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Междисциплинарный подход к изучению одаренности

Введение. Переход знания об одаренности на новый уровень, обеспечивающий его функционирование как инструмента развивающей диагностики в триаде «дар – способности – талант», реализуется посредством интеграции гуманитарных и естественнонаучных концепций. Однако в сфере междисциплинарного подхода к изучению феномена «одаренность», который позволяет выделить характеристики одаренности как многоуровневого, пластичного при педагогическом воздействии феномена, специальное исследование не проводилось. Цель исследования в рамках статьи – систематизировать научные идеи, вариативно-контрастно очерчившие с позиций междисциплинарного подхода современную концепцию одаренности.

Методология и методы. Междисциплинарный подход включал выделение и систематизацию по тем или иным признакам единиц знания об одаренности, т.е.: (1) ее структуре, (2) пластичности, (3) условиях преобразования природного дара в социально ценный талант. В ходе исследования проводился анализ концепций одаренности, предложенных философией (диалектический подход), нейрофизиологией (сравнительный подход), психологией (деятельностный, биологический подход), педагогикой (психолого-педагогический, личностный подходы), социологией (социально-психологический, социологический подходы).

Результаты. Исследование показало, что междисциплинарное знание об одаренности интегрируется в целостность посредством: (1) выстраивания ассоциативных связей и общего тезауруса изучающих одаренность наук; (2) создания модели «одаренного поведения» в условиях учебно-воспитательного процесса, с выделением биологических основ структуры и условий преобразования дара в талант, который доступна непосредственному наблюдению; (3) формирования понятий, отражающих целостность компонентов одаренности. Одаренность в свете междисциплинарного подхода – это многогранное и многоуровневое явление, ступенями которого являются дар, способности, талант.

Научная новизна. Полученные результаты позволили рассмотреть феномен одаренности в свете междисциплинарного подхода как энергию, накопленную “одаренным” мозгом и преобразующуюся из потенциального состояния – дара – в кинетическое – талант, через этап ротации способностей, усваивающих ресурсы среды и развивающихся в ней, а затем на новом уровне развития усиливающих нейрофизиологические и психические ресурсы человека.

Практическая значимость. Проведенное исследование позволяет наметить ориентиры создания общей теории одаренности, ее выявления и преобразования в талант, а также совершенствования программ “одаренного образования” и “психологии обогащения” на всех уровнях от дошкольного до вузовского и поствузовского.

Ключевые слова: одаренность, междисциплинарный подход, талант, способности, педагогическое воздействие на одаренность

Ссылка для цитирования:
Introduction. The transition of knowledge about giftedness to a new level that secures its functioning as a developmental diagnostics tool in the triad “gift – ability – talent” is realised through the integration of humanitarian and natural-science concepts. However, no special research has been undertaken in the sphere of the interdisciplinary approach in respect of studying the phenomenon of “giftedness” which would allow a scholar to highlight the characteristics of giftedness as a phenomenon that is multilevel and plastic under pedagogical influence. The aim of the research, within the framework of the present article, is to systematise the scientific ideas that outline the modern concept of giftedness in terms of the interdisciplinary approach, variability and contrasts.

Methodology and methods. The interdisciplinary approach included selection and systematisation, based on particular indicators, of the units of knowledge on giftedness, i.e.: (1) its structure, (2) plasticity, (3) conditions of transformation of natural gift into a socially valuable talent. The research involved the analysis of concepts of giftedness proposed by philosophy (dialectical approach), neurophysiology (comparative approach), psychology (activity-based, biological approaches), pedagogy (psycho-pedagogical, personality-based approaches), and sociology (socio-psychological, sociological approaches).

Results. The research showed that interdisciplinary knowledge about giftedness was integrated into a whole, through: (1) building associative links and forming a common thesaurus of sciences exploring giftedness; (2) creating a model of “gifted behaviour” in the conditions of the educatory process, highlighting the biological grounds of giftedness in the aspect that is directly observable; (3) forming due concepts that reflect the integrity of giftedness components (e.g. “gifted-nome”, “giftedness age”, “talent age”). Giftedness in terms of the interdisciplinary approach is a multifaceted and multilevel phenomenon, with such stages as gift, abilities, and talent.

Scientific novelty. The obtained results made it possible to consider the phenomenon of giftedness in the light of the interdisciplinary approach – as energy accumulated by the “gifted” brain and transformed from the potential state (gift) into a kinetic state (talent) through the stage of rotation of abilities absorbing resources of the environment and developing in it and subsequently enhancing a person’s neurophysiological and mental resources at the new level of development.

Practical significance. The undertaken research makes it possible to outline the guidelines of the general theory of giftedness, its recognition and transformation into talent, as well as to improve the programmes of “gifted education” and “enrichment pedagogy” at all levels from pre-school to university and post-university levels.

Keywords: giftedness, interdisciplinary approach, talent, abilities, pedagogical impact on giftedness

For Reference:
Introduction

The idea of using the interdisciplinary approach to solve complex problems is fundamental and holds great promise for the following reasons: (1) it is the overall efforts of sciences that are necessary for global sustainable development based on the concept and sustainable development goals (SDG) adopted by the United Nations in 2015; (2) sustainable development can be achieved by relying on a theory that encompasses the entire problem area of a particular SDG, which includes the following goal: “to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”; (3) natural sciences and humanities, developing across the borders, not only enrich each other but also form multilevel spheres united by core concepts used by sciences, with varying shades of meaning.

The “Framework for Action on Special Needs Education” states that gifted children also belong to this category [1], and that education must be transformed in such a way as to provide them, like all children, with the knowledge and skills necessary for the achievement of full inherent potential and worthy living. The guiding vision of UNESCO is transformative learning which is essential for the survival of the present and future generations [2].

The Council of Europe’s education policy initiatives include Recommendation 1248 on education of gifted children [3] which states that: the fundamental research of the “giftedness” and “talent” concepts as well as applied research, for instance, on improving recognition procedures, should be developed in parallel; due conditions for gifted children should be created primarily within the framework of the regular education system; the concept of giftedness should be clarified from the pre-school level, using the operational definition accepted and understandable in different languages.

The Council of Europe’s Strategy for the Rights of the Child [4] does not focus on “gifted education” issues which are enrooted in the general problems of childhood. However, it involves the interdisciplinary approach to interpreting children’s development, which considers this development as a unity of physical, mental, spiritual, moral, psychological, and social aspects.

The International Association of Universities promotes the research community initiative for transition to open science accessible worldwide to everybody, towards the best scientific quality and development and towards an efficient solution to the interrelated problems of economic, social, cultural, and environmental sustainability [5]. In fact, this means the interdisciplinary approach as well.

Since giftedness supposes special educational needs of a child that drive the learning process and are saturated with the relevant knowledge and skills, the knowledge about giftedness can be a tool for the realisation of sustainable development goals if it is integrated and structured; if due diagnostic and developmental tools are developed on a theoretical basis. The authors deem it possible to reduce the components of knowledge about giftedness to a common denominator by applying the interdisciplinary approach, which integrates the concepts of giftedness proposed by philosophy, neurophysiology, psychology, pedagogy, and sociology. The notional centre of “giftedness” attracts scientific ideas from different spheres, making it possible to find a common ground in this respect, as well as to understand the principles of “gifted education”.
The following points are important in terms of the concept of giftedness proposed by the authors: (1) optimal age at which giftedness is ready to be manifested and identified; (2) forms of pedagogical impact on a child with recognised giftedness, i.e. developmental diagnostics, with the tools that are accessible and interesting to the child, with regard for the fact that the inner world of a gifted person is more holistic, being organised by giftedness; the emphasis on activities matching the features of giftedness is expedient and cultivates the best personal qualities improving the “gifted” performance results; the actual research procedure ensures the transformation of giftedness into talent; (3) tracing the qualitative leap upon transition from giftedness to its higher form “talent”.

Viewing giftedness through the prism of several sciences makes it possible to find harmony in the opposing theses about giftedness as a form of inequality and as equality in the higher sense. The authors believe that awareness of one’s gift, abilities, and talent is a way to the genuine (“communist”) equality of people, when the society becomes more perfect through the creative contribution of everyone and its every member feels needed, irreplaceable, valuable and therefore happy.

The research problem within the framework of the article was raised because of the contradiction between the demand of society for a modern, scientifically grounded concept of giftedness transformed into talent and just contoured development of this concept. In the theoretical aspect, this is a problem of updating the scientific ideas of giftedness as a multilevel phenomenon, which is plastic for pedagogical impact and provides a higher level of cognitive management compared with the norm, as well as accelerated learning in the attractive area of activity that exceeds the productivity norm and the standard quality of results. The practical aspect of the problem is concentrated around the analysis of the facts of the developmental influence of pedagogical giftedness diagnostics on the academic and other results of learners aged from 6–7 (“age of giftedness”) to 15–22 (“age of talent”).

**Literature review**

The key idea of the research is that in order to overcome the methodological crisis of the doctrine of giftedness [6], it is necessary to transcend the established framework of knowledge in search of thesauruses unifying the “gifted knowledge”. Scientific thought can drift along these logical bridges more freely than across isolated spheres of scientific knowledge; the result of new research will qualitatively improve and will be really useful for practice.

Let us consider the approaches to the treatment of giftedness presented in philosophical, neurophysiological, psychological, pedagogical, and sociological concepts.

*Philosophical treatment of the phenomenon of “giftedness”*. A number of representatives of philosophy (Kant [7], Piaget [8], Saidov [9], and others [10-13] consider giftedness as a structured object subordinated to the laws of dialectics, as well as the historical development of humankind.

Explaining giftedness from the philosophical perspective makes it possible to talk about it as a scientific problem, to integrate scholarly knowledge into the concept of giftedness, which genetically precedes the origination of the relevant theory, although logically it organises scientific knowledge less clearly. The main parameter of knowledge about giftedness, within the framework of the concept created by the authors, is interdisciplinarity. In addition, the following is important: a scientifically grounded way of
obtaining information; fixed characteristics of knowledge making it possible to calculate the economic effect of its application; notional dominant depending on the concrete historical and socio-cultural situation; transformation of a word into a term, along with the emergence of a new notion; growing knowledge in the process of artistic creativity; special place of art concentrating aesthetic and other values around the modern social ideal in the structure of knowledge [14].

Philosophy enriches the giftedness doctrine thesaurus with the notion of abilities and talent.

Abilities are shown as an inherently flexible toolbox of human exploration of the world through experience during which activity is nurtured by the energy of the gift, while the expression of gift is enhanced by intensifying the successful activity in a particular area.

Talent is characterised as the highest manifestation of creative human abilities, as an extra-historical entity that is entirely associated with the peculiar development of the original natural uniqueness of an individual in the context of historical patterns of social recognition of individuality. The human creator (talent) objectifies its creative abilities without regard for a predetermined scale [63].

Neurophysiological concepts (Farber [15], Geake [16], Tsekhmistrenko [17] and others) consider giftedness and “gifted behaviour” as a biologically determined component. The scholars rely on the idea of differences in the structure and activity of the gifted person’s brain from the brain of those who did not show any giftedness.

The interdisciplinary approach to the study of “gifted behaviour” is realised through matching observations over the development and activity of a “gifted” brain – highly structured and coherently functioning – with direct observations of external manifestations of giftedness [18-20; 26-28].

The review of scholarly literature made it possible to clarify a number of characteristics of “gifted behaviour” conditioned by the functioning of neural networks:

- the first striking manifestations of gift revealed between the age 6 and 7, especially those based on the intensively forming visual function [15];
- more evident purposefulness of behaviour and accuracy of solving somatosensorial tasks, as compared to the behaviour of peer children [17];
- cross-modal information processing [16];
- “neural efficiency” demonstrated by the fact that a more dextrous/“gifted” brain requires less time to complete an assignment, while generally exhibiting less intensive cortical activation (23);
- various forms of specialisation matching the data characterising the brain structure and operation, e.g. “mathematical behaviour”, “musical behaviour” [24; 25].

“Gifted-nome” (inclinations) is material; it represents anatomical and physiological innate formations that store accurate information about the world; this information manifests itself in favourable environmental conditions in the form of an intuitive act – insight, assumptions, revelation. The gift determines the internal conditions for the transformation of giftedness into talent: individual features of gene expression and the brain structure and functioning; neural performance exceeding the norm; an increased level of oxygen in the blood.

Neurophysiology characterises abilities as the early maturation of frontal lobes of the brain, manifesting itself in children’s early academic success.

The concept of giftedness has been developed most thoroughly in psychological concepts (Bogoyavlenskaya, Kirnarskaya, Savenkov, and others).

In psychological terms, giftedness is characterised by:
• systematicity, the tendency to develop over the course of life, successful achievement of outstanding performance by an individual, outcomes exceeding the norm [29];
• manifestation of “talent” as results of activity that meet the requirements of objective novelty and social relevance [30];
• identifiability depending on the conditions that are more or less favourable for its manifestation [31];
• manifestation of abilities in more than one activity domain [32];
• manifestation of abilities in both high-achieving and low-achieving children [33].
Below one can see how the content of the renewed concept of giftedness thesaurus is presented in psychology.

Abilities are represented by the specific manifestation of mental functions in charge of assimilation of information, that are realised by the integral functional system based on human potential in a particular sphere of activity. They are distinguished by “absorptive” character and accumulate the manifestations of environmental impact. Abilities are deemed to have a systemically important role and are distinguished by a number of features: conjugacy with a person’s individual-psychological characteristics; expressed connection with success in any activity (activities); irreducibility to knowledge, skills or abilities that have already been developed in a particular person; orientation of the mental tool towards a particular area of activity; assimilative nature; dependence of manifestation on the specifics of a child’s native language.

Speaking of such a level as “talent”, giftedness is characterised by: significant superiority in potential and performance over other people, creatorship and creative efforts, a quantum leap in the mentality level, which is formed not by pure training of abilities, but is accounted for by many stages of human brain development, innate gift; similarity of basic features (patterns) in different types of giftedness; personality component function; realisation of special abilities; attitude towards giftedness as being special to the general.

The notion of giftedness in pedagogical concepts has been described by Feldhusen, Heller, Hoover, and others.

Giftedness is represented in the form of conceptual models: the “three-ring” model (above-average intellectual abilities + high enthusiasm for a current assignment + high level of creativity = “gifted behaviour”) [34]; “multifactorial” model [35]; “Munich” model [36]. The boundary between pedagogical and psychological knowledge is not strict. Giftedness belongs to the intellectual sphere; it functions as a mechanism that “absorbs” new things from the surrounding environment in order, after being changed under the impact of the new, to influence the external world, to adapt it for existence.

Modern research in the sphere of education has highlighted such characteristics of giftedness as:
• mismatch between the learners’ perception of their potential for creativity, imagination and innovation, their appreciation of creative personality, with the perception of teachers – specialists in “gifted education”; related under-representation of gifted children in groups with improved learning conditions [37-40];
• differences between gifted underachievers and other gifted learners in terms of perfectionism and ability to overcome difficulties (41);
• specification of giftedness against retaining the basic models [42];
• reflection of gifted learners’ creative mental activity in their specific eye movements [43];
• increasing complexity and improvement of the creative process when gifted students work in pairs [44]; the same in using exercises to practise concentration [45], concept maps [46], unconventional learning strategies [47], pedagogical approaches
aimed at re-engaging gifted learners [48], based on interconnected knowledge, interdisciplinary subjects [49-52], transformational style [53], demonstration of perspectives [54], integrative career counselling [55], cognitive training [56];
- impact on the learner’s giftedness self-identification (including twice exceptional) by educators whose competence is perceived positively [57-59];
- use of the concepts “non-transformational”, “transformational”, “self-actualised”, “actualised giftedness of others”, “inert”, “transactional” [60], and their expression in gifted behaviour as the interaction of competence in action, commitment to a task, care of others [61].

Abilities in the light of pedagogical concepts mean the high capacity of the intellect for biological adaptation, structuring of the environment and assimilation based on learning experience data.

From the sociological point of view, giftedness is considered within the framework of social demand, as a social manifestation, a phenomenon that has no clear determination and that contributes to the reproduction of inequality, which in turn can lead to social tension, with the object of research withdrawn from the framework of individual characteristics by entering the framework of social relations; i.e. giftedness is a social characteristic of an individual which allows him/her to realise his/her potential in the society (Lukash, Pesina).

It is proposed:
- to consider the individual as both gifted and untalented, thereby closing the issue of the individual’s original giftedness [62];
- to develop the ideas of social giftedness as a set of individual characteristics enabling one to realise his/her potential more successfully within the framework of social relations [62];
- to emphasise the factual impact of social relations on the formation of giftedness (“Giftedness is a state acquired by a person in social relations; therefore, one can take the opportunity to use his/her abilities as an instrument or a social function already within these social relations” [62, p. 20]);
- to characterise creatively gifted children as highly vulnerable to external influence, more susceptible than others to adaptation difficulties; to consider creative giftedness, in the first place, as giftedness in art and related activity (at the same time, creativity can be inherent in any human activity; intellectual abilities should be equated to creative abilities, since they are needed for the creation of new, original ideas and works of art) [63].

The external conditions for transforming giftedness into talent are determined by the environment and impact on a gifted person by others (pedagogues, parents and other family members, legal representatives, peers, neighbours, and media persons).

Materials and methods

The interdisciplinary approach is used to identify the links and dependencies between giftedness concepts in different sciences. New notional spheres between disciplines are formed; any tension between methodologies developed by different sciences is ironed out; new ways of solving interdisciplinary problems are found.

The approach presented within the framework of this article differs from the already known forms of the interdisciplinary approach that explore systems with a human element:
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the biosphere as such, ecological systems, medical and biological objects, biotechnology objects, and human-machine systems. The listed variants imply (1) the participation of a person in any process not involving him/her, along with other representatives of the natural world, (2) functioning of the human body producing certain substances, (3) interaction with mechanisms and devices in the process of activity. The authors of the article turn to different sciences to characterise the system of “giftedness” owing to which a person (1) is singled out from nature and from the totality of people, (2) his/her organism seems to be designed and functions purposefully, being in general perfectly adapted to specific activities, (3) the mechanisms of activity and relevant devices are chosen faultlessly, intuitively, in order to reach the goal which is seen by other people who can not reach it.

The authors undertook the analysis of concepts of giftedness as proposed by philosophy (dialectical approach), neurophysiology (comparative approach), psychology (activity-based, biological approaches), pedagogy (psycho-pedagogical, personality-based approaches), and sociology (socio-psychological, sociological approaches). The units of knowledge about the structure of giftedness were identified, along with the framework of its plasticity under the influence of “gifted education” pedagogy; the conditions of transformation of natural gift into a socially valuable talent were considered.

It was found out, on the basis of the undertaken research, that the differing characteristics of giftedness, when explored by different sciences, were integrated when humanities and natural sciences converge. The integration intensifies owing to the penetration of statistical and mathematical methods in the humanities exploring the notion of giftedness.

It is logical to systematise the selected features according to characteristic types: (1) sensory, which can be observed in a child’s “gifted behaviour”; (2) identificatory, which makes it possible to classify giftedness according to the criteria based on the typical ways of interaction with the given traits (as soon as music starts playing, a child with musical giftedness repeats precisely the melody with his/her voice; when a child with visual arts giftedness sees pencils and paper, he/she takes them and independently creates an original drawing which exceeds the quality of performance by children of the same age).

The interdisciplinary synthesis results in a new knowledge-based integrity/concept of giftedness, which represents a mental “archipelago of isles”. The islands in question are “philosophical”, “neurophysiological”, “psychological”, “pedagogical”, and “social”. The proposed concept has already been forming a ground for a new direction of scientific research – “talent studies” (“cogni-donum”).

The object of the study is giftedness as a multi-aspect and multi-level phenomenon.

Results

Let us present schematically the knowledge about giftedness identified through the interdisciplinary approach.

According to the chart (Figure 1), giftedness has a multi-level structure and represents a set of interconnected approaches to understanding giftedness in philosophy, neurophysiology, psychology, pedagogy, and sociology.

The following operational definition of the studied concept is offered herein: giftedness is a multilevel phenomenon with the material part represented by the energy of a highly structured and coherently functioning brain, the energy of which is transformed from potential to kinetic under the influence of internal and external conditions nurturing the
“gifted behaviour”. Meanwhile, the intangible part comprises: (1) the psycho-pedagogical component as a quality of psyche (motivation system); (2) the sociological component – a person’s extra-personal aura identifiable by society, harmonising the “equality – inequality” dyad and allowing a giftedness holder to realise his/her potential in the society.

| Philosophy: multi-level nature of giftedness | Neurophysiology: giftedness as the potential energy of a highly structured, coherently operating brain, converted into energy of “gifted behaviour” |
| Psychology: giftedness as a developing quality of psyche; integral manifestation of abilities for the purpose of specific activity, with extraordinary results exceeding the norm; the mental mechanism functioning towards minimising energy and time costs, with the achievement of high results through the integration of mental processes, their transformation into personality qualities | Pedagogy: giftedness as a child’s characteristics revealed only in the learning and educational process; a teleologically determined, multi-element, holistic, multi-level, internally structured phenomenon integrating the qualities that are characteristic of a particular activity |
| Sociology: giftedness as a phenomenon considered beyond the framework of individuality identifiable by society, contributing to the reproduction of inequality, a social characteristic of an individual that allows him/her to realise his/her potential in the society |

Figure 1 Giftedness in the light of the interdisciplinary approach

The interdisciplinary approach makes it possible to vary the vision of giftedness depending on connections and dependencies that are of interest to the researcher. For instance, if it is necessary to trace the viability of a particular component of giftedness, which appears to manifest itself from a person’s birth or early life, then:

- “neurophysiology of giftedness”, virtually unchanged, will represent a baseline (internal) level;
- “giftedness pedagogy” is directly adjacent to this layer, being expressed in a set of forms of pedagogical influence on giftedness, experienced by any child;
- “giftedness psychology” at the next level is not always included in the process of transformation of giftedness, but is meaningful if the educator deepens his/her knowledge of giftedness;
- the “giftedness sociology” level provides an explanation to logical puzzles that give no answer at the neurophysiological, pedagogical, and psychological levels (for instance, why a particular kind of giftedness is not recognised by all social groups);
- “giftedness philosophy” is an external layer of knowledge in terms of the considered approach; it offers global explanations, such as the ethical acceptability/unacceptability of research, the aesthetic harmony/disharmony of the “giftedness” concept, logical contradictions within the new knowledge of giftedness.

Thus, the inconsistent knowledge of giftedness is integrated into entirety, shifting from the psycho-pedagogical concept of “giftedness” to an extended interdisciplinary notion, by building associative links and a common thesaurus [64]. A number of concepts reflect the integral structure of giftedness, abilities, and talent: “gifted-nome” – a set of biological components of giftedness, including the genome and morpho-functional features; “the age of giftedness” – a period of child development from 6 to 7, when giftedness is ready to appear in the best way under the influence of a rapid burst of accumulated brain energy; “the age of talent” – from 15 to 22, a period of physical prime, the rapid development of personal qualities, acquisition of profession.
Discussion

Despite numerous works formally aimed at clarifying the essence of giftedness, its phenomenon is not properly revealed to the extent necessary for modern pedagogy. It is therefore important to critically analyse the sources in order to find the relevant knowledge that would explain what giftedness is and how it relates to other important notions of “gifted education”.

In general, the authors of this paper agree with the authors of the concepts considered above. Undoubtedly, the “portrait” of giftedness has been enriched by adding such traits as: the facts of underachievement among gifted learners; manifestation of giftedness in the form of interest integrating various scholarly and artistic sources; the veiled nature of giftedness in learners from low-income families, as well as representatives of social minorities, bilinguals, twice-exceptional children; reflection of “gifted behaviour” (for instance, children with mathematical giftedness) in eye movement trajectories; expectation experience, non-stressful work, vivid emotions, leadership experience, interaction, reflection as a good condition for the creativity of gifted children.

Giftedness in modern science is viewed in terms of the following approaches:

- dialectical (Saidov, Aminov, Ivleva, Ilyin, Mironova);
- comparative (Farber, Geake, Tsekhmistrenko, Antropova, Kuznetsova, Markosyan, Farber, Bezrukikh, Nusbaum, Hannoun, Kocevar, Stamile, Fourneret, Revol and Sappey-Marinier, Mrazik, Dombrowski, Gruhn, Rauscher, Md Jais, Azu Farhana, Mohd Sham, Al-Khalil, O’Boyle, Navas-Sanchez, Aleman-Gomez, Sanchez-Gonzalez, Guzman-De-Villoria, Franco, Robles, Arango, Desco, Gómez León);
- activity-based (Shadrikov, Ericsson, Savenkov, Jackson, Jung);
- biological (Kiernarskaya);
- psycho-pedagogical (Renzulli, Mönks, Ypenburg, Heller, Hopp, Händel, Stoeger, Vialle, Ziegler, Mosphere, Parker, Chakraborti-Ghosh, Schindler, Rott, Schindler, Lilienthal, Gómez-Arizaga, Valdivia-Lefort, Castillo-Hermosilla, Hébert, Conejeros-Solar, Shore, Sisk, Reis, Maker, Kaplan, Maree, de Vreeze-Westgeest, Vogelaar, Shim, Shin, Sternberg, Chowkase, Desmet, Karami, Lu, Landy, Chowkase);
- personality-based (O’Brien, Coleman, Schuller, López, Díaz, Piirto, Marzetta, Mason, Wee, Ronksley-Pavia, Neumann, Ambrose, Gierczyk, Hornby, Klingner);
- socio-psychological (Lukash);
- sociological (Pesina).

However, all of the considered research approaches represent a particular (narrow) scientific sphere. Each of them reveals only one or several aspects of such a complex phenomenon as giftedness.

Some positions seem to be underdeveloped and are interesting as promising directions of research in the sphere of giftedness.

For instance, a large body of evidence considering biological predisposition to manifestation and development of abilities remains outside the scope of research. The pragmatic explanation of unidirectional choice by trying to avoid the “confusion” created by the biosocial picture of giftedness seems to be a regression hampering the creation of the sought scientific theory. Rather, it is expedient to turn to other logical reasoning paths: clarifying the dialectic of giftedness and abilities, generalising the known concepts according to the rules matching the modern view of knowledge.
One can also see that abilities may be insufficiently differentiated by researchers in terms of knowledge, skills, and attitudes developed in the course of the educational process. It is also difficult to agree with the idea – essentially humane, but contradictory to observations – propagating the “emergence” of creative abilities in every healthy child, development of any human abilities to any human-attainable heights. However, the investigatory emphasis on the phenomenon of irreversible extinction of abilities and their progressive development is convincing – viewed as a consequence of asynchrony considered as a gap in time between the moment of mental maturation and the commencement of targeted development of the child’s abilities.

The boundaries of knowledge about giftedness are currently open, with information gaps around the edges. For instance, the role of culture in the reproduction of this form of knowledge is a debatable issue. For the knowledge about giftedness to increment systematically and each of its components to be perceived as related to others, the authors believe it necessary to imagine its structure not as abstract objects connected by cause-effect relations, but as an integrity based on the common nomological and axiological content. Disordered scientific knowledge is of particular value for the development of scientific knowledge about giftedness: new, poorly investigated facts need to be systematised and organised around a certain notional centre, and this centre should be given a coherent, aesthetically perfect, and economically meaningful form.

The mismatch between giftedness and a complex of knowledge, skills, and abilities should be brought to a logical end, which means that the only possible place of its localisation is a highly organised brain that has become as such under the influence of the genome and the environment. The role of age-specific stages has been clarified insufficiently, as well as – pessimistically – the issue of vitality decline caused by the limited supply of vital power destined for each individual.

An educator who has accepted the definitions of the “Operational Concept of Giftedness” (Russia, 2002) as a guide may have a number of questions: “In what observable forms does the ‘quality of psyche’, namely giftedness, manifest itself?”, “How can one differentiate an outstanding achievement from an ordinary one?”, “Are internal preconditions of achievement accessible for diagnostics?”, “Are new and socially significant activity results a manifestation of giftedness or do they represent acquired skills?”. The principles formulated by Shadrikov for identifying gifted children are partly helpful in answering these questions. It should be emphasised that the available valid psychodiagnostic methods for identifying giftedness are rather complicated and require high qualification and special training. However, developmental diagnostics, which takes place consistently, purposefully, from day to day, requires ecologically valid methods like those proposed by Shadrikov.

The giftedness pedagogy is currently at its formative stage. The results of pedagogical impact do not always meet expectations; the number of errors in assessing the prospects of transformation of giftedness into talent is great. Without belittling the role of educators-practitioners in solving the problems of “gifted education”, one should still note the need to strengthen the fundamental character of different methods, in particular, through resorting to the interdisciplinary approach.

This approach, when used in the sociological research of giftedness, reflects the ambiguity of the problem. In particular, Therborn in *World Inequality* pointed to the artificial reproduction of individuals’ inequality in society on the grounds of giftedness, which represents a kind of inequality (distancing) that is basically positive for the manifestation of giftedness in terms of success in achieving goals and compliance with social demands.
However, this approach has a “blind spot” – it does not consider the primary conditions of gifted individuals’ activity. Answering the question “Is the individual gifted?”, sociology does not answer the question “Why are the others not gifted”? This involves the inclusion of the sociological component in the interdisciplinary approach – by examining the social relations, the society in which giftedness manifests itself, the social demands an individual must meet, and, most importantly, this involves the consideration of all individuals, without exception, from the positions of the interdisciplinary approach – as initially gifted and not gifted. The sociological approach, combined with the interdisciplinary approach, makes it possible to ascertain giftedness within the framework of society and social relations, to build a system of individuals’ interrelation in terms of social interaction, and to prevent any social inequality. The notion of giftedness is formed as a phenomenon that takes place in society which is proper for the individual in terms of realisation of his/her potential, without encountering any negative assessment of himself/herself and his/her actions.

Thus, the consideration of giftedness in the current scholarly literature is presented by different authors from different angles. In order to have a complete picture, a modern researcher needs comprehensive consideration of giftedness concepts as presented by different sciences. The interdisciplinary approach allowed bringing together the disparate fragments of knowledge about giftedness.

### Conclusions

(1) The interdisciplinary approach has made it possible to reveal connections and dependencies between the concepts of giftedness proposed in philosophy, neurophysiology, psychology, pedagogy, and sociology. New notional fields were formed across different domains of scientific knowledge on the basis of concepts that are close in meaning, but differ in detail. The methodological contradictions in the approaches of different sciences were partially levelled out. Some new ways of solving interdisciplinary problems were found: integration of concepts offered by different sciences into a single thesaurus of giftedness, fundamentalisation of the practice-oriented methodology of revealing giftedness and its transformation into talent.

Scholarly views of giftedness (which includes such levels as gift, abilities, and talent) are important for the interdisciplinary approach, which is appreciated by educational practitioners. The hierarchy of the listed components is designed from the material level of gift, i.e. anatomical and physiological innate features, to abilities as a flexible tool inherent in a person, enabling him/her to master the world through experience, and further – to talent as the highest expression of creativity in unique or rare forms, focused on a specific sphere of activity, rooted in one’s gift and abilities.

(2) The “giftedness”, “abilities” and “talent” concepts are widely used in academic papers and texts of other affiliation, although their content is not generally accepted. These concepts are drawn together owing to the following features:

- positive emotional colouring typical of a giftedness/abilities/talent holder;
- the presence of common characteristics of otherness, obscure origin thereof (gift of nature or result of upbringing, pedagogically organised development?)
- love of learning as an inherent sign of giftedness/abilities/talent;
- impossibility to conceal giftedness/abilities/talent, and quite realistic possibility of their self-disappearance;
• aesthetic aura ("almost all talents are poets at least a little bit", according to Dostoyevsky).

The differences lie in the practicality of the phenomena in question: giftedness does not bind anyone to anything; abilities are considered as a gift that requires development; talent, as a social value, often serves as a basis for investment, since the results of a talented person’s activity tend to yield greater profit.

(3) A person’s giftedness represents an integral biological and social “substance” (metaphorically, it can be presented as a substance like plasticine, sometimes of different colours, sometimes with shiny inlays, sometimes edible, etc.) which remains the same in volume, scope, and scale throughout one’s life (the giftedness energy does not increase or decrease) and which can take different forms under external influence, including pedagogical impact: from gift (conditioned by the expression of genome and biological conditions – nutrition, sleep-wake schedule, comfort of air temperature, lighting, air constitution) to abilities (under the influence of learning and development conditions – coincidence of the child’s vector of giftedness with the content of the enriched environment, contact with the tutor in the domain of “giftedness” activity; mode, focus, and overall duration of learning sessions) and talent (influenced by “gifted education” conditions – individual educational route, pedagogical support by the tutor/coach, access to the best information resources, an individually modified educational environment with accessible high-quality training tools – musical instruments, sports equipment and apparatuses, sports uniform, electronic tools for recording and analysing one’s activities; paints and other graphic materials, premises for creativity and coaching).

(4) The diagnostic toolkit of giftedness has been unified by Russian and foreign scholars’ treatment of the phenomenon of “giftedness”, the absorptive nature of abilities and talent as the highest form of giftedness, inseparable from creativity, desorption of accumulated knowledge, skills, and abilities.

In the following papers, the authors will continue the research within the framework of the interdisciplinary approach, addressing such aspects of the giftedness problem as: the forms of “gifted behaviour” not presented in scholarly literature (“artistic and pictorial”, “theatrical”, “technological”, etc.); substantiation of conditions for the transformation of giftedness into talent by age-specific and individual qualities of children; search for evidence in favour of the “neural efficiency hypothesis” in the course of observation of gifted children; creation of developmental pedagogical diagnostics of giftedness with the use of music and other art forms. The new knowledge can serve as a basis for identifying the starting points, setting the general direction and culmination periods of individual educational routes for learners with identified giftedness, whose development takes place towards expressed talent.

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