Psychological Make-up of Inclusive Education and its Ties with the Development of Digital Technologies

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Abstract. This paper discusses psychological make-up of inclusive education, the importance of a barrier-free environment for physically challenged people. It looks at difficulties of obtaining university level education, problems of interpersonal communication and socialization, points out the leading role of digital technologies in the modern world and necessity of their introduction into the inclusive educational environment. Based on the results of MAI students survey we describe difficulties of communication with physically challenged peers, discuss different forms of psychological assistance inside the educational process. It turned out that contemporary youth is conscious of inclusive education problems. They are interested in removal of existing barriers and expanding social boundaries of communication including with people suffering from various health restraints. Young people also think that inadequate awareness of the problem leads to inaction and makes it impossible to give necessary psychological support to peers with special needs. The paper also discusses psychological and pedagogical support for people with special needs that can become the most accessible type of help in the future, and how introduction of digital technologies into inclusive education helps to solve main problems of their socialization and inclusion into society. We also touch an important question of the need for special correctional training of the academic teaching staff in the inclusive education development system inside an institute of higher education.

1 Introduction

Study of psychological make-up of inclusive education today is a pressing challenge for many experts including educators, psychologists, sociologists, doctors and many other researchers who are not indifferent to the fate of people with special needs.

Starting from UN resolution dated 13 December 2006 people with special needs can actively participate in the life of the society, increase their independence and self-reliance. This is also facilitated by development of digital information technologies and introduction of purpose-designed programs into the educational system.[1]
Today there is nothing surprising in that all teaching information can be delivered using special technical means which convert it into the format convenient to the persons with special needs. This activity continue to evolve, new textbooks, teaching units, technical equipment are constantly developed that assist the teaching process for the people with special needs. There are especially many new developments concerning the teaching process for people suffering from hearing and eyesight issues. [2,3]

The need for development of new digital materials is constantly growing. This is not surprising as according to statistics there are more than 2 mln children with special needs living in Russia and most of them suffer from neurological issues (86%). [4]

Thus, the Government of the Russian Federation in 2015 developed the Federal program for assisting children with special needs. This program should have solved most problems of their socialization by 2020. [5]

Besides the Federal program some regions of the Russian Federation developed dedicated programs of psychological and pedagogical assistance to children with special needs participating in inclusive education. [6]

Inclusion experts look at promoting rights of children with special needs as the most important task of the modern society. The need for successful socialization of children with special needs through their professional self-fulfillment is discussed at all levels of educational process (pre-school, school, and college). In order to solve this complicated task teachers improve their competence, study at special preparatory courses where they get the necessary knowledge for dealing with kids with special needs. [7]

There is no single attitude towards inclusive education in the contemporary democratic world. Not all experts believe that children with special needs can be socialized, and even more so, achieve self-fulfillment.

In our view the most important and urgent thing is the study of psychological issues facing people with special needs in the educational sphere and possibilities of solving them inside the inclusive system. The common attitude also embraces understanding of the necessity of special training for the personnel and development of digital methodology taking into account diverse individual peculiarities of children and youngsters with special needs.

Today Russian society demonstrates ambiguous public response to the discussion about value of inclusive education as opposed to traditional system of vocational training. Development of new educational standards can channel the evolution of inclusive education into the correct path and in many respects remove the existing drawbacks compared with international practices. Obviously this process will be prolonged and difficult, especially in challenging economic and political conditions, but it is impossible to turn away from further humanization of education.[8]


The problem of creating psychologically comfortable educational environment quite often becomes the main task in formation of children's personalities. As it is known sense of danger activates protection mechanisms, i.e. increases vulnerability, anxiety, and emotional sensitivity. This situation sharply hampers the process of socialization and necessitates intercommunication between a child and his peers. Inclusive education solves this and other tasks, and helps parents, teachers, psychologists, and all others involved into the process of supporting people with special needs.[9,10]

At present we observe the long-drawn-out «self-determination» of the subjects of educational policy in respect of usefulness, expediency, and relevance of inclusive
education for the existing learning environment. The government and educational community should not only discuss the possibility or impossibility of inclusion but begin making and realizing managerial decisions for real improvement of learning conditions for children with special needs.[11]

There are already some achievements, and inclusive education allows administration of conventional schools admitting children with special needs independently of their social status, physical, emotional, and intellectual development, thus creating them favourable conditions, giving psychological assistance, dealing with their peculiar needs. That's the aim of inclusion: make any school capable of admitting children with different health issues. [12]

Empirical evidence of inclusive education shows that children without special needs learn to respect and value their classmates with special needs, i.e. they see beyond the «borderline of disability». Through assistance to peers with special needs children get important life lessons, such as acceptance of differences between people, development of self-consciousness and self-judgment, forming of humanitarian principles, development of attitudes based on sincere care and friendship. [13]

At present inclusive education in Russia to a great extent depends on the attitudes of particular higher educational institutions and their policies towards training of the academic teaching staff which is going to teach students with special needs. It is necessary to integrate scientific and methodological efforts of experts of general and specialized (correctional) profile, create legal framework at regional and federal levels for comprehensive introduction of inclusive education.[14]

As it is known, advances in digital technologies are actively used in inclusive education in recent years. Their effectiveness in the educational process is evaluated and physical involvement of students with special needs into learning and social community is supported. Some researchers point out psychological problems of using digital technologies because of diminished relevance of interpersonal interaction. [15]

Digital technologies influence the inclusion system between individual and social integration models which is an attempt of reconciling different concepts offering a solution for specific pedagogical assistance to persons with special needs. [16]

Some foreign researchers believe that digital technologies are meant for training and repetition lessons. For this reason they will always be highly demanded, in particular, with the development of software using eye-tracking, holographic 3D-representations and so on.

In order to develop technologies creating learning possibilities, it is important that teachers understand the potential and limitations of digital technologies for the advancement of inclusive education. [17]

It is important to understand that inclusive education, anyway, became possible as a whole thanks to development of digital technologies assisting the learning process for the people with special needs. Thus, modern technologies make it possible for students with visual impairment, hearing loss, and musculoskeletal disorders to study together with all other people. Specialized equipment is already used in many schools and embraced by teachers in general educational institutions. Because of that interactive programs for expert training in higher institutions in the sphere of pedagogical and psychological education should be complemented with modules and blocks of disciplines for dealing with children with special needs including the area of inclusive education.

Development of inclusive education leads to creation of special centers in universities for students with special needs in order to provide psychological assistance. All necessary technical equipment, videos, and electronic textbooks are emerging, efforts are taken to help find employment for the graduates. [18]

According to the standing Federal law of Russian Federation concerning educational activities, it is necessary to provide equal access to education to all persons, tacking into
account their special educational requirements. It means creating necessary conditions for quality professional education of people with special needs. It is inclusive education that is capable of providing equal access to education and creating necessary conditions for all students without exception, independent of their personal characteristics, psychic and physical capabilities.

Inclusion assumes active participation of every student in the academic process and in various events. In this case teaching skills are represented by organizational ability needed to form a friendly atmosphere where all students can satisfy their learning needs and are not at risk of social deprivation. Contemporary researchers point out that besides using digital technologies in inclusive education, support of students with special needs on the part of their peers and teachers remains the necessary condition [19].

2 Research method

Senior students of the MAI university took part in our survey. So far the university does not have a barrier-free environment. For this reason we studied just how ready were the able-bodied students to help people with special needs in case they would study together. It turned out that most studied student groups had no experience of joint learning with people with special needs. We polled 250 undergraduate engineering students. The survey was presented as a discussion. The questions, which were prepared in advance, could bring to light real attitudes towards people with special needs, the degree of eagerness to help in the learning process, and also preparedness to befriend them in the future. As a result of the survey we made the following conclusions:

- equal attitude towards all students - agreed by 75% of the respondents,
- most agreed with creation of special conditions for those with special educational needs - 93% of the respondents,
- 61% of the surveyed students are ready to behave in a way, respectful for the rights of every person,
- ready to help - 74% of the respondents,
- desire to form friendly relations with people with special needs - 37% of the total number of the surveyed.

Contemporary researchers pay particular attention to the special format of the inclusive educational space and creation of barrier-free environment for people with special needs [20].

Inclusive education implies taking into account the requirements of people with special needs and also of all students having extra requirements. It was confirmed by the results of our study. In the process of discussion the students (91%) expressed confidence that some auditoriums in old university buildings would not allow people with special needs to study together with others because of lack of accessibility.

The problem of inclusion in institutes of higher education gave rise to many studies of attitudes of healthy students to those with limited capabilities. Many researchers point out at antagonism and distancing from people with special needs. We confirmed these results: 21 percent of those polled think that people with special needs will not be able to study because of low intellectual capability. For this reason they would not want to be in the same educational environment with them. This is precisely why a university must create all necessary conditions to support the educational process, in order to avoid additional negativity towards students with special needs on the part of their healthy peers. In this case students will be better psychologically prepared to adequately perceive and interact with their peers with special needs [21, 22].

Thus, students, who will be dealing with people with special needs as part of their professional activities, working for social adjustment of children with developmental
disabilities, took part in the survey conducted in Nosov Magnitogorsk State Technical University. They were offered questions concerning awareness of inclusive education, peculiarities of people with health limitations, their training, upbringing, and development. As it turned out, 40% of the polled students think that children with special needs should study in special educational establishments, 32% – in regular schools, 18% – in remedial classes, 10% chose homeschooling. Education of both people with special needs and healthy students at the same institution is approved by the majority – 68%. 30% see the coeducation as a contemporary norm. Senior students pointed out that a kid with special needs would be able to learn interaction skills (50% of those polled), among other advantages of inclusive education. In other words, inclusive education provides people with special needs with a unique possibility to feel themselves a useful part of modern society.

Our survey involved engineering students who are least likely to interact with people with special needs while performing their professional duties. Because of that the obtained results are tied, first, to insufficient awareness of problems encountered by people with special needs when looking for employment and with almost total lack of knowledge (84%) about the system of inclusive education existing in contemporary democratic societies.

However, unfortunately, the presence of a peer with special needs in the educational environment is not viewed as a positive factor with no negative influence on their own learning achievements. Only 27% expressed apprehension that a person with special needs could not master such a complex educational program, would fail to stand up to conditions of the educational institution which were oriented, according to their opinion, towards «absolutely» healthy people. Significant part of those surveyed (slightly more than 40%) struggled to answer a question whether they were ready to help people with persons with special needs in their studies, could not define their feelings, and how they would act in real inclusion situation.

However, it should be noted that the public in Russia slowly start to perceive people with special needs as fully competent members of the society. But not all higher education institutions are ready to offer inclusive education, not all of them have barrier-free environment, special student tables, certain infrastructure and organized spaces. Educational institutions are poorly adapted for use by people with special needs architecturally. They cannot freely move inside and outside the buildings. University management also inadequately informed about specifics of inclusive environment organization. Many researchers point out this fact as a serious obstacle on the way to higher education for certain categories of citizens with special needs. [24]

On other hand, some universities, for example, Bauman Moscow State Technical University, already implement digital technologies in the educational process, develop special programs, tacking into account individual demands of people with special needs in educational sphere. Special educational needs require special programs including digital technologies. Students with special needs should choose profession taking into account intrinsic capability of the educational institution. It is understandable that people with special needs must evince a lot of courage to handle difficult life situations. For this reason higher education institutions, apart from digital technologies assisting learning, must also provide social and psychological assistance in solving problems at the stage of professional self-determination of students with special needs.

Multiple various forms of obtaining higher education present a problem of choice today. Thus, the world's and Russian experience offers four main organizational forms of educational processes for people with special needs: integrated (inclusive), specialized, blended and distance learning. Integrated (inclusive) education is based on merging people with special needs on an equal footing with all students studying according to state educational standards.
Students with special needs require more time to adapt to the particular university environment so it is necessary to pay special attention to building psychological and pedagogical support. It is important to integrate them into the healthy students’ environment by virtue of psychological and pedagogical support, help to solve day-to-day problems, and foster corporate culture in the educational institution. Teachers must more actively interact with students with special needs, employ international practices and accumulate their own individual skills which will help uncover capabilities of students with special needs and achieve socially significant goals [25].

It is well known that graduates experience serious problems in finding a job because of their inability to analyze real situation in the labour market. This problem is especially acute for graduates with special needs. The solution is in inclusive education which presents an approach to organizing the educational process in the university in such a way that all students regardless of their physical, psychological, and other peculiarities study on equal footing with their peers. But at the same time their educational requirements must be taken into account, and they should get psychological support including job-placement.

In our view educational institutions in the inclusion system should assist their graduates in finding employment. First, help is needed with choosing the profession. Also, it is necessary to evaluate chances of every graduate for self-realization in a particular field. In other words, it is necessary to perform professional diagnostics of students with special needs, motivate them towards full self-reliance and economic independence which one of the main aims of inclusive education [26].

So, comprehensive approach towards inclusion helps people with special needs in successfully obtaining general cultural and professional skills. Some studies already confirm dependency between professional success and obtaining good education for people with special needs. Indeed, requirements to skills of people with special needs should satisfy modern market conditions. Only in this case they will be able to enter labour market at the education level no lower than that of their peers. Otherwise, this will be the source of serious difficulties.

According to some studies respondents with special needs less often take responsibility for their own problems, less inclined to analyze the situation purposefully and plan their actions based on individual experience. Many of them negate the problem instead of solving it, go into withdrawal or fantasize, distancing themselves from the problem and using maladaptive behavioural patterns with low level of resilience [3,27].

We suggest psychological and pedagogical approach to the system of inclusive education. For example, MAI developed a special educational program as part of upgrade training for the teaching staff. The program deals with psychological aspects of teaching in an engineering educational institution. Among other things this program allows forming adequate attitude to the problem of inclusive education in contemporary environment among teachers. Both teachers and college youths need special training to deal with people with special needs and to form positive thinking towards individuals with developmental challenges.

Modern researchers call for obligatory evaluation of teachers working in the inclusive education. There is a need to determine their preparedness to give psychological and pedagogical support both in-class and out of it. In case of violations identified it is recommended that the teaching staff went through retraining and the methodological support was enhanced.[28]

Modern education is impossible without digital technologies, for example, in teaching engineering disciplines, because mastering them in large part determines the success of professional training of students. Most classrooms are already equipped with computers, electronic whiteboards, projectors, and screens. New digital learning resources, virtual
objects, interactive models, graphic educational resources with high level of interactivity and multimediality.

On one hand, the learning material is presented in a vivid, in-depth, easily understood form. Larger quantities of information are quickly conveyed thanks to using slide presentations. There is also possibility of selective assessment of retained knowledge. On the other hand, knowledge becomes simplistic due to pictures, diagrams, tables, and ready-made Internet resources. In other words, from the psychological viewpoint, activity and interest grow up but deep pedagogical interaction between the student and the teacher becomes depreciated. Modernity rejects the classical learning process, the preference in many respects goes to the simple accumulation of knowledge.

It turned out historically that modernization of educational technologies introduced many different methods including developmental teaching, health preserving technologies, case technologies, and other forms of self-tuition partly or totally without a teacher. Computer software started to imitate laboratory classes and natural experiments. Visual aids acting upon main analyzer systems – sense of vision, hearing – in the educational process should have eventually improved levels of retention of educational content. However, the most important educational problem remains the lack of motivation in students.

Solution for the problem of students' motivation, as before, is in the area of individual psychological and pedagogical approach which does not depend on introduction of digital technologies. This is corroborated by results of our research obtained through surveying students of Moscow higher education institutions in which more than 60% showed inadequate motivation. Using communicative forms of pedagogical intervention, indeed, increases learning motivation to 85% (in our case these were special trainings of all students without exception).

Other necessary conditions for increasing students' motivation at the time of organizing the learning process are creativity, direct personal contact, charisma, and skills of the teacher.

3 Conclusion

Psychological and pedagogical approach develops critical and creative thinking, conscientious and self-supporting approach to education, increases cognitive motivation. It is a good time to recall problem-based learning, boundaries of known and unknown, enthusiastic learning.

At the same time connecting all schools in Russia to the Internet allowed forming additional positive learning motivation and develop self-control skills. Digital technologies became especially popular in the situation of inclusive education – involving «special» children into the educational process on an equal footing with all students. [29]

Joint learning allowed shifting social barriers and demolish stereotypes. Understandably, increased attention from the teachers was required but education became accessible for most people. Inclusive educational institutions started appearing every year. This excluded discrimination of handicapped children and provided for equal attitudes towards them in the society. Thus, we have computers with additional built-in functions, DAISY speaking systems, Braille systems, devices for reading from the screen, keyboards with special functions, equipment supporting functional capacity of people with special needs. [11]

Russian psychologists (L.S. Vygotsky, P.Ya. Galperin, V.V. Davydov, A.V. Zaporozhetz, A.N. Leontiev, A.R. Luria, D.B. Elkonin) were already developing psychological and pedagogical methods for the general education system in the XX century. At present expediency of digital technologies is proved conclusively in particular in the process of remedial education.
Computer technologies are more often used in the area of special pedagogic for children with delayed language development. Digital technologies are used for teaching children with developmental delays. Digital technologies are becoming the unique method which allows them to learn and develop. [30]

It is known, that the Institute of correctional pedagogic develops specialized programs for children with special needs. Logopedists successfully use these programs in their practical work in combination with different training simulators. There are also additional games and disks which allow teaching children with secondary speech disorders.

In other words, digital technologies help to create effective teaching methods in correction educational activities. This is directly connected with professional responsibilities of a teacher, his or her ability to use new possibilities and international practices in the modern pedagogical process.

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