

UDC 37

Influencing Factors of Science Olympiad Students' Success

¹M. Kürşad Özlen²Mehmet Özgün

¹International Burch University, Bosnia and Herzegovina
71000, Sarajevo

E-mail: kozlen@ibu.edu.ba

²International Burch University, Bosnia and Herzegovina
71000, Sarajevo

E-mail: mehmet.ozgun@bosnasema.com

Abstract. This research aims to identify the main factors affecting the success of science olympiad students who participate in national and international science olympiads. The collected data is analyzed descriptively after conducting a developed survey. Survey was prepared based on twelve variables with three, four or five measuring items. Among six private high schools of Bosna Sema Educational Institutions in four different cities of Bosnia and Herzegovina, a total of 136 science olympiad students participated in the survey. SPSS program was used to analyze data. The results indicate extreme agreement levels for probable factors except slight agreement levels for technology use, supervisor, assessment and student's self efficacy.

Keywords: Olympiad students; success factors; Bosnia and Herzegovina; Bosna Sema Educational Institutions; survey.

1. Introduction

Success is not achieved by hard work alone. Instead, it is mixed with some organization, belief, and support from the beloved ones. According to Williams and Williams (2011), five key ingredients of student motivation are: student, teacher, content, method/process, and environment. So it's not the student alone who'll be able to achieve the desired success but the perfect combination of these factors all together.

Student himself/herself is the first factor in the path of success. Surland (2010), in his article emphasizes that there is a relationship between student self-efficacy and locus of control, and there is an increased academic persistence in high self-efficacy students. High self-efficacy moves you up to a point but to go further, you need a good supervisor. It may be thought that in this age of technology where e-learning tools are everywhere, there may not be a need for teachers so much. However, Eristi (2012) in his study confirms that students do not see e-learning applications as an alternative from learning a teacher. They absolutely prefer to learn from their teachers but in technology-aided learning environments (Eristi, 2012). Content must be in line with the student's interest. Another important factor is the method/process. Using the benefits of technology in the learning process should not be ignored. Ghaznavi, Keikha and Yaghoubi (2011) in their research showed that use of information and communication technology is effective in increasing educational motivation, improving questioning skills, improving research spirit and raising school marks. According to Shepkey et al. (2010), students' use of laptops outside of school for doing homework and playing learning games is a strong implementation mediator of achievement. Besides using technology in the learning process, the method used by the students highly affects the success. For example, Garcia et al. (2012) examines the self-assessment of students as a learning method and finds that the students who used to assess themselves become truly engaged in their learning process. Finally, the learning environment plays an important role in the success process. From the physical condition of the classroom to the friends, from the attitudes of school administrators to the family members there may be many factors structuring the environment. According to Ogunshola and Adewale (2012), the parental educational qualification has significant effect on the academic performance of the students. Tiantong and Teemuangsai (2013) study the students working together in collaborative groups, and find that the more they work together the more they understand, retain, and feel better themselves, their companions and collaborative environment encourages student responsibility for learning.

The main goal of this research is to examine the factors affecting the success of science olympiad students from mathematics, physics, and informatics attending private high schools in Bosnia and Herzegovina. The study wants to evaluate the variables including their own performance, family support, school atmosphere and administrative support, supervisor's role, and friendship on their success from the students' perspective. The second section presents the relevant literature. Next section provides information about the obtained data and used methodology. Therefore, the results of the analyses are presented and the paper is finally concluded.

2. Literature review

2.1 Technology Use

Yilmaz and Orhan (2010) studied internet usage of high school students for educational needs and according to him this need varies as we categorize students as "surface learners" and "deep learners". He defines surface learners as those who prefer to memorize things for a temporary success, while deep learners want to grasp the meaning of the course material. He finds that the relationship between internet usage for educational purposes and the will of deeply understanding the subject is high and deep learners use internet more to achieve that purpose while surface learners use it for non-educational purposes.

Yilmaz, Ulucan and Pehlivan (2010) aimed to determine attitudes and thoughts of the students attending physical education teaching program about using technology in education. They found that the students' use of technological materials in education affected the students' attitude scores in a positive way.

Ghaznavi, Keikha and Yaghoubi (2011) states that using information and communication technology is effective in increasing educational motivation, improving questioning skills, improving research spirit and raising school marks.

According to Shepkey et al. (2010), students' use of laptops outside the school for preparing homework and playing learning games is a strong implementation mediator of achievement.

2.2 Socio-Economic Status

Ogunshola and Adewale (2012) investigated parental socio-economic statuses and parental educational background and found that these factors do not have significant effect on the academic performance of the students. But according to their research, the parental educational qualification and health statuses of the students are identified to have significant effect on the academic performance of the students.

Assadi (2006) examined the influence of socio-cultural context on parenting style, academic achievement, and learning style in Tehran. He showed that child rearing method is correlated with learning method and academic achievement of children. Authoritative parenting breeds "theorist" learning style and assists better academic achievement.

Seydooğulları and Arıdağ (2012) made a research to examine the correlation between life satisfaction levels of high school students with parental attitude. They observed that there is a positive significant correlation between democratic parent attitude with the life satisfaction of students and those who have high life satisfaction scores also have high level academic achievement and high level of economic status.

2.3 Supportive Family Environment

Lekes et al. (2011) tested the need for supportive family environment for adolescents' endorsement of the value priorities that their mothers wish for them. Their research results revealed that the adolescent's basic needs for autonomy, relatedness, and competence at home are satisfied, the intrinsic values such as personal growth, close relationships, and community contribution are moderated between the mothers and adolescents. Otherwise adolescents are found to be paying more attention on the extrinsic values such as wealth, fame, and attractiveness.

Kovacevikj and Meschalikj (2005) aimed to examine relations of the school results and family characteristics of primary school students with behaviour disorders. They found that the educational inferiority of the parents and the poor socio-economic situation of the family have big influence on the school results in a negative way.

2.4 Supportive School Environment

According to Ching and Po (2013), a school principal's creative leadership influences both the school's development and the school's excellence and quality.

Altun and Yildiz (2011) claims that the school improvement includes collaborative activities and planned change to enhance the quality of teachers, staff, environment and physical conditions. They've concluded that giving emphasis to social and cultural activities as well as education and dealing with each pupil one by one are the key factors in achieving a high quality education in a school. They suggest that cooperation as compulsory in the school.

Oye et al. (2012) studied the importance of guidance and counseling program in secondary schools and reported that they are necessary for the students in order to increase their understanding of the educational, vocational and social information in making wise choices. They suggest that principals should make provision for guidance and counseling on the school time table in order to eliminate overwhelming ignorance of many young people on their choices of career prospects and personality maladjustment.

According to de Souza (2011), architecture of the school building affects the democratization of the education because most public schools have little or no space for collective activities.

2.5 School Management Support

Çelebi (2010) conducted a research about public high school teachers' opinions on school administrators' supervision duty. According to her findings, school administrators' supervision duty is not only paying attention to annual plans and classroom management of the teachers but more importantly encouraging his team of teachers for continuous professional development and by presenting "instructional leadership traits" be able to create a setting where all the members of the school learn from each other.

According to Gündüz and Balyer (2012), principals "sometimes" demonstrate effective leadership behaviors and they are generally good at planning the future of their school, however, they are not open to be criticized.

2.6 School Motivation

Dzikunu and Amoh (2010) investigated students' attitude towards social activities in some high schools in Ghana and found that social activities in school help to develop psychomotor skills of students and also help students by relaxing their mind. According to them, lack of equipment for social activities affects attitude. Their study revealed that students prefer off-campus social activities to on-campus activities, so they suggest that school authorities should improve equipment for social activities in order to sustain students' interest. They suggest inviting professionals of social activities such as pastors, artists, sportsmen and women to interact with students.

According to Hohepa, Scragg, Schofield, Kolt, and Schaaf (2007), parents and friends are the key social influencers of physical activity during adolescence when parents, friends, and schools are considered. They emphasize the importance of proximal social networks on youth activity which should be considered when developing policies and programs looking to promote physical activities among young people.

Suh and Kim (2011) examined the relationship between Participation in Organized Activity and Cross-Group Friendships. The results of their study indicated that school-based extracurricular activities significantly influence the formation of cross-group friendships among young adults. They also found that participating in meaningful activities positively influences cross-group interactions and contact. They moreover identified that participants have intention to discover unnoticed similarities and cultural ethnic differences while forming cross-group friendships.

2.7 Supervisor

According to Eristi (2012), gifted students expect have teachers who can both guide students and provide information. Furthermore, he suggested that gifted students do not consider e-learning applications as an alternative for teachers. They are identified to prefer learning from their teachers but in technology aided learning atmospheres.

Lalić (2005) suggests encouragement for creating a positive social and emotional atmosphere, a positive learning environment, using preventive techniques in some discipline-related situations, some interventions to deal with behavioral problems of students and to strengthen students self-confidence. She identified that teachers prefer less encouragement when the students grow. She suggests training teachers about using encouragement under different circumstances.

Eristi (2012) investigated gifted students' opinions about learning and teaching and their understandings about teacher characteristics and teaching. He observed that the gifted students expect knowledgeable, understanding and fair teachers.

2.8 Group Engagement

According to Legault, Green-Demers and Pelletier (2006), students are demotivated in school because of four factors including their ability beliefs, effort beliefs, value placed on academic tasks, and characteristics of the academic tasks.

Williams and Williams (2011) emphasized that there are the five key ingredients impacting student motivation including student, teacher, content, method/process, and environment.

Sherhoff et al. (2003) conceptualized student engagement based on the culmination of concentration, interest, and enjoyment. They found that student engagement is influenced by the culmination of concentration, interest, and enjoyment. They suggest that the engagement can be increased by learning activities which support students' autonomy, and by giving appropriate level of tasks to the students' skills.

2.9 Assessment

According to Garcia et al. (2012), as students assess themselves, they get truly engaged in their learning process.

Balkan, Nacar and Mazicioglu (2007) aimed to determine the learning strategies of students and to evaluate the effect on their success. Their research reveals that students who take notes and underline the important points when they are reading or listening were found to be more successful. Students who overview the previous lesson, prepare questions about the course before the lesson and ask the unclear points in the lesson were found to be more successful.

2.10 Team Self-Efficacy

Katz-Navon and Erez (2005) claim that collective-efficacy effects team performance only when there is a highly interdependent task which requires the team members' close interaction and coordination of their efforts. According to them, under low task interdependence, collective-efficacy is not significant influence on individual performance. They however identified that self-efficacy influences individual performance under low task interdependence conditions.

According to Lavasani, Afzali and Afzali (2011), cooperative learning methods compared to traditional methods are highly influential on the social skills of students.

Ševkušić-Mandić (2003) suggests that effective cooperative learning is only possible if the teachers apply the five basic elements of cooperative structure including 1. structuring the learning task and students' positive interdependence, 2. individual responsibility, 3. Enhancing "face to face" interaction, 4. increasing students' social skills, and 5. Evaluating group processes.

2.11 Student Self-Efficacy

According to Robin Surland (2010), high self-efficacy of students enhances their problem-solving skills in order to overcome obstacles in school. According to Zajacova, Lynch and Espenshade (2005), academic self-efficacy and stress are negatively correlated.

Hosein-Nejad (2008) conducted a study to determine the role of self-efficacy on the dietary behaviors of high school girls and identified that increased self-efficacy methods and good model offer can be influential on the health behaviors.

2.12 Benefits

Tiantong and Teemuangsai (2013) claim that using collaborative learning is useful in order to enhance learning achievement and social skills. They reported that students in collaborative groups

can understand, retain, and feel better about themselves and their peers more. They also suggested that working together in a collaborative environment encourages student responsibility for learning.

According to Fredricks and Eccles (2005), students in school-based extracurricular activities can have more academic and prosocial friends. They suggest being involved in a prosocial peer network enhances activity participation with school engagement and decreases depression by providing social support, by teaching social skills, and by reducing alienation.

Wilson (2009) claims that the students participating in out-of-school activities often have higher grades, less attendance, and an increased commitment to the school. He suggests that extracurricular activities can enhance student self-esteem and school spirit.

3. Research Methodology

3.1 Scale development

While developing the survey items, the following works are referred.

Table 1. List of dimensions and references.

No	Dimensions	References
1	Technology use	Yılmaz and Orhan (2010), Yılmaz, Ulucan and Pehlivan (2010), Ghaznavi, Keikha and Yaghoubi (2011), Shepkey et al. (2010)
2	Socio-Economic Status	Ogunshola and Adewale (2012), Assadi (2006), Seydooğulları and Arıdağ (2012),
3	Supportive Family Environment	Lekes et al. (2011), Kovacevikj and Meschalikj (2005),
4	Supportive School Environment	Ching and Po (2013), Altun and Yildiz (2011), Oye et al. (2012), de Souza (2011)
5	School Management Support	Çelebi (2010), Gündüz and Balyer (2012)
6	School Motivation	Dzikunu and Amoh (2010), Hohepa, Scragg, Schofield, Kolt, and Schaaf (2007), Suh and Kim (2011)
7	Supervisor	Eristi (2012), Lalić (2005), Eristi (2012)
8	Group Engagement	Legault, Green-Demers and Pelletier (2006), Williams and Williams (2011), Shernoff et al. (2003)
9	Assessment	Garcia et al. (2012), Balkan, Nacar and Mazicioglu (2007),
10	Team Self-Efficacy	Katz-Navon and Erez (2005), Lavasani, Afzali and Afzali (2011), Ševkušić-Mandić (2003)
11	Student Self-Efficacy	Robin Surland (2010), Zajacova, Lynch and Espenshade (2005), Hosein-Nejad M. (2008)
12	Benefits	Tiantong and Teemuangsai (2013), Fredricks and Eccles (2005), Wilson (2009)

3.2 Explanations of dimensions

Technology Use refers using technology in order to enhance their knowledge and skills.

Socio-Economic Status is an important factor affecting the success of students. The money that the parents earn enough in order to support their children's expenses, preparing a technically and psychologically comfortable atmosphere at home, may increase the students' success significantly.

Supportive Family Environment enhances student's success by providing support in family environment.

Supportive School Environment is helpful to the student by providing the necessary conditions inside the school.

School Management Support is necessary in order to overcome the barriers inside and outside the school environment.

School Motivation increases the success of students by setting their target in order to enhance school success.

Supervisor is very influential on student success by helping through the process.

Group Engagement can increase the benefits of a student if he/she is involved with the group members.

Assessment plays a major role in students' learning and their motivation in learning.

Team Self-Efficacy enhances the team performance. A team capable of working together and having necessary skills can be a successful team.

Student Self-Efficacy increases the student's belief by challenging himself with difficult tasks and his/her intrinsic motivation.

Benefits refer to gaining a lot of experience, improved technical and social skills, and improved knowledge and self-esteem.

4. Data and Methodology

Data was collected only from science olympiad students attending high schools of private educational institution called "Bosna Sema" located in Bosnia and Herzegovina. The survey was conducted in six different high schools of the mentioned institution located in four different cities of Bosnia and Herzegovina. The science olympiad students from mathematics, physics, and informatics participated in the survey.

The surveys were distributed in the form of hard copy only. 136 survey forms were filled, and 132 of them were evaluated since 4 copies were not worth considering because of many unfilled sections. Response rate of 98.6% (136/138) was achieved from distributed surveys. 138 was the maximum number of students who prepare for the science olympiads at the Bosna Sema Educational Institutions.

Collected data is numerical except demographics part which is categorical. Five point Likert scale was preferred in order to test the agreements of the respondents on twelve variables with forty-nine questions. The collected data then inserted into an excel spreadsheet and analysed descriptively via SPSS.

5. Results

5.1. Demographics

Demographics information includes student's grade, gender and age. The survey is responded by 78 males and 52 females with 2 no response for the gender. The grades of the students range from 9th to 12th. It was observed that the students were from mainly 9th grade (51 students) and this number is followed by 10th, 11th, and 12th graders respectively. The age of the students varies between 14 and 19 but most of them are 16 years of old.

5.2. Survey Results

From table 2, it is possible to conclude that students use technology in order to achieve necessary information for their subject but they are slightly using technologic tools to enhance their understanding and to test their knowledge.

Table 2. Technology use

1 Technology Use	Mean	Std. Deviation
We use technologic tools in order to enhance our understanding	3.83	1.072
We use technology in order to achieve necessary information for our subject	4.05	0.888
We use technology to test our knowledge	3.5	1.276

According to the results, the surveyed students are technically and psychologically comfortable at home to a great extend. But, it is observed that the parents earn enough to support their expenses (Table 3).

Table 3. Socio-economic status

2 Socio-Economic Status	Mean	Std. Deviation
My parents earn enough to support all my expenses	3.92	1.071
I feel technically comfortable at home	4.55	0.658
I feel psychologically comfortable at home	4.8	0.436

The results revealed that the students have real supportive family environment where members of the family try to increase each other's achievements, try to remove difficulties all together and have domestic democracy where everyone can state his/her idea comfortably. However, there is detected to have slight involvement in the same activity by the members of the family (Table 4).

Table 4. Socio-economic status

3 Supportive Family Environment	Mean	Std. Deviation
Family members try to increase each other's achievements	4.37	0.796
Family members love to be involved in the same activity	3.76	1.008
When one family member has a difficulty, we try to remove it together	4.46	0.797
Every family member comfortably can state his/her idea	4.44	0.851

The findings of this research identified that there is a supportive school environment according to the students. They rate their schools as technically and socially competent and has supportive conditions for their development. They also seemed to be feeling the school support. However, they moderately agree that their school has an innovative approach towards them (Table 5).

Table 5. Supportive school environment

4 Supportive School Environment	Mean	Std. Deviation
I feel the support of School management on the issues related to my success	4.02	0.988
There is an innovative approach to the students in the school	3.91	0.851
My school conditions are supportive for my development	4.22	0.853
My school is technically competent in order to support my success	4.37	0.756
My school is socially competent in order to support my success	4.14	0.958

The results revealed that the students extremely feel that their schools can afford olympiad preparation costs and put olympiads among the first in their agenda. They confirmed that school management gives a suitable study environment, arranges training programs and hires mentors for them in order to manage the olympiad preparation (Table 6).

Table 6. School management support

5 School Management Support	Mean	Std. Deviation
School Management provides a suitable study environment for my Olympiad preparation	4.03	0.907

School Management arranges training programs for my Olympiad preparation	4.3	0.932
School Management hires mentors to manage my Olympiad preparation	4.05	1.108
School Management can afford Olympiad preparation costs	4.44	0.715
School Management puts Olympiad studies among its priorities	4.3	0.709

According to the results, the students extremely feel that their schools are motivated for success in terms of efficiency, effectiveness, agility and innovativeness (Table).

Table 7. School motivation

6 School Motivation	Mean	Std. Deviation
My school wants to be efficient in its activities	4.59	0.641
My school wants to be effective in its activities	4.56	0.621
My school wants to be innovative in its activities	4.42	0.773
My school wants to be agile in its activities	4.26	0.796

The results identified that the performances of the supervisors are rated well when their supervising ability and encouragement are considered. However, they are observed to be slightly well role model for the students and involved in all stages of their studies (Table 8).

Table 8. Supervisor

7 Supervisor	Mean	Std. Deviation
My supervisor can easily lead my preparation for the Olympiads	3.91	1.096
My supervisor is a role model for me	3.32	1.277
My supervisor is involved in all stages of my study	3.33	1.321
I always feel my supervisor's encouragement	3.71	1.262

Students are observed to be extremely motivated for success, their friendship is detected to be high and they are seemed to be satisfied with the group atmosphere (Table 9).

Table 9. Group Engagement

8 Group Engagement	Mean	Std. Deviation
We (Olympiad students) are motivated for the success	4.25	0.832
All the group members friendly approach to each other	4.23	0.938
We (Olympiad students) are all satisfied with studying atmosphere.	4.05	0.868

The results presented that the students slightly have initial strategy and plan to perform their studies and assessed their knowledge regularly. However, they are highly agreed that they studied again after making necessary assessment about their studies (Table 10).

Table 10. Assessment

9 Assessment	Mean	Std. Deviation
I prepared myself according to an initial strategy	3.83	0.904
I planned the stages of my study from the very beginning	3.5	1.026
I assessed (tested) my knowledge regularly	3.89	0.942
After checking and assessing my knowledge, if necessary I re-studied certain subjects	4.11	0.847

According to Table 11, it is observed that the olympiad teams are highly capable of working together, have necessary skills, are aware of their studies, technically competent and knowledgeable.

Table 11. Team self-efficacy

10 Team Self-Efficacy	Mean	Std. Deviation
Our team is capable of working together	4.14	1.01
Team has necessary skills to complete a study	4.13	0.886
Team members are aware of the issues related to their studies	4.06	0.854
Team members are technically competent for their studies	4.21	0.791
Team members are competent with the necessary knowledge for their studies	4.32	0.765

When self-efficacy of the students is considered, it is identified that they are slightly capable of preparing for the olympiads, achieving the necessary information and resources and managing time for olympiad activities by themselves (Table 12).

Table 12. Student self-efficacy

11 Student Self-Efficacy	Mean	Std. Deviation
I am able to prepare for the Olympiads by myself	3.42	1.049
I can achieve the necessary information by myself	3.55	0.944
I can manage my time for Olympiad activities	3.92	0.93
I can reach the necessary resources by myself	3.73	0.925

It is observed that science olympiad students have extremely gained benefits by enhancing their experience, improving technical and social skills, knowledge and their self-esteems (Table 13).

Table 13. Benefits

12 Benefits	Mean	Std. Deviation
We together gained a lot of experience at the end of Olympiad studies	4.54	0.67
Our technical skills are improved	4.28	0.911
Our social skills are improved	4.03	1.118
Our knowledge has improved	4.61	0.706
Our self-esteem has improved	4.25	0.928

6. Conclusion

This study results in general provide a high positive agreement level of science olympiad Students except slight agreement with their technology use, supervisors, assessment and their self-efficacy.

It can be suggested that they should increase the use of technology to enhance their success. Among the six high schools of this institution, three of the schools were located in the capital city of Sarajevo, have no insufficiency about having equipped supervisors since these schools are using their graduated olympiad students as their supervisors and these supervisors are teaching all three schools students located in the capital. On the other hand, among rest of the three schools were located in three different cities, two of them are new and have no graduates yet to help them as supervisor, and the other one is located in a border town where its graduates do not have opportunity to attend a good university there and prefer capital city of Bosnia and Herzegovina or other countries to study. So this third school, although old enough to have a lot of graduates, does have difficulty in supporting them with supervisors because graduates leave the town as they finish their school. So, they hire supervisors from other schools and apparently students are not satisfied with the performance of those non-family members. Therefore, the institution can find another way to supervise the students in those schools such as frequently arranging preparation camps in the capital city and employing distance supervising techniques to enhance their performance.

The institution can arrange frequent assessment meetings and exams in order to make them always ready. Moreover, Bosna-Sema Institution should increase the self-efficacy of the students.

The students who participated the survey were selected from the same private institutions' high schools and these institutions were famous with being successful in the national and international science olympiads in the Bosnia and Herzegovina. So, the main purpose of the survey was to determine the strength of the factors influencing this success. The high agreement levels for the selected items show that the study has become successful by employing the necessary measurements in the study. Therefore, the future studies may consider the same items for different institutions.

References:

1. Altun, T. and Yildiz, A. (2011) 'Examining characteristics of a primary school in terms of school effectiveness and improvement paradigms', *International Journal of Human Sciences*, vol. 8, no. 2, pp. 455-473.
2. Assadi, S.M. (2006) 'The Relationship between Socio-cultural Context, Parenting Style, Adolescents' Learning Style, and Scholastic Achievement', *Iranian Journal of Psychiatry and Clinical Psychology*, vol. 12, no. 1, May, pp. 21-28.
3. Balkan, Z., Nacar, M. and Mazicioglu, M. (2007) 'Effect of learning strategies on success of student's', *Erciyes Medical Journal*, vol. 29, no. 3, pp. 220-227.
4. Celebi, N. (2010) 'Public high school teachers' opinions on school administrators' supervision duty in Turkey', *Cypriot Journal of Educational Sciences*, vol. 5, pp. 212-231.
5. Ching, W.S. and Po, Y. (2013) 'An analysis on the creative management in innovative schools of Taiwan', *International Journal of Research Studies in Education*, vol. 2, no. 1, January, pp. 91-101.
6. de Souza, A. (2011) 'Democratic management and architecture school', *Educação : Teoria e Prática*, vol. 21, no. 38, pp. 168-185.
7. Dzikunu, C.K. and Amoh, P.K. (2010) 'Students' attitude towards school social activities: A survey of senior high schools in the Asikuma-Odoben-Brakwa District of the Central Region', *e-Learning: The Horizon and Beyond*, Newfoundland, 1-13.
8. Eristi, B. (2012) 'Gifted Students' Perceptions about Learning, Teaching, Teacher Characteristics and Teaching as a Profession', *Turkish Journal of Giftedness and Education*, vol. 2, no. 1, pp. 18-36.
9. Eristi, B. (2012) 'To Learn From Teachers at School, Ideal Teacher or E-Learning Applications From the Perspectives of Gifted Students', *The Turkish Online Journal of Distance Education*, vol. 13, no. 4, pp. 153-166.

10. Fredricks, J.A. and Eccles, J.S. (2005) 'Developmental Benefits of Extracurricular Involvement: Do Peer Characteristics Mediate the Link Between Activities and Youth Outcomes?', *Journal of Youth and Adolescence*, vol. 34, no. 6, pp. 507-520.
11. Garcia, E.R., Cervantes, C.T., Dona, A.M. and de la Torre Navarro, E. (2012) 'The role of self-assessment the interdisciplinary project «educating teachers, training people». A view from students' perspective assessing from self-assessment', *Psychology, Society & Education*, vol. 4, no. 1, pp. 17-28.
12. Ghaznavi, M.R., Keikha, A. and Yaghoubi, N.M. (2011) 'The Impact of Information and Communication Technology (ICT) on Educational Improvement', *International Education Studies*, vol. 4, no. 2, Available: 19139020 19139039.
13. Gunduz, Y. and Balyer, A. (2012) 'An investigation of the effective leadership behaviours of school principals', *Journal of the Theoretical Educational Science*, vol. 5, no. 2, pp. 237-253.
14. Hohepa, M., Scragg, R., Schofield, G., Kolt, G.S. and Schaaf, D. (2007) 'Social support for youth physical activity: Importance of siblings, parents, friends and school support across a segmented school day', *International Journal of Behavioral Nutrition and Physical Activity*, vol. 4, no. 54, Nov.
15. Hosein-Nejad, M., Aziz-zadeh-Forozi, M., Mohammad-Alizadhe, S. and Haghdoost, A. (2008) 'Role of Self Efficacy Predictors in Nutritional Behaviors of Kerman High School Female Students in 2006-2007 Academic Year', *Journal of Shahid Sadoughi University of Medical Sciences*, vol. 16, no. 3, pp. 320-320.
16. Katz-Navon, T.Y. and Erez, M. (2005) 'When Collective- and Self-Efficacy Affect Team Performance; The Role of Task Interdependence', *Small Group Research*, vol. 36, no. 4, pp. 437-465.
17. Kovacevikj, R. and Meschalikj, S. (2005) 'Relation between school results and family characteristics of the students with behavioral disorders in primary schools', *Journal of Special Education and Rehabilitation*, vol. 6, no. 3-4, pp. 77-87.
18. Lalić, (2005) 'The role of encouragement in primary schools', *Zbornik Instituta za Pedagoška Istraživanja*, vol. 37, no. 2, pp. 132-152.
19. Lavasani, M.G., Afzali, L. and Afzali, F. (2011) 'Cooperative learning and social skills', *Cypriot Journal of Educational Sciences*, vol. 6, no. 4, pp. 186-193.
20. Legault, L., Green-Demers, I. and Pelletier, L. (2006) 'Why Do High School Students Lack Motivation in the Classroom? Toward an Understanding of Academic Amotivation and the Role of Social Support', *Journal of Educational Psychology*, vol. 98, no. 3, p. 567-582.
21. Lekes, N., Joussement, M., Koestner, R., Taylor, G., Hope, N. and Gingras, I. (2011) *Transmitting Intrinsic Value Priorities from Mothers to Adolescents: The Moderating Role of a Supportive Family Environment*, Montreal: Hindawi Publishing Corporation.
22. Ogunshola, F. and Adewale, A.M. (2012) 'The Effects of Parental Socio-Economic Status on Academic Performance of Students in Selected Schools in Edu Lga of Kwara State Nigeria', *International Journal of Academic Research in Business and Social Sciences*, vol. 2, no. 7, July.
23. Oye, N.D., Obi, M.C., Mohd, T.N. and Bernice, A. (2012) 'Guidance and Counseling in Nigerian Secondary Schools: The Role of ICT', *International Journal of Modern Education and Computer Science*, vol. 4, no. 8, pp. 26-33.
24. Sevkusic-Mandic, S.G. (2003) 'Creating conditions for cooperative learning: Basic elements', *Zbornik Instituta za Pedagoška Istraživanja*, vol. 2003, no. 35, pp. 94-110.
25. Seydooğulları, S.Ü. and Arıdağ, N.Ç. (2012) 'Examining Life Satisfaction Levels of High School Student in term of Parental Attitude and Some Variables', *International Online Journal of Educational Sciences*, vol. 4, no. 3, pp. 752-767.
26. Shepkey, K., Sheehan, D., Maloney, C. and Walker, F.C. (2010) 'Evaluating the Implementation Fidelity of Technology Immersion and its Relationship with Student Achievement', *The Journal of Technology, Learning, and Assessment*, vol. 9, no. 4, pp. 1-69, Available: 15402525.
27. Shernoff, D., Csikszentmihalyi, M., Schneider, B. and Shernoff, E.S. (2003) 'Student Engagement in High School Classrooms from the Perspective of Flow Theory', *School Psychology Quarterly*, vol. 18, no. 2, pp. 158-176.

28. Suh, W. and Kim, J. (2011) 'The Exploration of the Relationship between Participation in Organized Activity and Cross-Group Friendships', *Interpersona : An International Journal on Personal Relationships*, vol. 5, no. 2, pp. 222-236.

29. Surland, R. (2010) *Student Voices: Self-Efficacy and Graduating High School*, Wichita State University.

30. Tiantong, M. and Teemuangsai, S. (2013) 'Student Team Achievement Divisions (STAD) Technique through the Moodle to Enhance Learning Achievement', *International Education Studies*, vol. 6, no. 4, Available: 19139020 19139039.

31. Williams, K.C. and Williams, C.C. (2011) 'Five key ingredients for improving student motivation', *Research in Higher Education Journal*, vol. 12, Aug, pp. 1-23.

32. Wilson, N. (2009) *Impact of Extracurricular Activities on Students*, Wisconsin: The Graduate School University of Wisconsin-Stout.

33. Yilmaz, M.B. and Orhan, F. (2010) 'High school students educational usage of Internet and their learning approaches', *World Journal on Educational Technology*, vol. 2, no. 2, pp. 100-112.

34. Yilmaz, İ., Ulucan, H. and Pehlivan, S. (2010) 'The Attitudes and Thoughts of the Students Attending Physical Education Teaching Program about Using Technology in Education', *Journal of Kirsehir Education Faculty*, vol. 11, no. 1, pp. 105-118.

35. Zajacova, A., Lynch, S.M. and Espenshade, T.J. (2005) 'Self-Efficacy, Stress, and Academic Success in College', *Research in Higher Education*, vol. 46, no. 6, Sep, pp. 677-706.

Appendix

Olympiad Study Survey

For each numeric question, circle the number that best reflects your opinion of the factor judged
1=strongly disagree, 2=disagree, 3=moderate, 4=agree, 5=strongly agree
 Circle only one number for each scale.

Demographics	
a	Your grade:
b	Gender: a) Male b) Female
c	Age:

1. Technology Use		Agreement Level				
1	We use technologic tools in order to enhance our understanding	1	2	3	4	5
2	We use technology in order to achieve necessary information for our subject	1	2	3	4	5
3	We use technology to test our knowledge	1	2	3	4	5

2. Socio-Economic Status		Agreement Level				
1	My parents earn enough to support all my expenses	1	2	3	4	5
2	I feel technically comfortable at home	1	2	3	4	5
3	I feel psychologically comfortable at home	1	2	3	4	5

3. Supportive Family Environment		Agreement Level				
1	Family members try to increase each other's achievements	1	2	3	4	5
2	Family members love to be involved in the same activity	1	2	3	4	5
3	When one family member has a difficulty, we try to remove it together	1	2	3	4	5

4	Every family member comfortably can state his/her idea	1	2	3	4	5
----------	--	---	---	---	---	---

4. Supportive School Environment		Agreement Level				
1	I feel the support of School management on the issues related to my success	1	2	3	4	5
2	There is an innovative approach to the students in the school	1	2	3	4	5
3	My school conditions are supportive for my development	1	2	3	4	5
4	My school is technically competent in order to support my success	1	2	3	4	5
5	My school is socially competent in order to support my success	1	2	3	4	5

5. School Management Support		Agreement Level				
1	School Management provides a suitable study environment for my Olympiad preparation	1	2	3	4	5
2	School Management arranges training programs for my Olympiad preparation	1	2	3	4	5
3	School Management hires mentors to manage my Olympiad preparation	1	2	3	4	5
4	School Management can afford Olympiad preparation costs	1	2	3	4	5
5	School Management puts Olympiad studies among its priorities	1	2	3	4	5

6. School Motivation		Agreement Level				
1	My school wants to be efficient in its activities	1	2	3	4	5
2	My school wants to be effective in its activities	1	2	3	4	5
3	My school wants to be innovative in its activities	1	2	3	4	5
4	My school wants to be agile in its activities	1	2	3	4	5

7. Supervisor		Agreement Level				
1	My supervisor can easily lead my preparation for the Olympiads	1	2	3	4	5
2	My supervisor is a role model for me	1	2	3	4	5
3	My supervisor is involved in all stages of my study	1	2	3	4	5
4	I always feel my supervisor's encouragement	1	2	3	4	5

8. Group Engagement		Agreement Level				
1	We (Olympiad students) are motivated for the success	1	2	3	4	5
2	All the group members friendly approach to each other	1	2	3	4	5
3	We (Olympiad students) are all satisfied with studying atmosphere.	1	2	3	4	5

9. Assessment		Agreement Level				
1	I prepared myself according to an initial strategy	1	2	3	4	5
2	I planned the stages of my study from the very beginning	1	2	3	4	5
3	I assessed (tested) my knowledge regularly	1	2	3	4	5
4	After checking and assessing my knowledge, if necessary I re-studied certain subjects	1	2	3	4	5

10. Team Self-Efficacy		Agreement Level				
1	Our team is capable of working together	1	2	3	4	5
2	Team has necessary skills to complete a study	1	2	3	4	5
3	Team members are aware of the issues related to their studies	1	2	3	4	5
4	Team members are technically competent for their studies	1	2	3	4	5
5	Team members are competent with the necessary knowledge for their studies	1	2	3	4	5

11. Student Self-Efficacy		Agreement Level				
1	I am able to prepare for the Olympiads by myself	1	2	3	4	5
2	I can achieve the necessary information by myself	1	2	3	4	5
3	I can manage my time for Olympiad activities	1	2	3	4	5
4	I can reach the necessary resources by myself	1	2	3	4	5

12. Benefits		Agreement Level				
1	We together gained a lot of experience at the end of Olympiad studies	1	2	3	4	5
2	Our technical skills are improved	1	2	3	4	5
3	Our social skills are improved	1	2	3	4	5
4	Our knowledge has improved	1	2	3	4	5
5	Our self-esteem has improved	1	2	3	4	5

Comments and Suggestions about this survey study

УДК 37

Факторы, влияющие на успех студентов-участников научных олимпиад

¹ Мухамед Курсад Озлен

² Мехмет Озгун

¹ Международный университет Барч, Босния и Герцеговина
E-mail: kozlen@ibu.edu.ba

² Международный университет Барч, Босния и Герцеговина
E-mail: mehmet.ozgun@bosnasema.com

Аннотация. Цель данного исследования – определить основные факторы, влияющие на успех студентов-участников научных олимпиад, принимающих участие в национальных и международных научных олимпиадах. Полученные данные были тщательно проанализированы после проведения развернутого исследования. Исследование было разработано, основываясь на двенадцати переменных с тремя, четырьмя и пятью измерительными позициями. Среди шести частных вузов образовательных учреждений Босна Сема в четырех городах Боснии и Герцеговины, всего 136 студентов-участников научных олимпиад приняли участие в исследовании. Программа SPSS была использована для обработки данных. Результаты показали экстремально высокий уровень влияния возможных факторов, кроме небольшого уровня влияния использования технологий, куратора, оценки и веры студента в собственные силы.

Ключевые слова: студенты-участники олимпиад; факторы успеха; Босния и Герцеговина; образовательные учреждения Босна Сема; исследование.