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Olympiad movement of school children as the development of their giftedness

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Abstract

Phenomenon of the children's talent is one of the most important aspects amongst the main global problems of the contemporary education. Therefore, all questions related to identification, support and further development of the talented children and the talented young people are subject of an utmost attention due to the fact that both categories are the main intellectual human asset of any country of the world. There are various pedagogical methods and technologies of development of the talented children and teenagers. One of the most effective is considered to be involvement of the schoolchildren into various subject olympiads and competitions. There can be distinguished the following methods of research of the problems related to the talented students support by means of development of olympiad movement: analysis, comparison, generalization of the innovative pedagogical experience, observations, discussions with the schoolchildren and the teachers. Practical experience of the Republican Olympiad center in Tatarstan presented in the Article proves efficiency of the training sessions conducted at its premises with involvement of the teachers from the Universities as consultants and trainers as well as the seminars, round tables and training sessions with the mentors of the participants of the final stage of All-Russian Olympiad on Technology: effectiveness, presented in 2016 by the team of the students of Republic of Tatarstan was higher than in 2015 by 25% and higher than in 2014 by 62,5%.

Keywords: Talent, talent support, olympiad movement on technology.

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1. Introduction

For over the past decades scientists continue their debates about what children should be considered as gifted. The main reason of such discussions is the absence of an answer to the question: why gifted children do not always become gifted adults. Finding of an answer is of the strategic importance as the potential of the society depends on the number of talented and gifted people.

Let's consider a few points of view on this issue. Kholodnaya's (2011) view is noteworthy, she believes that there are two main categories of gifted children: children with disharmonious and harmonious types of their development. The first group refers to "a group of risk" and is in need of psychological help due to dyssynchrony of their development, difficulties in communication, a high probability of extinction signs of giftedness with their age and the subsequent "syndrome of the former child prodigy", high psychophysiological "price" of achievements, emotional and communicational problems and so on. Children with harmonious type of development are characterized by a fairly high level of their psychological health; they are included in the appropriate relationships with peers and adults and have real advances in their interest areas. The differences between these categories of gifted children, according to Kholodnaya (2011), determine the differences in the likelihood of their becoming gifted adults.

Jurkevich in his work "Gifted children and intellectual and creative potential of a society" (Jurkevich, 2009) considers the definition of giftedness through the following three "reference points": 1) the problem of adaptation, 2) uncertainty avoidance (the development of creative abilities) and 3) physical and mental health. According to the theory of Jurkevich (2009), like Kholodnaya (2011), there are two different types of giftedness. The first type is a "special" talent connected with specific instincts and sharply distinguishes such children from common ones. Among very gifted children can often be found children with obvious health problems - pathological hyperactivity, autism and other severe pathologies development. The second type Jurkevich (2009) defines as "normal" talent ("high rate"). Such children have a better adaptation, higher social and emotional intelligence, they are often higher, healthier and even more beautiful than ordinary children. Studies show that there are more gifted children of the second type, and they form the basis of the spiritual, intellectual and economic wealth of a society. Methods of working with such children are effective and well developed (Matyushkin, 1999; Popova, 2009).

At various times issue, related to talent, have been studied by various scientists like H. Gardner (1983), Heller (1989), Renzulli (1983), Torrence (1980), Treffinger, Isaksen (Treffinger & Isaksen, 2005) and others, including Russian ones - Babayev, Bogoyavlenskaya, Gilbuh, Druzhinin, Leites, Melik-Pashayev, Rubinstein, Savenkov, Teplov, Ushakov, Shadrikov etc. (Bogoyavlenskaya & Shadrikova, 2006).

Most researchers tend to think that genius is the quality of the mind that determines the possibility of a human's achieving of good results in various activities. It is believed that the development of talent - is always the result of a complex interaction of heredity (natural instincts) and the social environment, mediated by the activity of the child (playing, training, working). A special role is given to the child's own activity, as well as the psychological mechanisms of self-identity, underlying in the formation and realization of his talent (Bogoyavlenskaya, 2005).

Since the mid-1990s, the program of working with gifted children has been actively implemented in Russia, and today centers for the development and support of the child and adolescent endowments, schools, high schools for the intellectually and artistically gifted children are universally established. An important area of their activity is to identify the most gifted pupils through their involvement to the Olympiad movement, whose foundations were laid in the middle of the twentieth century in the Soviet Union.

Currently, competitive and Olympiad movements on various school subjects are actively being developed. Receiving of prizes by students has a positive effect on the school's image, and motivates

children to further success. Organization of subjective Olympiads and competitions has two main objectives: to motivate the student to engage into the science, to make him believe in his abilities and to find gifted children, support them by developing their ability and talent.

2. Method

Methods used in the study include theoretical: comparison, explanation, induction and deduction; and empirical: observation, and measurement.

3. Discussion

For these purposes, there are several functions that competitions and contests fulfill:

1. The personal and intellectual development of all participants of Olympiad movement: students, teachers, teachers of supplementary education, university professors, researchers, members of the teaching committees and parents.

2. Maintaining a single educational space.

3. Preservation of the high scientific level of education in Russia (Popova & Kelsina, 2011).

Today the subjective Olympiads in Russia are carried out in four stages: school, municipal, regional and final. Every next step gives more complex intellectual and creative tasks to the participants. Successful participation in the contest or competition requires from the students their intellectual maturity, communication skills, ability to make quick decisions in stressful situations, to evaluate new information, the ability to concentrate on the task. These qualities will help them to feel confident in the labor market in the future.

For subject teachers competitive Olympiad movement is also a kind of a test, in which they can answer the following questions: if they were able to give their students the basic information of the subject; if they taught their students to find answers to the set questions; if the students will be able to apply their knowledge creatively, if they can find the ability to solve tasks independently (Brekhova, Sleptsova & Shamanina, 2015).

In the Republic of Tatarstan students' participation in competitions, contests, festivals of different levels is one of the main direction of educational activities to identify and support gifted children and adolescents. It should be noted that in the region target program "Children of Tatarstan", focused on the creation and preservation of the state system of identification, development, and targeted support of gifted children, the preservation of national gene pool of the country, the development of intellectual and creative potential of the Republic Tatarstan within the framework of sub-program "Gifted children" is realized. The result of long-term activity on this program is the increasing of the winners' number in the final stage of All-Russia Olympiad in various subjects.

In 2012 in Russia the Republic of Tatarstan took the 4th place after Moscow, St. Petersburg and Moscow region. Starting from 2013, Tatarstan students confidently take the 3rd place in the team event, behind the cities of Moscow and St. Petersburg on the number of winners in the final stage of All-Russian Olympiad (Abaturova, 2015). It is impossible not to take into account the fact that in the Republic of Tatarstan where about 4 million people live, while in St. Petersburg there are 5 million people and in Moscow there are 12 million people.

In 2016, according to the results of the final stage of All-Russian Olympiad Tatarstan students won the 141 times (for comparison: in 2009 - 58, in 2010 - 59 times, in 2011 - 75 times, in 2012 - 69 times, in 2013 - 76 times, in 2014 - 73 times, in 2015 - 109 times).

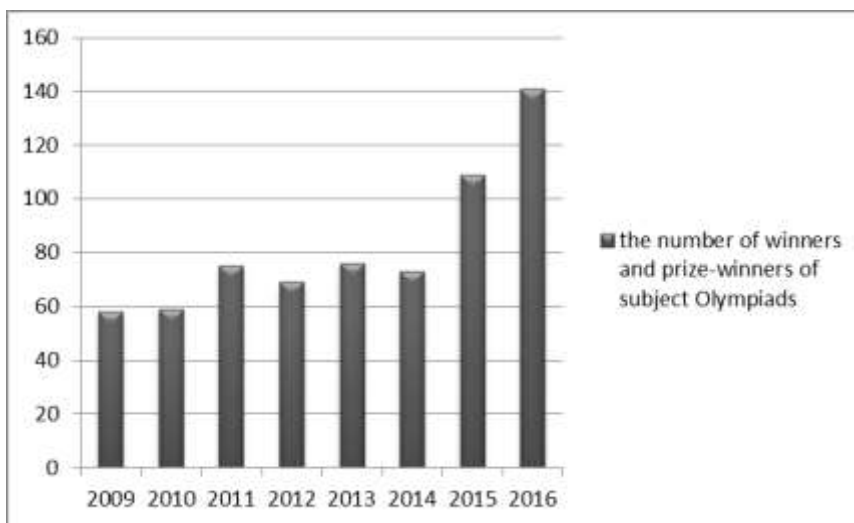


Figure 1 - Performance Indicators of school participants of Republic Tatarstan in the Russian Olympiad

In order to systematize the work with gifted children, aimed at developing their abilities and leadership qualities, and at making the basis for the formation of future region's intellectual elite, in August 2014 after the suggestion of the Minister of Education and Science, Republic of Tatarstan, Engel Fattakhov, the state independent establishment of additional education "Republican Olympiad Center"(SIE of AE "ROC") was created in Kazan.

The center develops gifted children's portfolio, coordinates the organization of school and municipal stages of All-Russia and republican Olympiads on various subjects, conducts the regional stage competitions, organizes the participation of the most talented children of Tatarstan in Russia and International Olympiads, as well as takes care of psycho-pedagogical support of training members in the republican Olympiad teams.

The opening of the Republican Olympiad Centre has contributed to a significant increase in the quality of students' training in various subject Olympiads. This is evident from the results of their performances in the final stage of All-Russian Olympiad (Table 1). The performance in such subjects as: mathematics, biology, law, health and safety framework, Technology, physical education has been noticeably improved.

Table 1 Number of prizes taken by Tatarstan students in the final stage of the All-Russian competition in the 2014-2016 biennium

Olympiad on the subject	2014	2015	2016
Math	5	7	13
Biology	5	7	11
Law	7	14	16
Ecology	14	11	18
Computer Science	4	8	9
Chemistry	13	11	16
The basics of life safety	3	7	11
Technology	1	10	12
Physical culture	4	13	12

Technology is a very capacious in content and practice-oriented, vocational and academic subject, aimed at teaching students how to labor operations, techniques and basic actions, and at preparing children for the planning of the work itself (choice of materials, the definition of the sequence of operations, the choice of instruments, the calculation of cost etc.) (Sedov, 2015). The purpose of the process of education is the formation of technological culture. Technological culture personality performs a certain measure of school readiness for graduate professionals in the world. This culture includes the labour culture, the culture of the graphics, design culture, informational culture, entrepreneurial culture, a culture of human relations, ecological culture, culture of housekeeping, consumer culture, project culture. On the Technology lesson creative work of students (creation of products based on creative transformative) is organized, that defines the essence of a meaningful process of education in general.

Olympiad Technology regardless to the stage (from the school to the final one) takes place in the logic of three stages: 1) theory 2) practical, 3) protection of the project. Recent years, the movement of students' Olympiad on Technology is characterized by its substantial efforts to improve. Today theory test questions are different with a variety of forms, the abundance of illustrations, references oriented on technological way of thinking. In 2015, the theoretical part of the test round was replaced by a creative task. Practical tour was interesting due to the necessity of solving modeling problems, finishing of a proposed object' designing, making of its sketching and drawing.

In 2016 the Ministry of Education and Science of the Russian Federation recommended to highlight several areas of schoolchildren's design activity by giving the required level of legitimacy of the work on robotics and other advanced Technology areas. During the Olympic Games lectures, seminars, master classes with teachers - schoolchildren's mentors are held, where vital issues are covered in details, best experience is demonstrated and best practices are discussed.

Let's consider in this research some aspects of team members' training in the SIE of AE "ROC") to the regional and final stages of All-Russian Olympiad on Technology.

High performance of a school children teams from Republic Tatarstan can be largely explained by the joint work of the SIE of AD "ROC" with Yelabuga Institute of the Federal State Autonomous Educational Institution of Higher Education "Kazan Federal University" (Elabuga Institute FSAEI of HE "KFU"). The choice of the university was not accidental. Within its walls, at the Faculty of Engineering and Technology, teachers of Technology has been taught (labor training teachers) since 1975. During this time, the faculty team has accumulated rich experience in training specialists in the field of labor education and the formation of the younger generation of technological culture - produced more than 3500 teachers who work successfully in the schools of the republic and abroad. Moreover, the teachers of the faculty have developed tasks and participated in the work of the jury at competitions in Technology at the municipal and regional levels in different years (Shatunova & Sergeeva, 2014). Organization of the joint system of systematic work with gifted students and has become, on our opinion, the key to the development of students Olympiad movement Technology in the Republic of Tatarstan.

In cooperation with SIE of AD "ROC" in 2014 teachers of Engineering and Technology Faculty of the Institute of Yelabuga FSAEI of HE "KFU" were involved as consultants and experts in the training camp. Classes are held mainly in the capital of Republic Tatarstan - Kazan, in the logic of team training students on Technology to the final stage of the All-Russian Olympiad. Training meetings mean intensive training of students on theoretical questions of all sections of the "Technology" subject, problem solving, execution of graphic works, consideration of various non-standard approaches in the implementation of tasks Olympiad. It should be noted that the most effective form of work at such meetings is the interaction of an expert consultant, the student and his teacher, as the teacher who prepared the student, gains himself the experience of consulting work, which will be required in the future work with other students.

Theoretical round of the Olympiad, until recently, has been focused on the textbook knowledge of Technology and a number of other subjects, which complete the content of Technology education students. This creative set has significantly improved the situation, having supplemented the ability to assess the Olympiad participant's ability to "apply" his obtained technological knowledge. At training camps a lot of attention is paid to methods of solving creative tasks. Tests of All-Russian Olympiad on Technology, despite their diversity, assess the cognitive abilities of students at the levels of "knowledge" and "understanding". During the students' team's preparation tasks on "analysis", "estimation", "synthesis" are used, which can not be performed without the knowledge and understanding.

Practical round for school and municipal stages of the All-Russian Olympiad is to perform tasks with a detailed instructional technological map. Thus, according to the central subject-methodical commission on Technology, an objective assessment of the quality of a case made by each member to a prearranged criteria is provided. At training camps at a practical tour the solution is worked out through additional tasks: to create a process map, a graphical representation of the future product and others.

The results of the project work, the students presented at All-Russian Olympiad on Technology, from year to year become more technological, diverse and ambitious. Thus, state-of-teacher organization of project activities children can be assessed as satisfactory. On projects' protection, the most successful participants often show far from childish result, which is different by its material consumption, labor-intensive and technological complexity. It is not accident that special attention to the training camp for the Technology is referred to the preparation of the project work defense. As a rule, students have a finished object or product, and together with their coaches develop the most efficient scenario of its presentation. Also the project is finalized as necessary, corrected and an explanatory note to the draft is edited. In the note the participant in fact demonstrates the maturity of most of the components of personality's technological culture, his ability to use the knowledge gained in the Technology and other subjects, analysis, evaluation and synthesis. In Tatarstan, much attention is paid to the authenticity of the project and formulation of the problem to be solved in this project. Priority is given to the problems of the construction as tasks for modeling, and redesign are less promising for reaching the final stage of the Olympiad. At training camps the children are working with all methods of solution design and technological challenges, increasing the level of practical relevance, originality of design ideas.

The preparation of the Olympiad participants for the performance of their protection projects is of special mention. Students are usually glad to talk about the process production and respond to the questions of the jury without subtext, testifying about the research work done, which was to be a priori. Therefore, during the preparation for the of the project presentation participants learn to build their performance at the defense of the project on the basis of submissions received during the selection of the optimal idea, selection of materials, optimum Technology of manufacturing some detail. The focus from the product is transferred to the process of its creation - that is, the creative process itself.

It should be noted that in the framework of the Federal target program of educational development during 2016-2020 years, a new technological environment of general education is being formed, the essence of which is in the dissemination of e-learning, distance technologies. As a result, the Technology teachers can plan lessons using the new media resources. It is noteworthy that the classes at the training camps in Tatarstan have been held for a number of years, with the materials of the Federal Center of Information of educational resources, with the Unified collection of digital educational resources and others.

Some lessons at the training camps are devoted to interactive work with all the students, who should not only show on the final stage of the Olympiad the quality of their individual training, but also their communication skills, as well as to demonstrate the team quality. We believe that it is no less important part of coaching, because on the Technology competition the participants have to help each other during the defense projects, and support their teammates. Exercises on the development of team work mechanisms as well as the formation and development of leadership qualities play a huge role.

Training meetings are not the only form of work of SIE of AD "ROC" on the development of technically talent students. There is no doubt that the key role in support of capable, talented children their teacher-coaches play. However, finding the child's potential the teacher often acts intuitively, focusing only on his own experience. Therefore, teachers need consulting support in their work with gifted students.

Republican Olympiad Center organizes and carries out such work at its base, invites all interested teachers at various seminars, trainings, round tables. At such meetings with representatives of higher education institutions, in particular with the teachers of the Faculty of Engineering and Technology Institute Elabuzhskij FSAEI of HE "KFU", teachers share their experiences, share ideas and solve many urgent questions arising in the course of work with gifted children. Consulting work is carried out not only by the university staff, but also teachers of Technology, who have achieved good results in the preparation of the participants of All-Russian Olympiad.

Thus, the All-Russian Olympiad on Technology is seen as a platform for determining the direction of technological education's development and improving teaching methods. Olympiad movement Technology is an opportunity not only to evaluate the quality of the technological preparation of pupils, but also affect its development. Coordinated activities of SIE of AD "ROC", representatives of the higher school (FSAEI of HE "KFU"), and the teaching environment are focused on quality assessment, followed by corrective actions, then planning of a new quality formation, implementation of the planned programs, next regular assessment and etc. like in a spiral development.

The positive dynamics of results of the students' participation from Republic Tatarstan in the final stage of All-Russian Olympiad on Technology can be seen in Table 2.

Table 2. The effectiveness of the participation of students from Republic of Tatarstan in the final stage of All-Russian Olympiad on Technology

Figure	2014	2015	2016
Number of participants	8	20	16
Number of first places	-	2	1
Number of winners	1	8	11
Performance	12,5 %	50 %	75 %



Figure 2. Detail of performances from the team member from the Republic of Tatarstan at the final stage of All-Russian Olympiad on Technology

Thus, the creation of conditions at the government level for the development and support of Olympiad movement in the Republic of Tatarstan allows students to achieve significant progress, thus ensuring the preservation and enhancement of its intellectual and creative potential. We hope that our

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proposals could be considered in a number of options for improving the work with motivated and capable students who are ready to show the higher level of technological preparation than the base one.

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