solve this problem, Alekseenko and Krolenko (2009) proposed to include additional topics in certain courses of academic disciplines. For example, the discipline “Social and Legal Security” should be supplemented with a module about the legal principles of inclusive education. According to Malyshevska (2016, p. 268), this will contribute to the formation of the perception of inclusive education and understanding of the need to implement the principle of equal access to quality education for people with special educational needs.

Reconsideration of educational programs of future specialists should ensure the development of professional readiness to work in an inclusive environment. This is the first step in training specialists to implement the individual educational path of children with special educational needs. In the content of professional readiness Kyrsta (2015, p. 56) highlights the information readiness (knowledge of the basics of psychology and special pedagogy, individual differences of a child with special educational needs) and the technological readiness (the possession of appropriate pedagogical technologies, ability to interact with all participants in the educational process) to involve children with different types of disorders in activities, etc. The improving of educational programs to prepare future specialist to work in an inclusive environment will create the information readiness, which will have a positive impact on the final educational result.

b) The renovation of the training methods of future teachers taking into account neuropedagogical aspects. The renovation of methods aims to improve the technological and methodological component of training of specialists to work in an inclusive environment. For example, we use the methods in the process of training of specialists to implement the individual educational path of children with special educational needs. These methods have proven their effectiveness. Among them are:

- microlearning. The effectiveness of this method is based on the properties of the human brain to absorb and keep information in small portions. In his study, Jenkins (2015) has found that microlearning improves pupils' memory by at least 20%. Accordingly, the division of academic topics

into small modules is the optimal solution to increase the effectiveness of learning. It is interesting to combine the principles of microlearning and modern information technology, one example of which is given in the publication by Eades (2014). We should stress that microlearning has certain age characteristics: for younger pupils is one of the ways to master certain information, and for students – is an effective tool for deepening knowledge or acquiring the desired skills;

- using of different modes of concentration. Oakley (2015) argued the greatest effectiveness of cognitive processes is achieved by alternating modes of concentration. It is expedient to use the focused mode of thinking for acquaintance with terminological apparatus of some topic or discipline. In order to deep his/her knowledge it is advisable to use defocused attention, for example, through debates, conversations, master classes realization, etc.;

- work in little groups. It is advisable to practice the quick reaction skills in conflict or critical situations, which is important for teachers working in an inclusive environment, in the process of working in little groups. In addition, it allows to beef up knowledge and skills on a particular topic, because explaining the material to the group members allows to a student actively applies the studied material, which has a positive effect on the formation of professional competence;

- cooperation with a mentor. This type of work is a priority during the on-the-job-internship, when students get into a real professional environment. The mentor, observing the work of the future specialist, will note the existing mistakes, possible ways out of stressful situations, features of behavior in different conditions. However, the on-the-job-internship should be preceded by situational modeling techniques, where the work of a mentor will also be useful;

- ensuring motivation to carry out a certain type of work. According to a number of scientists who have studied the cognitive processes of personality, in particular Zaniuk (2002), any effective activity begins thanks to motivation. To achieve this goal it is necessary to provide motivation. In our case – we must stimulate students to improve their professional skills by learning the features of inclusive education, etc.;

- learning on mistakes. In the educational process, it is believed that error is a negative phenomenon and students are taught to avoid mistakes in any way. However, we agree with Dehaene (2007) that error is the trigger of attention that determines such cognitive processes of personality as cognition and analysis. Error occurs when there is a contradiction between the information received and available in the human mind, therefore it

causes a desire to find the causes of this contradiction and, accordingly, stimulates person's cognitive processes.

In the future work a student will use received skills with the specified methods, including at the stage of construction of an individual educational path. The characterized methods are aimed at maximizing the use of individual characteristics of each child to provide a certain educational and personal result.

c) The ensuring of the possibility of professional self-improvement of specialists working in an inclusive environment during their professional activities.

Present day educational system is quite dynamic. Corrections by social development require an appropriate response from a teaching staff. The need of professional self-improvement is associated with the constant strengthening of requirements for teaching in general, and to ensure inclusive education in particular. In order to solve this problem we have to create a concept of continuing education for those teachers who work in an inclusive environment. Because, the process of training teachers to work with children with special educational needs requires specialists who are able to create and implement special educational programs and methods of teaching adapted to the conditions of inclusive education. Currently, these processes occur spontaneously and intuitively, which complicates the decision of existing moral and psychological, organizational, regulatory and legal problems that occur in an inclusive educational environment.

The first results of the introduction of inclusive education revealed problems of no readiness of teachers to work with children with special educational needs, which were shown in the presence of psychological barriers, professional stereotypes, unwillingness to work in an inclusive environment. Another one feature was the lack of theoretical knowledge, guidelines, effective methods of working with children with special educational needs in secondary schools and the opportunity to obtain such knowledge and skills in the system of advanced training.

We accept the statement by Katkova et al. (2019, p. 209) in the need to realize the expectations of teachers in improving professional competence in conducting activities in an inclusive environment. The successful development of inclusive education largely depends on this.

We think that providing opportunities for professional self-improvement of specialists working in an inclusive environment should be provided not only in the form of advanced training, which is observed at this stage. First of all, the organization of methodical work, counseling of

teachers by relevant specialists, psychological support, etc. should be provided. Educators need to be able to make connections between new knowledge about working in an inclusive environment and the results they will get after practice. Such connections are established through discussion, analysis, self-analysis, modeling in collaboration with colleagues.

4. Conclusion

Consequently, we have to say without doubt that the introduction of inclusive education involves qualitative changes in the content of professional training who will work with children with special educational needs, as the formation of inclusive education is a global tendency pointed at realizing the rights of every child regardless of psychophysiological development to receive quality education.

Based on the theoretical analysis of scientific works the peculiarities of training in high institutions of future specialists who will work in the conditions of inclusion, as well as the existing shortcomings of this process were determined. The preparation of teachers for the implementation of the individual educational path of children with special educational needs should include the improvement of educational programs, updating methods taking into account neuropedagogical aspects, as well as providing opportunities for self-improvement of pedagogical competence during professional activities. This approach presupposes the development of measures that at the stage of professional training will promote the formation of skills of future teachers to individualize learning, organize cooperation with parents and direct support professionals, ensure social adaptation of children with special educational needs.

Therefore, on our viewpoint new prospects for further study of the stated problem must be in the creation of the training specialists model in specialty 013 “Primary Education” for the realization of individual educational path of children with special educational needs, definition of conditions for its implementation and organization of pedagogical experiment to test its effectiveness.

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