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SCIENTIFIC COMPETITIONS AND ASSESSMENT OF DEVELOPING STUDENT COMPETITIVENESS

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The currently formed information civilization have a significant need to create a sufficient level of social consciousness, moral, cultural and intellectual position that determine the nature of social development. An integral part of the modern educational process and the formation of a well-developed, initiative personality is scientific fairs, Olympiads and other intellectual competitions of students. The purpose of the study was to analyze the importance of this form of education, including the development of a simple method of determining the general assessment of the individual participant and the educational institution in the rating, which was based on the results of the Olympiads, competitions held from different disciplines among students of all levels of education. To

achieve these goals, a set of theoretical methods, such as analysis, systematization and generalization of scientific literature, discussing the impact of scientific competitions on personality formation, was used. The article discussed some of the most significant international sciences competitions, accessible to students of all levels and countries, including Ukrainian students. The authors have developed a simple numerical method that allows to determine the general score of the participant, the educational institution in the rating series, obtained according to the results of intellectual competitions among students after the completion or Olympiad. Mathematical modeling with artificially created data were used to develop the method of evaluating the results of scientific competitions. The application of the proposed method will allow participants of scientific competitions to obtain an objective assessment of their activities, and their scientific leaders and mentors will be able to quantify their efforts on the development of educational measures, to promote creativity and competitiveness of students in their own educational institutions compared to others. The results of the study can be used in the educational process of all levels of education, schools, colleges or universities, scientific associations practicing the organization of scientific competitions or tournaments.

Keywords: *science fairs, subject contests, Olympiads, subject tournaments, rating of the participants, method of ranking, results of competitions.*

НАУКОВІ КОНКУРСИ ТА ОЦІНЮВАННЯ РОЗВИТКУ КОНКУРЕНТОСПРОМОЖНОСТІ СТУДЕНТІВ

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Сучасна інформаційна цивілізація має значну потребу у створенні достатнього рівня суспільної свідомості, моральної, культурної та інтелектуальної позиції, що визначають характер суспільного розвитку. Невід'ємною частиною сучасного освітнього процесу та формування всебічно розвиненої, ініціативної особистості є наукові ярмарки, олімпіади та інші інтелектуальні змагання студентів. Метою дослідження був аналіз важливості цієї форми навчання, включаючи розробку простого методу визначення загальної оцінки окремого учасника та навчального закладу в рейтингу, який базувався на результатах олімпіад, змагань, що проводилися з різних дисциплін серед студентів усіх рівнів освіти. Для досягнення цих цілей було використано комплекс теоретичних методів, таких як аналіз, систематизація та узагальнення наукової літератури, що обговорює вплив наукових змагань на формування особистості. У статті розглянуто деякі з найбільш значущих міжнародних наукових змагань, доступних для студентів усіх рівнів та країн, включаючи українських студентів. Автори розробили простий числовий метод, який дозволяє визначити загальний бал учасника, навчального закладу в рейтинговому ряду, отриманий за результатами інтелектуальних змагань серед студентів після завершення олімпіади. Для розробки методу оцінювання результатів наукових конкурсів було використано математичне моделювання зі штучно створеними даними. Застосування запропонованого методу дозволить учасникам наукових конкурсів отримати об'єктивну оцінку своєї діяльності, а їхні наукові керівники та наставники зможуть кількісно оцінити свої зусилля щодо розвитку освітніх заходів, сприяти креативності та конкурентоспроможності студентів у власних навчальних закладах порівняно з іншими. Результати дослідження можуть бути використані в освітньому процесі всіх рівнів освіти, школах, коледжах чи університетах, наукових об'єднаннях, що практикують організацію наукових конкурсів чи турнірів.

Ключові слова: *наукові ярмарки, предметні конкурси, олімпіади, предметні турніри, рейтинг учасників, методика ранжування, результати конкурсів.*

Problem statement; its connection with important scientific and practical tasks. The current stage of development of society is characterized by accelerated rates of development of technology and engineering. New ideas are constantly required to create competitive products and train highly qualified personnel. External conditions serve as a prerequisite for the realization of creative potential of the individual, who has unlimited potential in biological terms.

Scientific education plays an important role in the entire educational system. (Grinnell, 2020) One of the components of modern education, development of research skills and formation of a correct worldview is the involvement of students in scientific research. Student research, including participation in student scientific competitions, science fairs or scientific youth conferences, allows students to deepen their knowledge in a specific scientific field, develop analytical thinking, curiosity and problem-solving skills (Wharton, 2019).

The purpose of this study was to consider discussions devoted to the current state and development of such an area of scientific education as student science fairs, competitions and Olympiads, their importance in modern education due to the increase in jobs in the fields of Science, Technology, Engineering, and Math (STEM) (Guire, 2022).

The main issue that has been explored and discussed in the literature has been the question of the usefulness of participation in relevant scientific competitions for students themselves. Students' participation in science fairs has two main motivations; it is participation in a competition and a way to deepen knowledge of the relevant subject or general learning and should be voluntary (Grinnell, 2020).

However, as the researchers noted (DeLisi et al., 2021), science fair and competition participants also include teachers and project mentors, administrators, organizers, and science fair jury members, whose roles were also examined. The results of these science fair studies, including surveys and questionnaires, showed that science fair implementation varied

significantly across schools. J. DeLisi et al. (2021) found in their study that building knowledge through scientific experimentation is important for student learning. However, hands-on lessons do not have to be limited to large, long-term projects like science fairs. They suggested that teachers could find ways to incorporate discussion, assessment, and information into the context of regular science tuition.

A study of students' experiences of participating in science fairs and competitions (Grinnell et al., 2025) found that positive factors included new knowledge gained; experience in conducting research; enjoyable and fun experience; and career choice. An analysis of surveys of science fair participants allowed K. M. Schmidt and P. Kelter (2017) to conclude that independent topic selection and research planning were strengths of these competitions. Students knew the studied projects in detail and had a general understanding of the scientific process. (Schmidt & Kelter, 2017) However, according to the researchers, there were also negative attitudes towards science related to the length and complexity of the task, most often related to the age mismatch and the individual nature of the projects. Negative aspects of participation included boring time, bad project, lack of interest in research, and mandatory participation. It was also noted that students whose mentors were scientists made the most positive comments, in contrast to the negative impression of those who participated at the school-only level (Grinnell et al., 2020). K. M. Schmidt and P. Kelter (2017) recommended making the science competition or competition sections more age-appropriate and allowing shorter/smaller projects and encouraging students to work with a partner or a small group. According to some recommendations, important things are choosing a topic that interests the contestant, proper project planning. Having a good, well-formulated question, hypothesis and procedure will allow the whole project to go smoothly (Adtalem et al., 2025).

Researchers who studied the results of science fairs and student competitions and their impact on the learning process argued that student participation in such events was a significant addition to practical lessons in natural and technical subjects (DeLisi et al., 2021). However, as the researchers note (DeLisi et al., 2021), science fair and competition participants also include teachers and project mentors, administrators, organizers, and science fair jury members, whose roles were also examined. The results of these science fair studies, including surveys and questionnaires, showed that science fair implementation varied significantly across schools.

By analyzing the positive and negative aspects of scientific competitions, their connection with students' intentions to build their careers in science and engineering, or the lack of such intentions, the authors of the study identified some little-studied issues (Grinnell et al., 2020). The problem that the researchers considered was the inappropriate behavior of students in research, namely plagiarism and falsification of results (Grinnell et al., 2020; Grinnell et al., 2017). Grinnell et al. (2020) suggested that this negative side of science fairs might be related to the mandatory participation of students in science fairs and the availability of two kinds of science fairs – competitive and noncompetitive.

Analysis of recent research and publications. The role of intellectual competitions and tournaments in modern education. Intellectual competitions and tournaments are an integral part of the modern science education process. In the modern education among the many types of tournaments, subject Olympiads, science fairs, competitions of various levels in the main scientific disciplines, such as mathematics, physics, chemistry, biology etc. or modern disciplines, such as Computer Science, Information and Communication Technologies, and Cybernetics are known and widely in use. (DiMenichi & Tricomi, 2015; Grinnell et al., 2017; Orosz et al., 2018) In addition to the above types of scientific and educational tournaments, there are widely used types of educational competitions such as performances, presentations, submissions, and examinations, each of which has its own unique positive educational goals aimed at advanced personal development. The undeniable positive strengths of these competitions can be used to

make learning an exciting opportunity for personal intellectual growth for all students. The undoubted positive features of tournaments is competitiveness, a wide field of activity, a variety of forms and methods of conducting, voluntary participation and high motivation of participants, increased requirements in the subject and thematic areas. (DiMenichi & Tricomi, 2015) The ultimate goal of various competitions and tournaments is to educate a successful comprehensively developed individual who is able to withstand competition with other members of society, without going beyond the norms and rules adopted in society. Preparing projects for the competition and actually participating in the competition, presenting the achievements of personal intelligence will also help in choosing a profession and prospects for life. (Susanto et al., 2018)

Moreover, the problem of developing human competitiveness is quite profound and has become the subject of special research. (DiMenichi & Tricomi, 2015; Hawley, 2008; Orosz et al., 2018; Schmidt & Kelter, 2017) The causes, trends for the high and continuing levels of gender segregation in science, technology, engineering, and mathematics (STEM) fields and their possible links to education were examined. The authors suggested that the structure of majors and their linkages to professional training and careers might combine with gender differences in educational goals to influence the persisting gender gap in STEM fields. (Mann & DiPrete, 2013)

An important factor in the development of personality is internal motivation to explore the surrounding world and one's place in it. (Prabhu et al., 2008). Studies have shown that many students do not consider their natural science education interesting or do not see anything important in it for their lives. However, many of the students reconsidered their attitude towards STEM fields after participating in science competitions (Wharton, 2019).

Many long-time science teachers were concerned about improving school science education not only in their own countries but also internationally (Harlen, 2010). The authors of the study argued that the big ideas taught in science education should reflect big ideas in science, expressed in ways appropriate to learners at various stages in cognitive development. Science education researchers have also suggested that educators should provide students with opportunities to gain experience and value collecting and using evidence in scientific endeavors, which is critical to developing an understanding of the world around them. (Harlen, 2010, 2015)

Nowadays, many educators confirm that in addition to theoretical classes and testing, practical classes with scientific experiments are of great importance in mastering the materials of various sciences. Educators claim that, as was previously noted, hands-on science provides many benefits for students, and develops many useful abilities for personal development. T. Baumbach in his analysis identified such benefits as better understanding of concepts, development of critical thinking skills, stimulating creativity, promoting inquiry and curiosity, developing skills for the future, enhanced motivation and engagement, better retention of information, real-world connections, promotion of teamwork and collaboration, learning to learn from failure (Baumbach, 2023). Undoubtedly, these abilities will also develop in students when they deepen their knowledge for competitions, Olympiads or create projects for science fairs. Based on our teaching experience, we can confidently say that we have not met any unsuccessful students among those who took part in competitions, Olympiads, student conferences, etc. Moreover, we generally noted an increase in interest to in-depth study of subjects necessary for the relevant specialty. However, such progress also depends largely on the efforts and attitude of teachers and tutors.

Among the contests and tournaments that have become widespread in the practice of educational institutions, one can distinguish two types of events that differ in the activated competencies of students: competitions of creative works and projects, so called science fairs and subject tournaments or Olympiads.

Science fair is a science project competition of students in elementary, middle and high schools and allows them to practically participate and compete in the scientific and technological environment, thereby expanding their horizons in various disciplines. Students usually compete individually or within their age groups. The information about numerous scientific competitions are also available online for international students. (Baumbach, 2025; Jain, 2025; See Science, 2025).

In the modern world, there are numerous General Science Competitions:

GENIUS Olympiad, which organizes competitions in such areas as science, information, social responsibility of business, the role of science and technology, art and artistic expression, music performance, looking at problems through cameras, and computer technologies aimed at creating innovative solutions in the field of global ecology. (GENIUS Olympiad, 2025) A distinctive feature of the GENIUS Olympiad is the expansion of the level of national GENIUS Olympiads for organization in individual countries. GENIUS Olympiad Ukraine was the first National GENIUS Olympiad, which expanded to include 12 countries this year. (GENIUS Olympiad Ukraine (GOU), 2025) In Ukraine, despite the martial law, the national GENIUS Olympiad Ukraine was held in 2024 in all categories. The organizer of this Olympiad, as well as a number of other competitions and scientific competitions, is the Junior Academy of Sciences of Ukraine. (Junior Academy of Sciences of Ukraine (JAS), 2025) Now the registration and the First stage of evaluation are underway.

International Kangaroo Science Contest (IKSC) is open to students of all ages and across a variety of disciplines. Participation in the competition provides participants with an engaging, long-term experience that inspires and motivates students, their mentors, and entire international communities to embrace challenge-based learning. (International Kangaroo Science Contest (IKSC), 2025)

The EU Competition for Young Scientists (EUCYS) gives students who have won national competitions the opportunity to present their projects and compete with the best of their peers at a European level, meet other young scientists with similar skills and interests, and receive recommendations from Europe's most eminent scientists. To encourage participants, the best works, selected by a representative authoritative jury according to such parameters as originality and creativity in the identification of and the approach to the basic problem; skill, care and thoroughness in designing and carrying out the study; following through of the study from conception to conclusion; reasoning and clarity in the interpretation of the results; quality of written presentation and ability to discuss the project with the jury members, are awarded core prizes. (EU Contest for Young Scientists (EUCYS), 2025)

Many national competitions become international and invite participants from other countries. For example, Egypt International Science and Technology Fair (EISTF) is prestigious international science fair and is open to students of all ages and all countries, encourages them to showcase their research projects. It is a great platform to gain experience in research and presentation skills. (Egypt International Science and Technology Fair, 2025)

The Breakthrough Junior Challenge (BJC) is a tournament focuses on scientific thinking and problem-solving skills. The BJC is an annual global competition for students aged 13 to 18 from around the world designed to inspire creative thinking in science, physics or mathematics. Students are invited to create and submit original videos (maximum 2:00 minutes) that bring a concept or theory in science to life. Projects are judged on students' ability to explain complex scientific ideas in an engaging, colorful and creative way. It encourages students to identify real-world problems and propose innovative solutions. (Breakthrough Junior Challenge (BJC), 2025)

The Institute of Competition Sciences (ICS) organizes all sorts of scientific competitions using a system similar to that of professional sports. ICS declares that they aim to create a

system of support, wide recognition and rewards for participants in scientific competitions, students, mentors and teachers. (The Institute of Competition Sciences (ICS), 2025)

Many scientific societies also organize youth competitions within their field of science. For instance, the Royal Society of Chemistry is organized several competitions like UK Chemistry Olympiad, Cambridge Chemistry Challenge Lover 6th etc. aim to stretch and challenge students interested in chemistry, and will provide an excellent experience for anyone considering taking their studies further. (The Royal Society of Chemistry (RSC), 2025)

Only the most significant global competitions and Olympiads have been listed here. However, there are also numerous national, regional, and university scientific competitions, fairs, and contests aimed at developing the most pressing requirements of social development. Subjective tournaments, Olympiads and competitions can cover almost all existing disciplines studied in schools, colleges or universities. Subjective tournaments are usually held among individual participants, where participants compete in solving tasks of increased complexity. Participation in the subject Olympiad suggests that participants have a good grasp of the main school curriculum in the subjects of tournament. Subjective tournaments are usually held among individual participants and the teams that these participants are members, similar to how they evaluate the results of individual-team sports competitions. In addition to an individual rating of participants, it is often necessary to calculate the rating of teams, groups or educational institutions (EI) that provided their contestants for the tournament.

Research objective. The purpose of the study was to examine the significance of intellectual competitions, science fairs and tournaments, scientific and educational Olympiads in the modern educational process as a means of educating a successful, comprehensively developed personality, capable of withstanding competition with other members of society, without going beyond the norms and rules accepted in society. The purpose of the study also included the development of a simple method for determining the overall score of an individual participant and an educational institution in a rating series, which was built on the results of Olympiads held in various disciplines among students of all levels of education.

Research methods. In accordance with the research objective, the following methods were used in the study to obtain objective information: theoretical analysis of specialized, scientific and methodological literature, search for information on the most prestigious world subject competitions and Olympiads, as well as methods of mathematical modeling, formation and processing of artificially generated data. This article does not contain any studies involving human participants and/or animals performed by any of the authors and is a theoretical generalization of the accumulated experience. Artificial intelligence methods were not used in the study and the preparation of manuscript.

Presentation of the main research material. Results of scientific competitions and an assessment of the teaching effectiveness. During the subject Olympiad, the contestants of the same teams, groups or educational institution, according to the results of competitions, obtain different score according to scores ranking. (Brozos-Vázquez et al., 2008) The simple addition of the scores obtained by the participants at individual tournament does not make it possible easy and correctly determine its final interscholastic score of particular team among the others in the so-called rating series. (Brozos-Vázquez et al., 2008) Of course, it is possible to determine the rating according to the received “Gold”, “Silver” and “Bronze” positions, however, this consideration leaves a large group of participating teams outside the overall rating, and possibly unsatisfied with their ranking.

In this paper, we suggest an easy method for determining the ranking of teams participating in a subject competition or Olympiad based on individual results of members of these teams had acquired during various subject tournaments.

Each participant (P_i) of the subject tournament included in subject Olympiad as usually receives a certain number of points, score (S_n) for the completed work in the respective subject tournament.

As an example, we were considering a competition in one subject of 36 participants, one from each EI. If the EI did not provide the participant for the competition, then EI would not obtain points ($S_n = 0$).

Table 1.

The scores had acquired by contestants

P_i/EI	Score	Task performance, %	Rank	P_i/EI	Score	Task performance, %	Rank
1	22	51	12	*19*	30	70	5
2	24	56	10	*20*	19	44	15
3	22	51	12	*21*	26	60	8
4	15	35	19	*22*	20	47	14
5	18	42	16	*23*	12	28	22
6	14	33	20	*24*	31	72	4
7	21	49	13	*25*	29	67	6
8	14	33	20	*26*	37	86	**1**
9	19	44	15	*27*	30	70	5
10	17	40	17	*28*	36	84	**2**
11	8	19	23	*29*	0	0	0
12	28	65	7	*30*	15	35	19
13	17	40	17	*31*	28	65	7
14	13	30	21	*32*	16	37	18
15	33	77	**3**	*33*	0	0	0
16	24	56	10	*34*	25	58	9
17	29	67	6	*35*	20	47	14
18	20	47	14	*36*	23	53	11

Source: The data in the table was artificially created by authors to demonstrate a possible model situation.

As an example, in the Table 1 the results of the contest, which were artificially generated data in some subject, were demonstrated. Such parameters like the number of points received by the contestant for the work done, the percentage of his performance and his rank among other participants in the contest were presented in Table 1.

As a rule, competitions are held on several subjects, as the subject Olympiad, for example, six, that will form six tables. The calculation of the total number of points or the simple addition of ranks obtained by the participants for each contest of the subject Olympiad does not allow to accurately reflecting the overall result of the participant/EI and correctly determine its ranking among others. The proposed method allows determining the position of the EI in the ranking series because of the all competitions of the subject Olympiad.

For this purpose, the rank of the participant/EI in the Olympiad on the each subject should be determined. In the next step, the relative units corresponding to the rank obtained by the participant/EI in the competition are calculated by referring to the first position of all other positions using Formula 1.

$A = 1000/n$, relative score, (**1**)

where n is the position won by the contestant on a particular subject contest.

We denoted the relative units obtained as the relative score of the participant in the result of the Olympiad. For example, the relative score (A) corresponds to the positions: first – 1000, second – 500, third – 333 points, etc. It is necessary to note that the number of 1000 points for the first place in a specific rating was taken for simplicity of calculations and in order to avoid fractional numbers if the number of participants is large enough. The final scores will have the same meaning if the jury of the competition will accept the number 1, or 10, or 100 for the first place. According to the received relative score from higher to lower value, the competition jury will place the participants in the competition and receive their rating. The relative scores of participants/EIs on the result of the subject contest calculated using the formula (**1**) were demonstrated in Table 2.

Table 2.

The relative scores of participants/EIs in the subject contest

Participant/EI	Position in the subject contest, *n*	The relative score, *A*	Participants/EI	Position in the subject contest, *n*	The relative score, *A*
1	12	83	*19*	5	200
2	10	100	*20*	15	67
3	12	83	*21*	8	125
4	19	53	*22*	14	71
5	16	63	*23*	22	45
6	20	50	*24*	4	250
7	13	77	*25*	6	167
8	20	50	*26*	1	1000
9	15	67	*27*	5	200
10	17	59	*28*	2	500
11	23	43	*29*	0	0
12	7	143	*30*	19	53
13	17	59	*31*	7	143
14	21	48	*32*	18	56
15	3	333	*33*	0	0
16	10	100	*34*	9	111
17	6	167	*35*	14	71
18	14	71	*36*	11	91

Source: The data in the table was artificially created by authors to demonstrate a possible model situation.

In the same way, relative score should be calculated for all other subject competitions, and the relative score of each participant for the whole subject Olympiad can be calculated by summing A_m parameters according to the formula (2):

$$\sum_{m=1}^{m=6} A_m = A_{m1} + A_{m2} + A_{m3} + \dots A_{mi}, \quad (2)$$

where *m* is the number of subject in the Olympiad, A_{mi} is the relative score of the particular participant/EI in the distinct subject competition, *i* is the number of participants/EIs.

The final score for each participant/EI, as example, for six subjects in the Olympiad, such as History, Chemistry, Biology, Mathematics, Physics, Language and literature was exhibited in the Table 3.

Table 3.

Positions (n) in the subject Olympiad, the value of relative points (A_m) for a particular subject, the sum of relative points (ΣA_m) for each participant/EI

Participant/EI	History		Chemistry		Biology		Mathematics		Physics		Language and literature.		ΣA_m
	N	A_1	N	A_2	N	A_3	N	A_4	N	A_5	N	A_6	
1	12	83	7	143	29	34	9	111	20	50	12	83	505
2	10	100	4	250	15	67	6	167	15	67	18	56	706
3	12	83	26	38	0	00	18	56	18	56	19	53	286
4	19	53	24	42	22	45	14	71	12	83	13	77	371
5	16	63	0	00	0	00	21	48	2	500	11	91	701
6	20	50	9	111	19	53	13	77	16	63	16	63	416
7	13	77	25	40	17	59	17	59	6	167	19	53	454
8	20	50	31	32	26	38	18	56	20	50	23	43	270
9	15	67	9	111	6	167	12	83	14	71	23	43	543
10	17	59	13	77	12	83	17	59	8	125	22	45	448
11	23	43	11	91	24	42	15	67	14	71	17	59	373
12	7	143	21	48	11	91	23	43	13	77	22	45	447
13	17	59	6	167	20	50	20	50	4	250	14	71	647
14	21	48	18	56	8	125	21	48	24	42	6	167	484
15	3	333	2	500	1	1000	1	1000	10	100	7	143	3076
16	10	100	17	59	25	40	21	48	13	77	0	0	323
17	6	167	23	43	23	43	20	50	17	59	10	100	462
18	14	71	27	37	10	100	20	50	22	45	20	50	354
19	5	200	19	53	0	0	3	333	3	333	15	67	986

20	15	67	29	34	9	111	11	91	11	91	10	100	494
21	8	125	5	200	2	500	7	143	9	111	3	333	1412
22	14	71	22	45	20	50	4	250	8	125	8	125	667
23	22	45	1	1000	0	0	12	83	0	0	5	200	1329
24	4	250	3	333	3	333	2	500	5	200	2	500	2117
25	6	167	0	0	5	200	10	100	19	53	8	125	644
26	1	1000	28	36	29	34	20	50	7	143	6	167	1430
27	5	200	21	48	7	143	21	48	21	48	4	250	736
28	2	500	20	50	21	48	8	125	14	71	1	1000	1794
29	0	0	0	0	0	0	21	48	25	40	21	48	135
30	19	53	12	83	13	77	16	63	14	71	15	67	413
31	7	143	15	67	16	63	5	200	14	71	24	42	585
32	18	56	16	63	28	36	5	200	1	1000	9	111	1465
33	0	0	10	100	4	250	0	0	0	0	0	0	350
34	9	111	30	33	28	36	19	53	23	43	0	0	276
35	14	71	7	143	14	71	22	45	0	0	14	71	403
36	11	91	14	71	27	37	10	100	18	56	12	83	438

Source: The data in the table was artificially created by authors to demonstrate a possible model situation.

The sum of the relative score ΣA_m, which were won by the participant/EI made possible clearly determine the final ranking of the particular participant/EI in comparison to other participants in the subject Olympiad. An analysis of the data in Table 3, as an example, demonstrates that the best results were achieved by participant/EI No. 15, with a total score $\Sigma A_m = 3076$. The second position won participant/EI No. 24, with a total score $\Sigma A_m = 2117$, and third position had No. 28 with score $\Sigma A_m = 1794$ points and so on (Table 4).

Table 4.

The final scores of the subject Olympiad and the position, reached by the participants/EI

Participant/EI	Sum of the relative scores, ΣA_m	Position, N	Participant /EI	Sum of the relative scores, ΣA_m	Position, N
15	3076	1	14	484	19
24	2117	2	17	462	20
28	1794	3	7	454	21
32	1465	4	10	448	22
26	1430	5	12	447	23
21	1412	6	36	438	24
23	1329	7	6	416	25
19	986	8	30	413	26
27	736	9	35	403	27
2	706	10	11	373	28
5	701	11	4	371	29
22	667	12	18	354	30
13	647	13	33	350	31
25	644	14	16	323	32
31	585	15	3	286	33
9	543	16	34	276	34
1	505	17	8	270	35
20	494	18	29	135	36

Source: The data in the table was artificially created by authors to demonstrate a possible model situation.

Conclusions and prospects for further research. Over the years, numerous scientific competitions have proven themselves an effective platform for young researchers who are ready to conquer new scientific heights. Participation in scientific and technical excellence competitions provides experience that can be called fundamental in the development of a specialist without exaggeration. This experience includes increasing general and professional erudition, design experience in working on innovative projects, their support and promotion, gaining experience in public defense, increasing interest in the chosen profession, and cooperation with the scientific supervisors and centers. Thus, the final calculated data made it easy to determine the position achieved by the participant in the subject Olympiad. The proposed method is simple and does not require much time to calculate the total amount of relative scores received by the Participant or Education Institution, as the relative scores are repeated in the rating series for each subject and they only need to add up. The authors of this publication also hope that this study of students' scientific creativity will attract the attention of teachers to this very useful part of the educational process and will contribute to its further development in Ukraine.

In the future, the authors of this study will monitoring the development trends of world and national science competitions and Olympiads for students of all levels and the influence of this kind of science fairs on the development of people's personal qualities and creativity.

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