

MODELING THE DEVELOPMENT PROCESS OF INCLUSIVE EDUCATION IN UKRAINE

Mariana M. Kovtoniuk¹, Olena P. Kosovets¹, Olena M. Soia¹, Olga Yu. Pinaieva²,
Vira G. Ovcharuk³, Kuralay Mukhsina⁴

¹Vinnitsya Mykhailo Kotsiubynskyi State Pedagogical University, Faculty of Mathematics, Physics and Computer Sciences, Vinnitsya, Ukraine, ²Vinnitsya Mykhailo Kotsiubynskyi State Pedagogical University, Educational and Scientific Institute of Pedagogy, Psychology, Training of Highly Qualified Specialists, Vinnitsya, Ukraine, ³Vinnitsya National Technical University, Physical Education Department, Vinnitsya, Ukraine, ⁴Institute of Information and Computing Technologies of the CS MES RK, Almaty, Kazakhstan

Abstract. The article presents the results of research on the implementation of the principles of inclusive education in Ukraine, substantiates its relevance in the development of a democratic society and European integration policy. The principles of the state policy in the field of inclusive education, its normative-legal support and international practice of providing educational services to citizens with special needs are described. Advanced experience of inclusion introduction in the educational process of preschool, general secondary, vocational and higher education institutions is analyzed. Official statistics on the total number of people with disabilities in Ukraine; availability of special secondary education institutions (boarding schools) and their contingent; the number of children with disabilities in preschool education institutions, students with disabilities in full-time secondary education institutions, persons with disabilities in vocational education institutions, persons with disabilities among students of higher education institutions etc., have been handled. The importance and expediency of the scientific development of the principles of inclusive education, its practical implementation and study of socio-economic effect are substantiated. Graphic visualization of the correlation between the employed persons with disabilities and persons without disabilities, number of children, pupils, students with special educational needs in education establishments of Ukraine is presented.

Key words: inclusive education, inclusive environment

MODELOWANIE PROCESU ROZWOJU EDUKACJI WŁĄCZAJĄCEJ NA UKRAINIE

Streszczenie. W artykule przedstawiono wyniki badań nad procesem wdrażania zasad edukacji włączającej na Ukrainie, uzasadniono ich znaczenie w warunkach rozwoju społeczeństwa demokratycznego i europejskiej polityki integracyjnej państwa. Opisano zasady krajowej polityki państwa w zakresie edukacji włączającej, jej wsparcie regulacyjne i prawne oraz międzynarodową praktykę świadczenia usług edukacyjnych obywatelom ze specjalnymi potrzebami. Przeanalizowano najlepsze doświadczenia z wdrażania integracji w procesie edukacyjnym placówek przedszkolnych, ogólnokształcących, zawodowych i wyższych. Opracowano oficjalne dane statystyczne dla Ukrainy dotyczące całkowitej liczby osób niepełnosprawnych; dostępność specjalnych szkół średnich (internatów) i ich zespołów; liczby dzieci niepełnosprawnych w placówkach wychowania przedszkolnego, uczniów niepełnosprawnych w dziennych placówkach ogólnokształcących, osób niepełnosprawnych w placówkach kształcenia zawodowego (zawodowego i technicznego), osób niepełnosprawnych wśród studentów szkół wyższych itp. Uzasadniono wagę i celowość naukowego opracowania zasad edukacji włączającej, jej praktyczne zastosowanie oraz badanie efektu społeczno-ekonomicznego. Zaprezentowano graficzną wizualizację stosunku zatrudnionych osób z niepełnosprawnościami do osób sprawnych, liczby dzieci, uczniów i studentów ze specjalnymi potrzebami edukacyjnymi w instytucjach edukacyjnych Ukrainy.

Słowa kluczowe: edukacja włączająca, środowisko włączające

Introduction

At the present stage of development of a democratic society in Ukraine and in the conditions of the realization of social and legal processes of European integration policy, conducted by the state, the problem of ensuring social protection of citizens in general and people with special educational needs in particular is of great importance. The urgency of the introduction and formation of the sphere of inclusive education is due to the fact that the number of people with special needs who require quality educational services and provision the conditions for adapting the educational space to their individual characteristics is constantly growing. A prudent policy strategy of many countries in the field of inclusion is a scientifically sound and proven statement that "it is economically feasible to invest in human capital wherever possible, instead of direct investment in social services" [10].

The issue of inclusive education in Ukraine in the context of the development of a democratic society and European integration policy is of great importance both for the Ukrainian state and for the European community as a whole. Therefore, research on this topic should be considered important from both a theoretical and a practical point of view. We used the priorities of the concept of sustainable world development as a basis for further research in the field of inclusive education.

The analysis of scientific and pedagogical research shows the relevance of improving inclusive education in Ukraine. Researcher O. Batsman [3] described the peculiarities of training future social workers to work with students with functional health limitations in institutions of higher education (2021), I. Kalinowska [8] considered the methodological foundations of training future practical psychologists to work in conditions of inclusive education students of general secondary education institutions (2020), O. Kasyanenko [9] investigated the readiness

of future educators to work with preschool children in conditions of inclusion (2018), and O. Kosovets [11] developed a methodology for teaching informatics to students of vocational education institutions in conditions of inclusion (2015).

The purpose of the article is to investigate and model the process of development of inclusive education in Ukraine in the context of the development of a democratic society and European integration policy.

1. Formulation of the problem

International human rights standards are based on the idea of the participation of every individual in public life on the basis of equality and without discrimination. The spread of the process of inclusive education of children with physical and (or) mental health problems in Ukraine is not only a reflection of time, but also represents another step towards ensuring the full realization of the rights of children with special educational needs to quality education [31].

The legal field of providing educational services in the sphere of inclusive education is regulated by the current legislation [4, 5, 15, 17, 18 etc.] and international documents [21–23 etc.]. The Constitution of Ukraine (Article 43) states: "Everyone has the right to work, which includes the opportunity to earn a living by work which he freely chooses or agrees to freely" [5]. Additional guarantees for employment of persons with disabilities are provided by the Law of Ukraine as amended on February 13, 2020 under No 5067-VI "On Employment" [17].

Analyzing the experience of inclusion in the educational process, we note that of particular interest are the works of scientists D. Deppler, T. Lorman, F. Armstrong, B. Barber, G. Becker, P. Bourdieu, J. Davis, K. Jenks, X. Kerbo, M. Crozier, F. Crosby, who made a significant contribution to the

development of theoretical and methodological foundations of inclusive education. M. Andreeva, Y. Boginskaya, V. Tserklevych, T. Grebenyuk, T. Komar, V. Skrypnyk, M. Tomchuk studied the problems of social and psychological adaptation of students with health problems to the study at universities. S. Bogdanov, G. Gavryushenko, N. Naida, N. Sofiy, I. Yarmoschuk, etc., dedicate their works to the study of the problem of involving people with special needs the study in education establishments, their rehabilitation and socialization to social norms [1, 10, 12–14, 16, 27, 28, 31 etc.]

The problem of inclusive education is closely connected with the new paradigm of education, which is based on the transition to new educational technologies. Thus, Canadian and American Researchers M. Forest, M. Giangreco, E. Lusthaus, J. Pearpoint, J. Putnam and others proposed to use the following innovative technologies: MAPS (Making Action Plans, from the English – “systematic production of action plans”); PATH (Planning Alternative Tomorrows with Hope); COACH (Choosing Options Accommodations for Children) [1].

As of the beginning of the 2020/2021 academic year, the number of special schools was 319 units with a contingent of 36,461 students (out of the total number of special schools with boarding department – 264 units (29,634 students)). Number of children with disabilities in preschool institutions – 8544 people. The number of students with disabilities in full-time secondary schools (at the beginning of the school year) is 74,354. Number of persons with disabilities in vocational education institutions (at the end of the year) – 4648 people. The number of people with disabilities among students of higher education institutions (at the beginning of the 2019/2020 academic year) is 12,959 applicants, for the 2020/2021 academic year there is no information [26].

However, according to experts, the number of children with physical and (or) mental disabilities is much higher [31]. And there is no complete statistical state registration of children with mental and physical disabilities in Ukraine today. The lack of a single transparent and reliable system of registration of children with disabilities and children with disabilities hinders adequate assessment of the real scale of the problem and the development of a clear strategy for the implementation of inclusive education in Ukraine [12].

2. Theoretical research

Over the last ten years, Ukraine has been developing the legal framework for the introduction and development of inclusive education for children with special educational needs. In this aspect, it is worth noting the following changes in the regulatory framework that allow for the effective development of inclusive education at different levels of public administration:

- adoption of a social approach to understanding disability and special educational needs as a basis for overcoming various barriers in the field of education, including through the implementation of inclusive education;
- enshrining in the field of education international principles in terms of ensuring the rights of persons with special educational needs and persons with disabilities, among which are the principles of non-discrimination, equality of opportunity, accessibility, respect for the development of abilities and individuality;
- definition of guarantees of the right of children with special educational needs and children with disabilities to access quality education, including inclusive education in general secondary education institutions at the place of residence, legal regulation of the rights and freedoms of this category of children in education; to create special conditions for such education;

- definition of competence and division of responsibilities of state bodies that carry out administration in the field of education to create a set of special conditions for children with special educational needs and children with disabilities, including their education in inclusive education etc. [14].

At the same time, pronounced deviations from the norm of development – the basis for the provision of special services to the child during his schooling, which until recently was not within the competence of general secondary education [16]. However, with regard to persons with disabilities in Ukraine, the principles of accessibility for every citizen of all forms and types of educational services provided by the state are also violated; equality of conditions of each person for full realization of his abilities, talent, comprehensive development, humanism, democracy etc. [31].

Currently, higher education institutions are actively involved in creating the necessary conditions for education and living of people with special needs, as their integration into the general education space of Ukraine is one of the areas of humanization of the entire education system. In particular, the professional activity of the teaching staff of Vinnytsia Mykhailo Kotsyubynsky State Pedagogical University is aimed at the development and formation of personality, ensuring socio-psychological and labor adaptation of people with special educational needs, education of universal values, civic position. In the conditions of an inclusive institution of higher education, “the activities carried out at the university are focused on solving the following tasks: appropriate conditions have been created for teaching and education in accordance with the current legal framework; an advisory group on inclusive education of persons with special educational needs was organized; created conditions and involved specialists for psychological and pedagogical diagnostics and forms of support aimed at developing individual curricula; the office of psychological unloading is equipped with the needed facilities; compliance with hygienic standards aimed at protecting and promoting health, harmonious development and improvement of the functional capabilities of the body of persons with disabilities is provided; the office of inclusive training in which the thematic literature, the corresponding educational and methodical materials is stored is organized; university monitoring is carried out to determine the level of knowledge and skills of people with special educational needs” [22].

The curricula for training specialists of Vinnytsia Mykhailo Kotsyubynsky State Pedagogical University include relevant disciplines, in particular: “Psychology of people with special needs”, “Psychological support in an inclusive environment”, “Assistance in an inclusive environment”, “Special pedagogy with history”, “Fundamentals of inclusive education”, “Pedagogical technologies of inclusive education”, “Differentiated teaching and standardized assessment in an inclusive classroom”, “Speech therapy”, “Logopsychology”, “Theory and methods of raising children with speech disorders”, “Methods of inclusive education in computer science” etc. [22].

Building an effective system of inclusive education in Ukraine is possible on the basis of the interaction of various factors, primarily strengthening funding for education, improving its regulatory support, improving the methodological and staffing of inclusive education. O. Zayavnyuk [31] identified the most significant in his opinion organizational and economic levers of micro-, meso- and macro-levels that can enhance the development of inclusive education in Ukraine (table 1).

Thus, it is extremely important to develop and improve inclusive education in educational institutions. The creation of an appropriate educational infrastructure, the provision of decent living conditions and the development of progressive training programs for people with special needs is an indicator of the development of a social and legal society.

Table 1. Organizational and economic levers of influence on the intensification of inclusive education in Ukraine

Macro level	
Organizational levers	Economic levers
1. Introduction of the Amendments to the laws of Ukraine „On Education”, „On Preschool Education”, „On General Secondary Education”, „On Extracurricular Education”. 2. Development of a training system for working with children with special educational needs. 3. Cultivating a positive opinion in society about inclusive education by involving the media in this matter. 4. Development of barrier-free social infrastructure. 5. Inclusion of a course on the practice of implementing inclusive education in Ukraine in the teacher training program. 6. Reduction of the number of children in classes where children with special educational needs study.	1. Increase funding for the development of the material base of educational institutions in order to turn them into an accessible learning environment. 2. The use of economic incentives to encourage teachers to develop special literature, methodological support for working with children with special educational needs; make them available to the general public.
Meso level	
Organizational levers	Economic levers
1. Usage of socio-psychological incentives for teachers and heads of educational institutions that successfully conduct inclusive education. 2. Conducting psychological training for teachers to reduce fears and rejection of changes in educational institutions that will be associated with the introduction of inclusion.	Use of financial and economic incentives to encourage educational institutions to implement inclusive education.
Micro level	
Organizational levers	Economic levers
1. Application of the latest learning technologies for children with special educational needs. 2. Inform the staff of the educational institution about the successes of its employees in the process of implementing inclusive education.	Using the possibilities of collective labour contract regulation of social and labor relations in order to create material incentives for teachers who work with children with special needs.

The use of a competency-based approach in inclusive education implies an adequate assessment of the level of formation of the relevant competencies. According to M. Malyar and A. Shtymak, the diagnosis of the formation of professional competence is the most problematic and requires the development of assessment methods that allow assessing the real level of students' competence [15].

In the context of incompleteness and inaccuracy of information in the process of inclusive education, obtaining unambiguous results is problematic and contradictory, therefore, methods using fuzzy logic, which are based on expert assessments and allow obtaining results as close to reality as possible, are promising.

Accordingly, the procedure for such assessment of the levels of professional competencies formed by students consists of three main stages:

- fuzzification: transformation of crisp input variables into fuzzy ones. As initial data, the results of individual assessment by the teacher using the 100-point ECTS scale are used, which takes into account the results of creative and research work over a certain period (semester). We turn the input data into fuzzy values. At the same time, the level of professional competence Q will be given by a set of four linguistic terms: K_1 – „low level”, K_2 – „satisfactory level”, K_3 – „sufficient level”, K_4 – „high level” (in accordance with the levels of educational achievements of students of institutions of higher education). That is, $Q = \{K_i, i = 1..4\}$ and, moreover, each of the designated terms is a fuzzy set. To translate the input data, we use the membership function defined in the study [15]:

$$\mu_{K_i}(x) = \begin{cases} 0, & x \leq NG \\ \frac{x - (NG - 1)}{RG}, & RG \leq x < VG \\ 1, & x \geq VG \end{cases}$$

where NG is the lower limit of the gradation, VG is the upper limit of the gradation, RG is the range of the gradation.

That is, given the above, we will have:

- a) the linguistic term K_1 is “low level”, the corresponding values are in the range $[0...59]$ and the membership function

$$\mu_{K_1}(x) = \begin{cases} 0, & x \leq 0 \\ \frac{x}{60}, & 0 \leq x < 60 \\ 1, & x \geq 60 \end{cases}$$

- b) the linguistic term K_2 – „satisfactory level”, the corresponding values are in the range $[60 ... 74]$ and the membership function

$$\mu_{K_2}(x) = \begin{cases} 0, & x \leq 60 \\ \frac{x - 59}{15}, & 60 \leq x < 75 \\ 1, & x \geq 75 \end{cases}$$

- c) the linguistic term K_3 is “sufficient level”, the corresponding values are in the range $[75...89]$ and the membership function

$$\mu_{K_3}(x) = \begin{cases} 0, & x \leq 75 \\ \frac{x - 74}{15}, & 75 \leq x < 90 \\ 1, & x \geq 90 \end{cases}$$

- d) the linguistic term K_4 – “high level”, the corresponding values are in the range $[90...100]$ and the membership function

$$\mu_{K_4}(x) = \begin{cases} 0, & x \leq 90 \\ \frac{x - 89}{11}, & 90 \leq x < 100 \\ 1, & x = 100 \end{cases}$$

According to the above formulas, we turn the obtained values of the levels of formation of theoretical, practical and personal-motivational criteria into fuzzy values;

- block of rules: establishment of rules, according to which the level of formation of professional competence is determined based on the use of the Tsukamoto fuzzy algorithm;
- defuzzification: transformation of a fuzzy initial value into a clear value of the level of the initial value, which is determined as a weighted average.

3. Results of investigations

Today, there are 2,724.1 thousand people with disabilities in Ukraine, it means that a significant percentage of the country's population - every eighteenth - has a disability, and the number of such people is growing, especially in connection with the military conflict. As of December 31, 2020, 41,397 people with disabilities worked at 90,331 enterprises, which is a lower figure compared with 2017 – 666.8 thousand people. Whereas in 2015 the number of working people with disabilities was 742.6 thousand people. At the same time, International Labor Organization standards require that at least half of the total number of persons with disabilities living in the country be employed.

In the graph of the Fig. 1 percent of employed people with disabilities in Ukraine is shown in light color. This chart shows that in Ukraine the largest percentage of employed persons with disabilities (about 20–24%) is in the age group of 30–34 years (i. e. in the most able-bodied age). But even in this case, their share is much smaller than employed people without disabilities (3.5 times). The largest gap (5 times) occurs before the age of 40, and the smallest – at retirement age (2 times).

Analyzing the sphere of employment of certain categories of citizens, we find that in modern society there are problems with insufficient quotas for places for people with special needs; in the underdeveloped area of remote work for people with a high degree of disability; in the reluctance of government and commercial organizations to hire „special” people [1].

The development and implementation of inclusive education in educational institutions of Ukraine will partially help to solve the existing problem of employment of persons with disabilities.

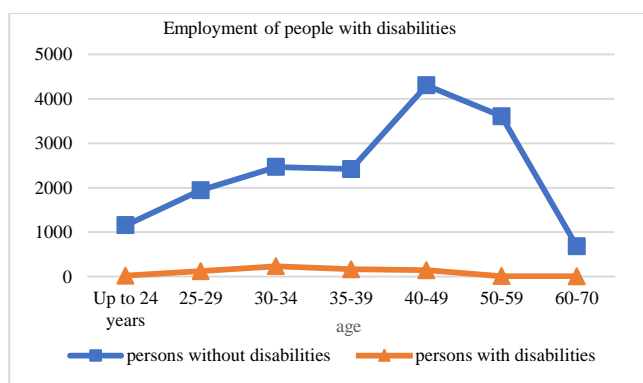


Fig. 1. Ratio of employed persons with disabilities and persons without disabilities

The head of the institution informs the body in the sphere of management of which the educational institution is located about the need to open an inclusive classroom and create an inclusive educational environment. Before the start of the new school year, the headmaster issues an order to enroll the child in school and forms an inclusive classroom [24].

The resolution „On the organization of inclusive education in general secondary education” clearly states that the head of the institution on the basis of the application of parents with the support of the relevant education body creates an inclusive educational environment taking into account the requirements of universal design for education of people with special educational needs. bring the territory of the institution, buildings and premises in accordance with the requirements of state building codes for accessibility; to provide the necessary educational and methodical and visual-didactic manuals and teaching aids in accordance with the needs of students; to equip resource rooms; to provide the educational process with the necessary employees in accordance with the needs of students with special educational needs [18].

A separate state fund provides a subvention to local budgets for the organization of an inclusive environment at school. About 20 thousand hryvnias are allocated for a calendar year. The list of expenses for which the specified subvention can be directed, is defined in item 4 of provision No 88, namely:

- conducting (providing) additional correctional and developmental classes (services), which are determined by the individual development program for students of inclusive classes and the working curriculum (individual student curriculum) for students of special classes;
- acquisition of special means of correction of psychophysical development, which allow the child to master the curriculum (35% of the subvention amount can be allocated for the purchase of equipment) [19].
- According to the Resolution the Cabinet of Ministers.

Resolution No 635 “On approval of the Order of inclusive education organization in higher education establishments” the organization of the educational process of students with special educational needs in higher education institutions provides for:

- creating an inclusive educational environment;
- application of the principles of universal design in the educational process;
- bringing the territory of the institution of higher education, buildings, structures and premises in accordance with the requirements of state construction norms, standards and rules. If the existing buildings, structures and premises of higher education institutions cannot be fully adapted to the needs of persons with disabilities, their reasonable adaptation is carried out taking into account the universal design;
- providing students with special educational needs of higher educational institutions of state and communal ownership with the necessary special means of correction of psychophysical

development in accordance with the standard list approved by the Ministry of Education and Science of Ukraine;

- providing the necessary educational and methodical materials and information and communication technologies for the organization of the educational process;
- providing, if necessary, a reasonable adaptation;
- application in the educational process of the most acceptable for students with special educational needs methods and ways of communication, including Ukrainian sign language, relief-dot font (Braille) with the involvement of relevant specialists and teachers;
- ensuring the availability of information in various formats (Braille, enlarged font, electronic format, etc.) [20].

Given that the opportunities for access to higher education for people with special educational needs and normative citizens differ, the legislation of Ukraine provides for such entrants a number of benefits for admission to a higher education institution, namely:

- enrollment of persons with special educational needs who have I or II group of disability, children with disabilities under 18 years of age, who are not contraindicated to study in the chosen field (specialty) out of competition when submitting certificates of the Ukrainian Center for Educational Quality Assessment. tests not below the established level);
- persons with special educational needs who, according to the decision of the regulatory commission at the regional center for quality assessment of education, was denied registration for participation in external independent assessment due to the impossibility of creating special (special) conditions;
- in accordance with the conditions of admission on the recommendation of health and social protection bodies, the admissions committee should consider enrollment in excess of the state order based on the results of the interview with the right to study at the place of residence of applicants with special educational needs who are unable to attend. and is also obliged to create conditions for their training in external or distance forms;
- the right to transfer to vacant budget places have persons with disabilities of groups I, II and children with disabilities under the age of 18, who are not contraindicated to study in the chosen specialty [21].

The main problems of access to higher education for people with special educational needs or disabilities (primarily inclusive education), their integration into the educational and social environment, which also have different scales and nature, are:

- insufficient development of the legal framework for the education of persons with disabilities;
- insufficient level of quality of general secondary education of disabled people, which creates obstacles for their admission to higher education institutions;
- lack of conditions for combining professional training of students with special educational needs and their medical rehabilitation;
- lack of barrier-free architectural environment for the training of people with disabilities in colleges;
- low level of provision of students with disabilities with adaptive technical means of education (various surdo-, blind aids and other adaptive equipment);
- insufficient level of provision of students with special educational needs with educational and methodical literature adapted to their psychophysiological needs;
- low level of public awareness of understanding the problems and needs of people with disabilities;
- inactive consolidation of efforts of persons with disabilities (due to both subjective and objective circumstances) in terms of defending their rights, including the right to education [13].

Therefore, in order to ensure the inclusive education of students with special educational needs, it is necessary to form an external environment that affects the organization of an inclusive educational environment, and to adapt the internal educational and methodological environment of higher education institution (Fig. 2).

Main factors of social exclusion of persons with disabilities from the field of education are the insufficient number of educational places, limited by the quota for admission of such persons to higher education institutions; imperfection of legislation in the field of education, which leads to the lack of mechanisms for the development and financing of inclusive education; insufficient material and technical and staffing of educational institutions (lack of special auxiliary educational equipment, specially developed teaching methods, lack of material incentives for teachers and lecturers – developers of appropriate educational and methodological support; lack of special training for teachers to work with students and students with disabilities); unsuitability of educational buildings for unimpeded access to them by pupils and students with various diseases and pathologies. Thus, 27.4% of higher education institutions and only 8.4% of vocational education institutions are equipped with ramps for unimpeded access to the premises of students with disabilities [31].

Table 2 shows the number of children, pupils and students with special educational needs who study in inclusive classes of educational institutions of Ukraine. According to statistics, the number of children with special educational needs in preschools has been growing steadily over the past five years. This initial link is important for the further development and education of students with special educational needs in general secondary education.

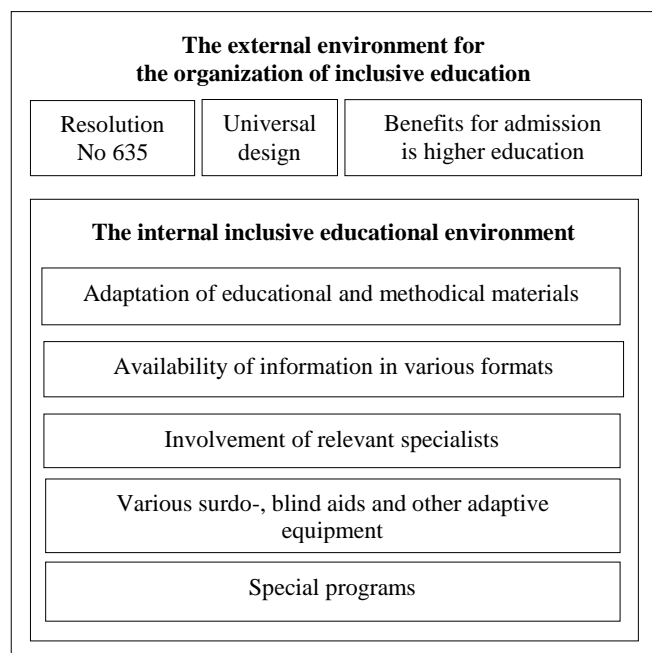


Fig. 2. Organizational principles of inclusive education in higher education institutions

Table 2. Number of children, pupils and students with special educational needs in educational institutions of Ukraine

Year	Number of children, pupils and students with special educational needs			
	in preschool education institutions	in general secondary education institutions	in vocational education institutions	education in higher education institutions
2015	8357	62075	5368	16090
2016	8892	65603	4988	14752
2017	9447	68714	4828	13216
2018	9014	73161	4617	12788
2019	9157	74452	4825	12959
2020	8544	74354	4648	...

The data on the number of children, pupils and students with special educational needs in educational institutions of Ukraine are prepared according to the Ministry of Education and Science of Ukraine and the State Information System of Education, provided by the State Scientific Institution „Institute of Educational Analytics” [26].

Fig. 3 shows a positive trend of increasing the number of students with special educational needs in general secondary education in Ukraine, which gives grounds to draw conclusions about the feasibility and necessity of further development of inclusive education.

At the same time, there is an obvious demand among people with disabilities for higher education. In Fig. 3 the number of students with special educational needs who study in higher education institutions is much higher than the number of students with special educational needs who study in vocational education institutions [2, 3, 23].

Modern education is characterized by the search for new pedagogical opportunities, which is primarily related to the idea of the integrity of the pedagogical process as a system. At the same time, all aspirations are based on the theory of universal human values, cultural growth and humanization of society. It has been experimentally proven that the implementation of the goals and objectives of high-quality training of specialists in the field of inclusive education stipulates the necessity of searching for innovative approaches to the formation of the readiness of future educators to work with the preschool children in the conditions of inclusion [9, 25], training of future practical psychologists to work in the conditions of inclusive education of the students of general educational institutions [8, 30], methods of teaching informatics of the students of vocational and technical educational institutions in conditions of inclusion [11], training of future social workers to work with students with functional health limitations in institutions of higher education [3] etc.

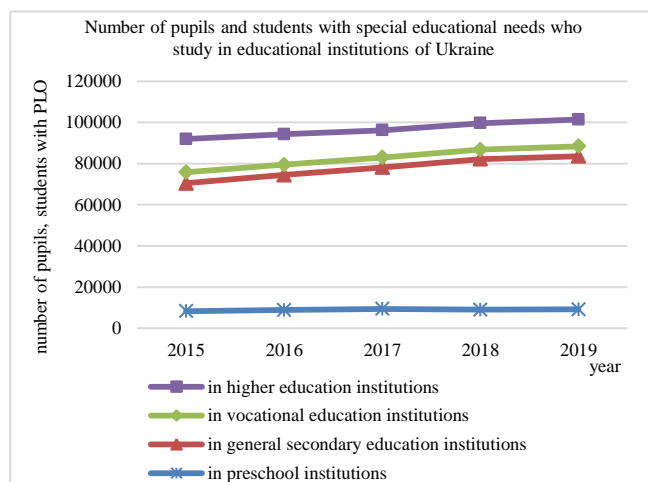


Fig. 3. Ratio of the number of children, pupils and students with special educational needs in educational institutions of Ukraine

The general picture of the results of the dissertation studies indicates the presence of the positive changes in the training of specialists in the field of inclusive education. We will check the validity of the proposed hypothesis using the method of mathematical statistics.

To check the heterogeneity of unrelated samples in the experimental and control groups in studies [3, 8, 9, 11], we will use the Student's t-test for unequal samples $n_1 \neq n_2$, the statistics of which has the form [23]:

$$t_{emp} = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2} \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

where \bar{X}_1 i \bar{X}_2 , s_1^2 i s_2^2 , n_1 i n_2 are the average, variances and volumes of the first and second samples, respectively.

According to the Student's t-test, the null hypothesis $H_0: \mu_1 - \mu_2 = 0$ (μ_1 does not differ from μ_2) is that the

difference between the average values of the two samples is (statistically) equal to zero, that is, there are no differences. The alternative hypothesis $H_1: \mu_1 - \mu_2 \neq 0$ (μ_1 differs from μ_2) indicates that the difference is different from zero, that is, the matter is the significance of the differences, which is assessed by the level of significance – the probability that the differences are considered significant.

The critical value of the criterion t_{cr} for a given level of significance α and the number of degrees of freedom $df = n_1 + n_2 - 2$ can be obtained from Student's distribution tables. If $t_{emp} > t_{cr}$, then the hypothesis of homogeneity H_0 (about the absence of divergence) is rejected and the alternative hypothesis H_1 is accepted. If $|t_{emp}| \leq |t_{cr}|$, then the difference of averages is invalid.

Table 3 shows empirical data for experimental and control groups are taken from primary sources [3, 8, 9, 11].

Therefore, according to the Student's t-test for the independent samples, we have $t_{emp} > t_{0.05}$ everywhere. That is why, the training of specialists who will provide educational services to persons with special educational needs at various levels of education is relevant and requires special attention and appropriate financial support from the state.

4. Conclusion

Inclusion has a significant impact on policy, research and practice and has many meanings, ranging from simply enrolling students with special educational needs in regular classes to transforming the philosophy, values and practical approaches of entire education systems [1].

Table 3. Empirical data for experimental and control groups

Testing of statistical hypotheses by Student's t-test for independent samples for the level of significance $\alpha = 0.05$; $t_{cr} = t_{0.05}$	
according to O. Kasyanenko's empirical data [9] – preschool education	
$t_{emp} \geq t_{0.05}$	10.39 > 1.99
according to the empirical data of I. Kalinovska [8] – higher education and general secondary education	
$t_{emp} \geq t_{0.05}$	7.05 > 1.97
according to empirical data of O. Kosovets [11] – vocational and technical education	
$t_{emp} \geq t_{0.05}$	3.7 > 2.2
according to empirical data of O. Batsman [3] – higher education	
$t_{emp} \geq t_{0.05}$	5.25 > 1.97

The concept of independent living should be a key priority in the realization of the right of persons with special educational needs to the quality and accessibility of higher education. Educators together with the Government should develop measures to increase the involvement of such students in higher education, include indicators of their education in the rating system of higher education institutions; to strengthen control over the implementation of requirements for the creation of an inclusive environment in vocational and higher education institutions, to develop a network of transport services for students who have vision problems, problems with the musculoskeletal system; to promote employment and analyze the career growth of graduates with special educational needs; prevent and eliminate elements of discrimination and bullying; to involve the media to create a positive image of higher education for people who need an individual approach [1].

Education of people with disabilities is one of the most important tasks for the country. This leads to the creation of a truly inclusive environment where everyone can feel the importance of their existence. Society has a duty to enable everyone, regardless of their needs, to reach their full potential, to benefit society and to become its full-fledged member.

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Prof. Mariana M. Kovtoniuk

e-mail: kovtonyukmm@vspu.edu.ua

Doctor of sciences (pedagogy), professor, Head of the Department of Mathematics and Computer Science Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University.

Research Interests: professional pedagogy, formation of information and communication competence, professional education in the field of digital technologies.



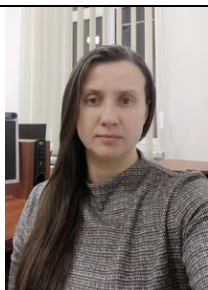
<http://orcid.org/0000-0002-7444-1234>

Ph.D. Olena P. Kosovets

e-mail: helen.kosovets@gmail.com

Candidate of sciences (pedagogy), senior lecturer of the Department of Mathematics and Computer Science Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University.

Research Interests: professional pedagogy, formation of information and communication competence, professional education in the field of digital technologies.



<http://orcid.org/0000-0001-8577-3042>

Ph.D. Olena M. Soia

e-mail: soia.om@vspu.edu.ua

Candidate of sciences (pedagogy), senior lecturer of the Department of Mathematics and Computer Science Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University.

Research Interests: professional pedagogy, formation of information and communication competence, professional education in the field of digital technologies.



<http://orcid.org/0000-0002-0937-299X>

Ph.D. Olga Yu. Pinaieva

e-mail: pinolga00@gmail.com

Candidate of science (pedagogy), associate professor of the Department of Pedagogy, Vocational Education and Management of Educational Institutions Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University.

Research Interests: professional pedagogy, formation of information and communication competence, professional education in the field of digital technologies.



<http://orcid.org/0000-0002-8829-1388>

M.Sc. Vira G. Ovcharuk

e-mail: ovcharukvira@vntu.edu.ua

Senior lector of Physical Education Department, Vinnytsia National Technical University.

Specialty „Pedagogy and methods of secondary education. Physical culture” and obtained the qualifications of a physical culture teacher, head of sports sections of school and extracurricular institutions.



<http://orcid.org/0000-0002-0648-7994>

Ph.D. Kuralay Mukhsina

e-mail: kuka_ai@mail.ru

Ph.D., senior researcher of the Institute of Information and Computing Technologies of the CS MES RK. Graduated from the Faculty of Physics and Mathematics of the Abai Almaty State University. Master of NARXOZ University. She defended her dissertation for the degree of Doctor of Philosophy in the specialty 6D07400 – Computer engineering and software on the topic „Development of a system for analyzing multilingual text information based on machine learning”.



<http://orcid.org/0000-0002-8627-1949>