

The Eurasia Proceedings of Educational & Social Sciences (EPESS), 2019

Volume 14, Pages 95-99

ICEMST 2019: International Conference on Education in Mathematics, Science and Technology

Project to Train 6th And 7th Grade Students in Math Olympiads

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Abstract: In Brazil, the teaching of mathematics present itself in a decontextualized, inflexible and immutable way, it being the product of privileged minds. The Brazilian Mathematical Olympiad (OBMEP) is a national project directed to the public and private schools, it carried out by the National Institute of Pure and Applied Mathematics, with the support of the Brazilian Society of Mathematics and it is promoting by the Ministry of Education and the Ministry of Science, Technology, Innovation and Communications. This project came about in order to improve the interest of mathematics in children and adolescents, and also, to solve difficulties that for many people turn out to be something frustrating. In addition, it contributes to a higher classification of them in OBMEP, which it's an important competition to discovery of new talents. Voluntarily, students from various engineering courses were instructed and trained to teach classes to 99 students enrolled in the 6th and 7th years, with 52% belonging to public schools and the other 48% of private schools. Contents in the areas of Arithmetic, Combinatorial Analysis and Geometry were addressed, on Saturdays, at the Federal University of Technology, Parana, for free and didactic. The approximation of the academic community to society, together with the constant participation of the family and the encouragement of the teachers, it contributed significantly to the success of the project. Besides to presenting a greater number of classified in relation to previous editions, statistics point to satisfactory results, not only in the educational area, but also in the social context, once the students have come into contact with children of the same age, but different realities. Students dropout rates were lower for public school (42%), it be confirming the need for more attention in education and it be reinforcing the relevance of this work.

Keywords: Elementary school, Mathematics, Obmep

Introduction

The posture of the math teacher in the classroom has been evolved a lot in the last decades. Today, these are always in the search of the approach of the learning to the daily of the students, it making the content more pleasant. However, there is still a lot of difficulty in how to maintain attention and the enthusiasm when it comes to this subject.

The teaching of mathematics was introduced in Brazil in mid-1550 by the Jesuits, in order to approach the arithmetic operations, reason, proportion and euclidean geometry (Valente, 1999). In his studies, Bravo (2007) states that our brain has a genetically imprinted numerical capacity. In this way, we are advised the teaching of

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mathematics through the development of intuitive reasoning, manipulation of materials and the use of play in the presentation of activities.

With the purpose of a differentiated approach and in order to reinforce the content taught in the classroom to the students of the 6th and 7th years of elementary school, from the public and private schools in the city of Apucarana - PR - Brazil, it was emerged the project "Train 6th and 7th grade students in math olympiads (OBMEP)". Its main objective is to encourage and improve students' logical reasoning and enable the highest number of students in the Olympiad.

OBMEP is a national project directed to Brazilian public and private schools, carried out by the National Institute of Pure and Applied Mathematics (IMPA), with the support of the Brazilian Society of Mathematics (SBM), and promoted with resources from the Ministry of Education and the Ministry Science, Technology, Innovation and Communications (MCTIC). In the quest for new talents and future scientists, this Olympics promotes a healthy dispute between elementary and middle school students, encouraging them to study mathematics. It is held in two phases, the first classifier and eliminatory, held in the school itself, and containing multiple choice questions. The second phase is performed only by those selected and has discursive questions, raising the level of difficulty.

Method

The teaching project aims at the largest possible number of elementary students in the city of Apucarana and region, which it requires the performance of a large team to organize and carry out the activities. Faced with this situation, the first step was to divulge a proposal among all the teachers and students enrolled at the Federal Technological University of Paraná - Câmpus Apucarana, in a search of interest in participating. One scholar and seventeen volunteers, who could be able to work and help the children, they have been selected. The second stage involved the dissemination of the project to an outside community, where an application form was communicated and attached to be passed on to students interested in all public and private schools in the last week of 2018.

Three groups of studies for division of tasks were formed, each responsible for the following themes: Combinatorial Analysis, Arithmetic and Flat and Space Geometry. Next, the criteria for the formulation and resolution of lists of exercises based on previous editions of OBMEP were established, according to each topic and group, and later applied to the children. The first meeting with the students was held in the second week of March, 2018. On that day, the interested parties were registered and a brief meeting was held with those responsible for clarification. From then on, according to the schedule, activities were performed on Saturdays (Figure 01 and Figure 02), conducted by volunteers always under the supervision of the coordinator.



Figure 1. Activities worked by the volunteers in the 6th grade class
Source: Author data (2018)



Figure 2. Activities worked by the volunteers in the 7th grade class
Source: Author data (2018)

In June 2018, the first phase of the OBMEP was held and the project activities continued, both for those students who were approved for the second phase and those who were simply interested in continuing. The difference was in the way of working the lists, and the approach was directed to the second phase of the Olympiad, using instead discursive rather than objective questions. As the degree of difficulty increased, the doubts of the students became more frequent, consequently, demanding more attention from the volunteers.

Results and Discussion

In all, 99 student enrollments were made, among which there was no significant difference of interest between public and private schools, both for the 6th grade and the 7th grade (Figure 03).

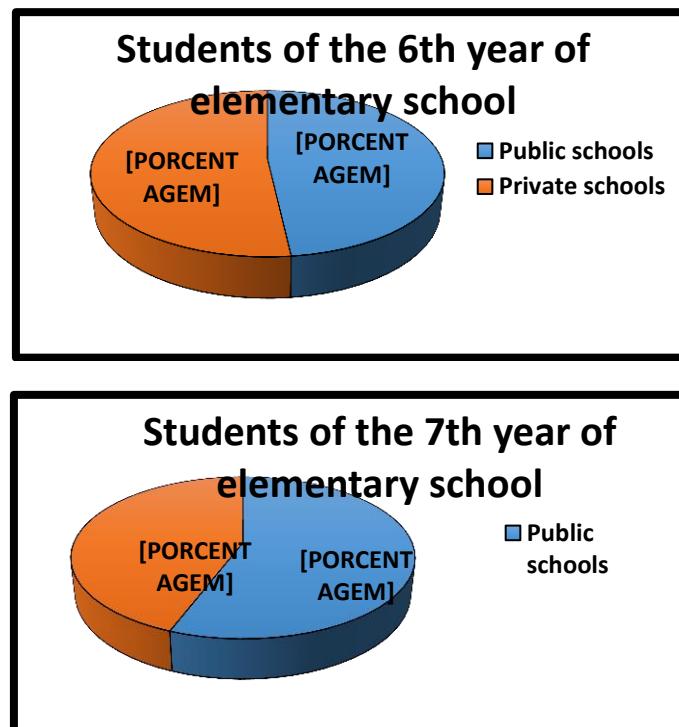


Figure 3. Number of enrollments of students from 6th and 7th
Source: Data of the author (2018)

Two classrooms of the Universidade Tecnológica Federal do Paraná - Câmpus Apucarana were used, with the purpose of dividing the classes by level of education: 6th and 7th grades. In this way students from public schools and students from private schools of the same period began to share the same study environment and to

have egalitarian learning opportunities. As expected, this factor had no influence on the conduct of activities and no less the interaction between children. However, the difference in prior knowledge acquired among these students is striking, with public school students presenting a considerable deficit of content, making them more difficult than those coming from private schools. Whenever they have had some opportunity, they would help each other and exchange information about the content and the routine of the school. In this way, the project also contributed to the personal growth of the students, showing that, even when they lived different school realities, all were there with a common goal: the search for more knowledge.

In addition to approaching more of a discipline considered complex, as mathematics is designated by many, it during the meetings it was possible to notice the animation of the students in being able to participate in activities in the physical space of the UTFPR and also the parents' satisfaction in being able to present a university, with quality and free education, to the children, so early.

In the period from March to June the classes remained full, and the absences, when they happened, it were justified by those in charge. In addition, several reports of improved grades in school subjects were pointed out by the parents who accompanied their children in the meetings.

In July, due to the recess of UTFPR classes, the classes were suspended, as was already stated in the schedule. However, after that vacation, there was a certain dropout of students from both public and private schools (Figure 04).

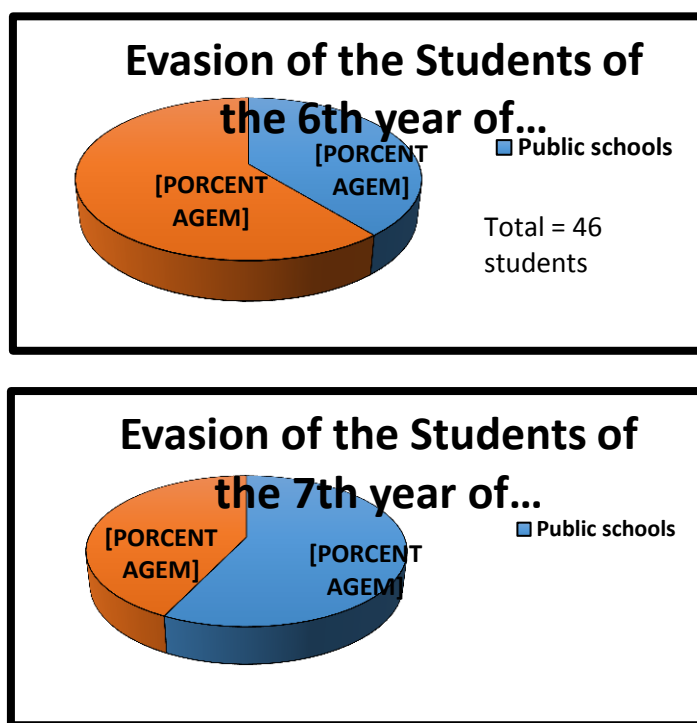


Figure 4. Number of students dropout in grades 6 and 7 Source: Author data (2018)

In relation to those approved for the second phase of OBMEP, the results reached expectations and caused an impact on the public served, demonstrating that the students who participated in the project learned during the activities carried out. Among the students enrolled in the 6th year, 3 were classified for the second phase, one of them being a public school student. In relation to the 7th grade students, 5 were classified, and all of the private education network. After the announcement of the results of the second phase, it was verified that the students of the city of Apucarana obtained a very satisfactory result, since, 12 students from public schools were awarded and 6 students from private schools. Of these, three effectively participated in the project, it winning two bronze medals an honorable mention.

Regardless of the classification or not, the students continued to attend the project, and they admitted a greater interest in mathematics and also reported that their grades had been better than in previous years. This fact indicates the social relevance that the work developed causes in the community.

Conclusion

It is noteworthy that the project contributed to the improvement of the logical and mathematical reasoning of the students who attended UTFPR activities, and also allowed a significant number of approved ones. The way in which it was developed allowed a constant contact between UTFPR students and teachers with the community, thus being able to better meet and understand the individual expectations of each one.

In addition to contributing to the training of children, the project also contributed to the professional growth of undergraduate students, who acquired maturity and responsibility during the preparation of the material and also in the execution of the proposed activities. Aiming at improving and taking into account suggestions, some changes regarding the enrollment of students from the private network and the production of material are being analyzed.

Aiming at improving and taking into account suggestions, some changes regarding the enrollment of students from the private network and the production of material are being analyzed. Due to the high impact and positive satisfaction, the project aims to continue the activities carried out, seeking to be more efficient and above all, always it willing to serve students who seek knowledge and dream of making a difference in the world.

References

- BRAVO, José Antonio Fernández. Hacia una revisión crítica de la enseñanza del número de dos cifras. Elecciones en la FISEM, p. 133, 2007.
- VALENTE, Wagner. Rodrigues. Uma História da Matemática Escolar no Brasil. São Paulo: Annablume, FAPESP, 1999.
- LUBACHEWSKI, G. C.; KAMPHORST, C. H. LABORATÓRIO DE MATEMÁTICA: RELATO E REFLEXÕES SOBRE O PROJETO DE EXTENSÃO UNIVERSITÁRIA DA URI/FW. IV Jornada Nacional da Educação Matemática e XVII Jornada Nacional de Educação Matemática. Passo Fundo. 2012.
- 14ª OLIMPÍADA BRASILEIRA DE MATEMÁTICA DAS ESCOLAS PÚBLICAS-OBMEP 2018- ESCOLAS PÚBLICAS + ESCOLAS PRIVADAS. Disponível em: <<http://www.obmep.org.br/>>. Acesso em: 13 Ago. 2018.

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