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Psychological perspectives on gifted education – selected problems

Abstract: *The present article reviews the psychological literature on selected problems of gifted education. It discusses issues which are particularly important from the point of view of the skills and tools used by psychologists, educational specialists, teachers and tutors in their daily work with gifted children and adolescents. The problems described include diagnosis of giftedness in education, types of educational support provided to the gifted, and the requirements placed on teachers of gifted students. A particular emphasis is put on the contemporary research-related and practical challenges faced by gifted support specialists in schools.*

Key words: *education, educational challenges, gifted students*

When contemplating the extensive knowledge and research on abilities from the perspective of the new millennium, one may notice that similar to the history of psychology they have a long past but a short history (Ebbinghaus, 1908, quoted in: Stachowski, 2007, p. 25). As early as in the ancient times, great thinkers (such as Confucius in China and Plato in Greece) wrote about “heavenly” (gifted) children in their works, emphasizing the role they could play in the development of a given society provided that an appropriate support system was used. However, it was not until the analyses carried out at the beginning of the 20th century by Binet, Stern, Spearman and Terman that intelligence, giftedness and school achievement became topics of a scholarly debate that continues to the present day (Mönks, Heller, & Passow, 2000; Tannenbaum, 2000). The question that has since been asked by researchers and practitioners of education in the broad context of education of gifted students is how individuals can be helped to follow in the footsteps of Leonardo da Vinci, Wolfgang Amadeus Mozart, Vincent van Gogh or Albert Einstein?

Davis (2009) and Shaughnessy and Persson (2009) claim that nowadays, thanks to the experience accumulated in the past, education of gifted students takes on a new meaning. It represents an individual and a social need to invest in the potential of gifted persons. Theoretical analyses of issues related to giftedness and their role and

place in education (see Ambrose et al., 2010; Dai, Swanson, & Cheng, 2011; Mönks & Katzko, 2005; Reis & Renzulli, 2010; Ziegler, 2009; Ziegler & Phillipson, 2012) usually go hand in hand with proposals of practical solutions to be implemented as part of school-based and non-school-based activities that support work for the benefit of gifted students (see Balchin, Hymer, & Mathews, 2009; Colangelo & Davis, 2003; Davis, Rimm, & Siegle, 2010; Shavininia, 2013). Various reports prepared at the request of public institutions on the possibilities, scope and quality of gifted education in different countries also make a considerable contribution to these issues (cf. EURYDICE, 2007; Mönks & Pflüger, 2005). Thus, the question of education of gifted students is a constant and unrelenting subject of discussion among specialists.

The specificity of gifted education is debated in pedagogical and psychological literature mainly in terms of the scope and type of educational activities undertaken both as part of the entire educational system of a given country and those designed specifically for gifted students. The key research topics related to the education of gifted students include the problem of defining giftedness, methods of diagnosing exceptional abilities, description of the ways gifted persons function in a society, search for the determinants of school achievement, attitudes towards the gifted, training programmes for teachers of gifted persons, relevant research methods and the activity of organizations

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of specialists interested in the exchange of knowledge and experience of working with gifted students (Davis, 2009; Heller & Schofield, 2000; Shaughnessy & Persson, 2009).

An analysis of various studies shows that, in the past, educational work with gifted students in different countries and regions of the world was characterized by a great diversity. But today, in the era of globalization and development of modern information technologies, those differences have faded away. Currently, the specific nature of the educational measures used in teaching gifted students is mainly connected with the theoretical assumptions of curriculums and the creativity of their authors. Thus, scientific research and educational programmes based on contemporary theories of intelligence (Gardner, 2006; Sternberg, 1997), creativity (Cropley & Urban, 2000), giftedness (Heller, Perleth, & Keng Lim 2005; Mönks & Katzko 2005) and wisdom (Sternberg, 2003) are used successfully in various countries around the world. Every approach to giftedness in the educational practice of a given country generates a unique educational tradition and solutions for educating talented individuals, which are a rich source of clues and inspiration for other researchers and practitioners, allowing them to improve their own professional skills.

Models of giftedness and the problem of diagnosing gifted students in education

The practice of working with gifted students shows that measurement of giftedness is a process in which various indices should be taken into account. The choice of the method of assessing the level of general and special abilities among children and adolescents has its practical implications. It not only affects the use of terminology in the scientific literature and documents published in a given country but should also aid the development of formal criteria for identifying gifted persons.

An analysis of the terminology used in Europe's individual countries with reference to gifted children and adolescents shows that the terms most frequently used in official documents are "gifted" and "talented". However, these terms are associated with different types of giftedness: the term "gifted" refers to the ability to learn, i.e. "mental" or "academic" abilities, while "talented" relates more to artistic and sporting abilities. Apart from the already mentioned terms, gifted students are referred to with descriptive phrases such as, for instance, "a young person of high potential ability", "intellectually precocious children", "pupils with high intellectual abilities" or "pupils capable of high attainment". The educational policy of the countries of Europe also shows that the term "gifted" is falling into disuse. The preferred new names are intended to focus attention on the degree to which the students are able to assimilate new knowledge and the significance of the environment in developing various types of ability. Of central interest is the potential for development of all young people (EURYDICE, 2007).

Nowadays, the level of intelligence is no longer the only criterion for measuring outstanding abilities. A high

intelligence quotient, measured using tests of intelligence, or a high level of special ability, measured using tests regarding various aspects of development (physical, creative, artistic and technical) serve as the psychological criterion for the identification of gifted students. The equivalent psycho-pedagogical criterion is used parallel, expressed as a high level of school and out-of-school achievement. These are the two most prevalent criteria for determining the level of ability among children and adolescents in educational settings. The criteria show the need for a complex diagnosis of ability which is why it is worth to use them together as complementary. This is confirmed by the experience of daily work with the gifted student at school as well as research on the underachievement syndrome (Dyrda, 2000). Defined in accordance with these criteria, gifted students are those persons who are characterized by a high IQ or a high level of general or special abilities or have outstanding achievements at school and in competitive examinations (Sękowski, 2001).

Students' scores on aptitude tests or other tests measuring school achievement provide a basis for a comprehensive assessment of their potential. Additionally, school psychologists and education specialists, when diagnosing students' abilities, also take into account other aspects of their personal development, drawing on Gardner's theory of multiple intelligences (Gardner, 2006). The most frequently mentioned of those aspects is intellectual development connected with cognitive abilities including talents for language and mathematics. Attention is also paid to artistic achievement in various fields of creative expression such as dance, music or visual arts. Psychomotor predispositions that can be used in a sport discipline or in an area requiring technical skills are also important. An analysis of the developmental aspects taken into account in assessing the level of an individual's giftedness shows that more and more often the diagnosis and development of giftedness involve aspects of emotional and social intelligence. These types of intelligence involve, among others, the ability to recognize and deal with one's own and other people's emotions, empathy and leadership skills.

The criterion of teacher, parent, peer and self-nominations (Painter, 1993) is also sometimes used as a helpful complementary measure. Teacher nominations involve asking teachers to indicate students who stand out against others in school performance. An opinion about a given student is usually issued by subject teachers. It is formed over time, not only on the basis of an analysis of a student's school achievements but also based on observation of his or her behaviour and personal traits. Although teachers may have different qualifications and experience, and their opinions alone can sometimes be too lenient or overly critical, it is generally assumed that they are a good and reliable criterion for diagnosing gifted students in the classroom. Parental nominations, on the one hand, represent a subjective approach to the assessment of a child's skills, which may sometimes diverge from teachers' opinions. On the other hand, however, they

provide valuable information about a child's interests, the types of artistic or cognitive activities he or she is willing to undertake, about his or her motivation to act, the goals he or she wants to achieve or the needs he or she wishes to fulfil. Schoolmates are an underrated source of information about a student's abilities. Meanwhile, class fellows are able to quickly and correctly identify who among their peers is the best in a given field. Another way of determining students' abilities is to elicit their own declarations regarding their educational needs relative to their skills. Self-nomination allows students to fulfil their potential as they can select, on their own, the programmes or educational or artistic trips that fit their interests. Such choices also demonstrate the students' motivation to achieve their goals (Mönks & Pflüger, 2005).

While there are many different methods of determining giftedness, neither theoreticians nor practitioners in gifted education have so far worked out a uniform system with which one could clearly identify the level of ability in a given person. For young people to be included in the group of gifted students and benefit from special educational solutions, they have to demonstrate excellent results, whether in the form of school achievements or aptitude tests, right from the outset of their educational career.

Diagnosis of giftedness can, however, be aided by models of giftedness which, having their roots in the theory of giftedness, are successfully used by class tutors in their everyday work with gifted students, as they point to the multi-faceted nature of the determinants of school achievement. Two models have been developed to aid the educational success of gifted students: Heller's Munich Model of Giftedness and Talent (Heller, Perleth, & Keng Lim, 2005) and Mönks' Multidimensional Model of Giftedness (Mönks & Katzko, 2005).

Heller's Munich Model of Giftedness and Talent describes the relationship between abilities and achievement. The author has based this model on the premise that every student is gifted and with proper stimulation every ability may turn into a talent. This model points to the mutual interactions between talent factors, non-cognitive personality characteristics, environmental conditions and performance areas. Talent factors include, for example, intellectual and creative abilities, social competence, practical intelligence and artistic skills. Non-cognitive characteristics include some dimensions of personality such as coping with stress, achievement motivation, locus of control and learning strategies. The author also names dimensions resulting from environmental conditions connected with family climate, the methods and quality of instruction or critical life events. Based on this model, diagnostic tools and special educational programmes for schools have been developed (Heller, Perleth, & Keng Lim, 2005).

Mönks' Multidimensional Model of Giftedness (Mönks & Katzko, 2005) expands upon Renzulli's conception of giftedness (2005). Renzulli defines giftedness as an interaction between three clusters of traits, namely: (1) above-average abilities, (2) task commitment and

(3) creativity, thereby putting special emphasis on the importance of individual features of a person. Above-average ability can be understood as general and specific abilities. The former can be measured with general intelligence tests, whereas the latter relate to particular areas of performance, often very narrow, and are connected with specific activity (e.g., a talent for chemistry, mathematics, humanities, biology, music or arts). The second group of traits, defined as task commitment, relates to the sphere of motivation. It involves perseverance, diligence, the ability to make sacrifices, self-confidence and belief in one's own capabilities. Task commitment is also associated with goal seeking and the structure of goals that individuals set themselves, and thereby with preferred values, which motivate people to accomplish their goals. Creativity refers to both behaviours and products or ways of reaching specific solutions. It manifests itself in the fluency and originality of thought, cognitive curiosity and unconventional ways of solving tasks and problems. Mönks expands upon Renzulli's model by treating the interactions between the three factors mentioned above as part of the conditions of the social environment of family, school and peer groups. The mutual influence of these environments on a person plays a decisive role in shaping the optimal conditions for his or her talents to develop, including stimulation of the person's own activity. Environmental conditions affect not only the stimulation and actualisation of abilities but also the way they are supported and used in the future.

Knowledge of the context in which abilities and determinants of school achievement emerge promotes better understanding of talented pupils in their pursuit of goals; at the same time, it also increases the efficiency of learning and instruction and shapes the desired educational objectives. It can also be an important clue for school institutions, allowing them to avoid errors when diagnosing talented students, and an aid in supporting underachieving learners (Sękowski, 2001).

Types of educational measures for gifted students

The use of special educational measures for gifted students is a common practice in many countries. Educational systems have two major objectives: (1) to create conditions for the development of the potential of all students and (2) to provide pupils with support in accordance with their needs. However, in order to build an educational system that can support the potential of gifted students, appropriate legal regulations are necessary. Karnes and Stephens (2009) emphasize the importance of introducing regulations mandated by law, pertaining to the support of the development of gifted students, in the form of both appropriate terminology and eligibility criteria. Formal provisions are an integral part of education and they enable professionals to implement specific educational programmes in their everyday work for the benefit of gifted students. In individual countries, gifted and talented children and adolescents can be included in the group of pupils with special educational needs. However, the fact

that a country does not have such formal provisions in its educational policy does not mean it cannot create special educational measures for gifted students or that the students' educational needs are not noticed and taken care of. The largest numbers of special educational measures are offered by those countries which apply classification criteria for identifying the level of abilities in children and adolescents.

Nowadays, a variety of educational solutions for supporting gifted students are successfully implemented. However, an issue that arouses discussion is whether gifted students should study together with their equally talented peers (specialized education), or whether they should remain part of the system of general education, attending schools with averagely talented schoolmates (integrated education) (Sękowski, 2001). Supporters of specialized education emphasize the specificity of the educational needs of gifted students and the necessity to adapt the forms and methods of teaching and the pace of work to their intellectual needs, optimal development and self-realization. In their opinion, educating talented students together with pupils with average abilities may contribute to a slowdown in the development of the former, while at the same time failing to prevent social and emotional difficulties. On the other hand, the supporters of the integrative approach to gifted education pay more attention to social development and the role of mutual interaction between the gifted and their averagely talented peers. However, as the experience of teachers working with gifted students shows, both approaches can be creatively combined for the benefit of effective teaching (Limont, 2010). De Corte (2013) emphasizes that it is important to use forms and methods of teaching and learning which reinforce the intellectual and emotional strengths of gifted students and stimulate goal-oriented learning.

In studies devoted to the analysis of the forms of work with gifted students (see EURYDICE, 2007; Mönks & Pflüger, 2005; Sękowski & Łubianka, 2015), both at the level of primary and secondary education, the most frequently mentioned types of special educational measures include: more advanced or more varied activities within mainstream classes, differentiated provision, non-school based activities and so-called 'fast tracking', i.e. the possibility of completing mainstream education in a shorter period of time.

More advanced and varied activities within mainstream classes involve the use of different teaching methods to enrich students' knowledge and spark their particular interest in school subjects. The idea of such classes is to use forms and methods of instruction that correspond with contemporary knowledge in the field of psychology of teaching and learning (Mietzel, 2001). These are usually individual or group activities in which students are assigned problems of varied difficulty. The requirements placed on gifted students are raised by assigning them more difficult tasks to perform and creating situations in which students can independently select additional projects according to their interests. This type of work with talented individuals may also include assigning

gifted students a special role to play in the classroom (such as a teacher's assistant or a leader). Giving talented pupils an opportunity to prepare multimedia presentations, to conduct research projects on their own, get involved in volunteer work or participate in international classes also constitutes an attractive form of work with them. It is recommended that teachers should mainly use problem-related methods, including active-learning instruction methods, which encourage students to independently seek information, help them improve their ability to organise and use in practice the knowledge they have acquired and allow them to assess the state of their knowledge. Thanks to these methods, students learn to creatively solve problems and develop their passions. These methods also play a role in shaping the social and emotional skills associated with understanding oneself, managing one's own development, presenting one's views and communicating effectively with others in different situations.

Another special educational measure for gifted people is differentiated provision. It offers the possibility of adjusting the pace at which a school programme is implemented to the needs of a student, giving him or her extra time to develop their abilities in a selected field of sport, fine arts, individual creativity or a particular school subject. In addition to the mainstream curriculum of school subjects, original modules are developed and implemented as part of individualised instruction. Opening of classes or schools for students with above average abilities is one of the most popular ways in which different countries support gifted students within the framework of integrated and specialised education at both primary and secondary levels. In elementary schools, gifted children can learn in separate groups according to the type and level of their abilities. Secondary education offers talented young people classes with an extended curriculum of particular subjects or individual teaching programmes designed in consultation with teachers. This is an extended and accelerated learning model, in which students can enrich their knowledge in accordance with their interests and aptitudes, choosing course pathways in humanities, science or mathematics. There are also specialist art and music schools. In addition, young people are encouraged to participate in laboratory research, art workshops, lectures and seminars conducted by university teachers. The Academic Secondary School Complex in Torun, Poland, run under the patronage of Nicolaus Copernicus University, a network of schools participating in the project under the name APROGEN (Alternative PROgrams for Gifted Education) in Slovakia or special educational G&T (Gifted and Talented) programmes for outstandingly able students in England, UK are examples of institutions and programmes that differentiate provision to meet the individual needs of gifted students (Limont, 2010).

Gifted students can also participate in various types of non-school based activities, which are most commonly provided either in the form of extracurricular activity clubs (in the fields of fine arts, sports, literature, maths, history) or through participation in regional and national competitive examinations. The purpose of after-school

activities is always the same: to develop students' abilities. There are a lot of forms of activity to choose from: summer schools and courses (in photography, architecture, astronomy, nature, foreign languages), classes held at art centres or research and development projects executed in cooperation with academic teachers from university centres. In this respect, it is worth mentioning several outstanding centres that provide support to the process of educating gifted students such as, for example, the Centre for Innovation in Education in France or the Centre for Talented Youth (CTY) operating at the Johns Hopkins University in the USA.

In most countries, there is the so called 'fast tracking' arrangement, mandated by law, that allows students complete mainstream education faster than officially planned, both at primary and the secondary school levels. Gifted students can, parallel to attending regular school classes provided in the curriculum, receive private schooling and take exams before a state examination board individually. The possibilities of early entrance, advanced placement and home-based schooling are other examples of similarly flexible solutions.

In addition to the educational solutions mentioned above, there are also special organizations for gifted young people. Their task is to initiate, monitor and integrate local, national and global actions that enable scientists, teachers, psychologists and educationalists to share the knowledge and experience of working with gifted persons, to promote initiatives related to gifted education and present the latest research on forms of support provided to gifted and talented persons. These actions involve organization of conferences, publication of books and magazines, organization of professional development courses for specialists working with gifted students and funding of various types of scholarships for the best academic performance or outstanding sports achievements. The following organizations are worth mentioning: the World Council for Gifted and Talented Children (WCGTC), the European Council for High Ability (ECHA) and the European Committee for the Education of Children and Adolescents who are Intellectually Advanced, Gifted, Talented (Eurotalent) (Heller & Schofield, 2000).

The teacher of a gifted student

Teachers are integral to the process of developing and implementing specific forms of work with gifted pupils. Usually, it is them, who, in cooperation with psychologists or school education specialists, recognize the abilities of their students and monitor the choice and implementation of appropriate educational solutions to stimulate the development of gifted children and young people's latent talents. Proper diagnosis and development of students' talents is only possible if teachers are well trained and prepared for work with gifted students. Teacher preparation standards ultimately translate into the building of the intellectual potential of school communities, and, in a broader perspective – of entire societies. Therefore, as noted by Baldwin, Vialle and Clarke (2000), Croft (2003)

and Van Tassel-Baska and Johnsen (2007), the demands imposed on teachers working with gifted students are very high. Johnsen (2012) compares four sets of contemporary teacher preparation standards in gifted education announced by the National Association for Gifted Children/Council for Exceptional Children – The Association for the Gifted (NAGC/CEC-TAG).

Analyses carried out by researchers show that teachers of the gifted are not only expected to have an extensive knowledge of their teaching subject and experience in teaching and implementing curriculums that support the development of the abilities of their students; they are also expected to identify their pupils' educational and pedagogical needs and be knowledgeable about issues concerning abilities and the specificity of gifted education. More and more importance is given nowadays to the teacher's teaching skills, interpersonal skills and personal traits and his or her attitude towards educational activities for gifted pupils. A teacher who works with talented students should be involved in their cognitive and personal development. He or she should motivate them to achieve at their maximum level, inspire them to creatively solve problems, discern the unique structure of their talent and patiently support their development. At the same time, he or she should demonstrate professionalism in his or her educational activities as well as a mature personality. According to Clasen and Clasen (2003), the teacher of a gifted learner is seen as his master and mentor.

The above-mentioned tasks, with which teachers are faced, constitute only part of the numerous challenges they encounter in their educational work; therefore, not all teachers achieve an immediate success in working with gifted students. Anderman (2011) and Gallagher (2003) notes that there is a need for proper preparation of professionals who are to work with talented children and youth including subject teachers, class tutors, school education specialists, school psychologists as well as specialists in the field of gifted education who support a teacher's work in the classroom. This is in line with Patrick et al. (2011) who propose that elements of educational and teaching psychology should be introduced into teacher training programmes on a larger scale.

The educational policies of different countries or regions of the world regarding the ways specialists should be prepared to work with gifted students and the ways their competences in this area should be developed are quite diverse. As some studies show (cf. EURYDICE, 2007; Mönks & Pflüger, 2005; Sękowski & Łubianka, 2015), the importance attached to the theoretical knowledge of the issues related to ability, creativity, and intelligence and the practical knowledge of the methods of supporting gifted students incites individual countries to develop programmes devoted to the methodology of teaching gifted children and youth; later such programmes are successfully incorporated into the teacher' training system.

Knowledge of the standards of gifted education and compliance with these standards are necessary in the process of developing professional competencies of class tutors and teachers working with gifted students. Usually,

teachers, school psychologists and school specialists in education who wish to improve their qualifications in the area of gifted education are allowed to choose the subject matter of their training programmes on their own, generally according to their interests or school requirements. Thus, they can make use of a diverse – in terms of topics and time – offer of in-service training programmes including courses, workshops, projects, and postgraduate studies devoted to (1) the principles of individualized education, (2) working with pupils with special educational needs or (3) improving tutoring competence. As far as dissemination of knowledge about working with gifted students is concerned, attention should be paid to activities undertaken by the European Council for High Ability (ECHA), which organizes specialized training courses for teachers leading to the diploma of *Specialist in Gifted Education*.

In addition to participating in training programmes, teachers can reach for contemporary literature pertaining to the psychology of giftedness and creativity, including scientific journals devoted to gifted education. Such publications represent the effect of work of scientists from various research centres on the problem of giftedness and allow an exchange of international experiences regarding best practices of working with talented individuals. Academic literature devoted to these issues also helps promote and update the knowledge of the development of gifted people and the ways of supporting them and motivating them toward achievement; it is also a basis for implementing educational programmes that build on the latest research results (see Balchin, Hymer, & Mathews, 2009; Colangelo & Davis, 2003; Heller & Schofield, 2000; Parker et al., 2010; Shavinina, 2009b; 2013; Sternberg & Davidson, 2005).

Research conducted by Johnsen (2012) shows that implementation of standards positively influences the professional competence of teachers. Well-grounded knowledge of the specific manner in which gifted and talented individuals function allows professionals who work with them not only to adapt educational strategies to the needs and abilities of such students, but also to optimize programmes for stimulation of their talents. Trained teachers more often use varied forms of working with gifted students; they also meet the criteria for participation in university research programmes and are able to prepare or assist students in preparing and executing their research projects independently; furthermore, they can also support their colleagues in assessing the abilities of individual students. Teachers who become familiar with the theoretical foundations of giftedness, intelligence and creativity, can better understand how the capabilities of their gifted students develop, and are therefore able to better adjust the educational requirements to that process. Having class tutors trained in the area of giftedness and management of class potential results in an overall improvement in the quality of education not only with respect to gifted students but also whole classes and – in the long term – whole school as well. It also prevents the formation of stereotyped perceptions of talented people, deeply rooted in the folk understanding of giftedness, and

creates favourable conditions for an informed exchange of teaching experience. Furthermore, well-trained teachers get to know and understand their students better in the process of tutoring and instruction, which is absolutely necessary for students to achieve success at school.

Contemporary challenges in gifted education

As noted by some researchers (Mönks, Heller, & Passow, 2000; Ziegler, 2009), the beginning of the 21st century is a good time to sum up current reflections on teaching and learning in gifted education and take a courageous look into the future of working with gifted persons from the perspective of past achievements and in the context of present opportunities. A review of the literature from the last decade concerning education of gifted students shows that researchers have paid particular attention to this trend, pondering over the role and the scope of changes in gifted education as a response to the dynamically changing world (see Aljughaiman, 2010; Cramond, 2009; Davis, 2009; Gallagher, 2003; Little, 2001; Masse, 2001; Partnership for 21st Century Skills, 2009; Renzulli, 2012; Shavinina, 2009; Sytsma, 2001; Shaughnessy & Persson, 2009; Zambo, 2009; Van Tassel-Baska, 2013).

The beginning of the 21st century has brought a number of educational challenges, both theoretical and practical. Thompson and Subotnik (2010), who discuss the methodological context of contemporary research in gifted education, mention the need for standardizing the definitions and measures of giftedness and talent. They also write about the need for well-thought-out selection of participants in comparison groups and longitudinal studies involving gifted persons, with regard to the specificity of their development, their cognitive abilities and the support they receive. They discuss the effectiveness of educational programmes and effects of test ceilings in the measurement of the progress and growth of ability. Dai and Chen (2013) take the same tone, claiming that in order to expand practical research, it is necessary to develop a clear educational research strategy for determining theoretical assumptions, research objectives, participants and research procedures. Ziegler and Phillipson (2012) pay attention to the challenge of developing a systemic approach to gifted education that would involve a change of the existing paradigm of research methods. The basic principles of a systemic approach to gifted education require that attention should be focused on interaction between an individual and his or her environment, with continuous development of resources and competence in the system and creation of an individualized learning path for gifted pupils, including the particular activities and goals to be achieved.

Taken together, all these challenges of gifted education point to the importance of and the need for further research into education-related aspects of the psychology of giftedness, such as thinking styles, cognitive styles, creativity, temperament, achievement motivation, preference values and wisdom (Sekowski, Siekanska, &

Klinkosz, 2009). For example, Woolcott (2013) proposes a new approach to the processes of learning and memory of gifted students as a framework for thinking about human cognition and behaviour. Ziegler (2009) believes that research in education is a never ending process in which a researcher is always faced with new conditions. If such a process is continued with a purpose in mind, it contributes to the development of one's own methods and models, leading to self-control and self-reflection. Thus, research findings may open the door to changes in education of gifted students so as to strengthen the cognitive and personal potential of both students and teachers, thereby showing the need for lifelong learning (Masse, 2001; Gallagher, 2003).

Analyses conducted by researchers also show that the area of practical solutions in gifted education is larger than originally anticipated. Today's world requires from students much more than just having the knowledge of specific topics, and schools are expected to do much more than just transfer this knowledge (Partnership for 21st Century Skills, 2009). The rapid technological development, global culture, build-up of knowledge and economic requirements of the market are challenges that require the updating of and introduction of innovative and far-reaching changes into teaching programmes as well as educational research in general and giftedness and creativity research in particular (Shavinina, 2009a; 2013). In addition, as noted by Ziegler (2009), it is necessary for scholars to engage in constructive criticism of the current state of research on education of gifted and talented individuals and metatheoretical reflection with the aim of searching for good solutions and inspirations in working with gifted students that could be instantly applied in practice. Such educational solutions result from interdisciplinary discourse between the theory of education and pragmatism of action (Aljughaiman, 2010).

The authors of the Partnership for 21st Century Skills (2009), Gallagher (2003), Shaughnessy and Persson (2009), Zambo (2009), Renzulli (2012), and Shavininia (2013) announce in unison the arrival of new trends in gifted education in the 21st century. To be able to assist and support students in achieving educational and professional success, educational institutions should follow those trends on a mandatory basis. These new trends in gifted education are based on the concept of self-learning activity, i.e. direct experience of the knowledge a student has gained and acquisition of practical skills. Particular emphasis is placed on the development of the following skills: critical thinking, creative problem-solving, effective interpersonal communication, cooperation within a group and leadership skills, which is consistent with Sternberg's theory of *successful intelligence* (1997). The fact that a student possesses specific abilities is only a starting point, however; they are necessary but not sufficient for full activation of an individual's potential. Outstanding achievement is only possible due to a person's own activity, involvement of the motivational sphere, use of personality assets and support from community. A student's motivational sphere is one in which the hierarchy of values plays an

important role in achieving school success. Preferred values motivate students to accomplish their aims centred around their own educational path and arising from the need to acquire knowledge as well as from beliefs about its usefulness in their life's agenda. The above pertains even to goals which are difficult to achieve or require time and perseverance. The values in which a given person believes often co-determine and set the direction of one's actions (Sękowski & Łubianka, 2014). Integration of Sternberg's (1997) analytical, creative and practical intelligences with the formation of social skills and practical wisdom constitutes the basis for the pursuit of a mature personality; it also creates favourable conditions for job satisfaction and positively influences the sense of the quality of life (Sękowski & Siekańska, 2008).

In order to achieve such complex educational goals a student has to do much more than just master the school curriculum. It is proposed that he or she should get acquainted with interdisciplinary problems connected with interculturalism, entrepreneurship and finance, and health and environment protection, actively participate in social life, learn to use modern information technology tools (Partnership for 21st Century Skills, 2009) and form his or her own individual and socio-cultural identity (Kaplan & Flum, 2012). This is also a task for teachers, which can be successfully accomplished only if they are open to pedagogical innovations. According to Little (2001), Clasen and Clasen (2003) and Shavininia (2013), such innovations usually include activating teaching methods and the newest forms of work with a student such as mentor-based teaching, tutoring, coaching, e-learning, on-line classes and participation in international research and educational projects (Van Tassel-Baska, 2013), examples of which include Lifelong Learning Programme (*Comenius, Erasmus, Leonardo da Vinci*) and Youth in Action (EACEA, 2013). An attempt made by any educational centre to create a system based on students' knowledge and aimed at improving their skills, should also take into account the necessity to introduce changes not only in teaching methods, but also in assessing pupils' achievements, measuring teachers' effectiveness, exchanging good practices and providing feedback to parents. The payoff will be students who are involved in the learning process and well-prepared to function in the knowledge-based economy (Welsh, 2011).

Conclusions

Identification and development of the cognitive or artistic abilities of an individual are educational challenges that still capture the interest of researchers in the psychology of ability, intelligence and creativity (Sękowski, Siekańska, & Klinkosz, 2009). An analysis of the forms of work with gifted students used in different countries shows that there is substantial diversity at each level of education. This allows professionals to choose the most appropriate solutions from among the many that a system offers: individualized classes with different levels of challenge, special education programmes, extracurricular

activities and support of organizations for talented children and adolescents. As emphasis is put on the individual dimension of a given student's ability and his or her needs and potential, the educational process admits of the use of individual teaching methods. Therefore, the purpose of contemporary gifted education is not only to support the development of students' potential abilities and skills or to motivate them for achievement, but also to prepare them to succeed in life and ensure their harmonious development in cognitive, social and emotional spheres (Sternberg, 1997). It is important to follow new pedagogical trends in gifted education, implement innovative methodological solutions, and promote independent thinking and cognitive curiosity (Shavinina, 2013). By placing the objectives of gifted education in the context of the entire education system of a given country, educators can reflect upon the selection of effective measures and make them part of their own educational techniques, thereby contributing to modernization of today's schools so that they can face up to the educational challenges of the 21st century.

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