



ADDITIONAL EXTRACURRICULAR TEACHING OF MATHEMATICS

Original scientific paper

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ABSTRACT

Mathematics as a school subject in primary and secondary school is a significant problem for quite a number of students. Additional classes that are organized and conducted within schools reduce this problem, but not significantly. In supplementary classes, the same is done with large groups, but not individually, and the same teachers teach in the same way that did not give satisfactory results, and similar. For that reason, many resort to the so-called “instructions”, in other words to the extracurricular supplementary lessons of mathematics. The aim of the research is to examine, determine, analyze and present the representation of extracurricular supplementary teaching in mathematics in secondary (high school) education depending on gender, grade, socio-economic status of the family and grade point average in the past school year.

Keywords: *mathematics, teaching, supplementary, extracurricular, instruction, failure*

INTRODUCTION

“Mathematics is a symbol of our intellectual strength and a guarantee that the human mind will always fight for lofty goals” - Danilo Blanusa. Today, mathematics has developed greatly and has applications in many branches, both natural and social sciences. Mathematics emerges wherever questions related to size, structure, space, or change arise. It is taught in primary and secondary schools as a compulsory subject. Also, a large part of the faculty has compulsory and elective mathematics courses. What is characteristic of mathematics as a subject is that, as expected, it is at the top of the list of subjects with the largest number of users of private instruction. The advantage of individual instructions is that the lecturer devotes his attention and time to only one student and his needs. Thus, greater efficiency is achieved than with group instructions. In addition to the greater attention that the student receives, there is also greater freedom about arranging appointments and the duration of appointments.

As previously mentioned, the topic of this final paper is extracurricular supplementary teaching of mathematics in high school. Through this paper, we will show the prevalence of private instruction in secondary schools, what are the reasons for using the instruction and how they are implemented.

Theoretical part of the paper

“A large part of the settings and goals of modern mathematics teaching can be achieved by appropriate choice of teaching forms and teaching methods and their more frequent change. One of the characteristics of a creative mathematics teacher is mastering this skill. A creative teacher, by choosing suitable problems and applying different methods, can train students for work that is very close to research work.

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Students should be gradually and appropriately taught to analyze, synthesize, concretize, induce, deduce, generalize, specialize, and observe analogies, whether or not they later take mathematics more seriously. The mathematical way of thinking is valuable and applicable in many other industries.¹ The difficulty of mathematical content and prior knowledge of students depends on which forms of work and teaching methods the problem will be addressed later. There are two systems for teaching mathematics, and especially for developing students' ability to solve problems: problem-based teaching and heuristic teaching (Resic, 2016, p.136). There are also the following types of teaching: differentiated teaching, programmed teaching, elective, optional and additional teaching, methodology in working with gifted students, worksheets, teaching individual areas of geometry. In addition to these divisions, extracurricular supplementary classes have often been represented recently.

School supplementary classes in mathematics

Supplementary teaching is a means of pedagogical intervention in situations in which regular teaching cannot achieve satisfactory results for some students. It is organized for students who find it difficult to master parts of the prescribed program in regular classes, so they need additional help. The aim of supplementary classes is to compensate for losses in knowledge or skills and thus enable students to successfully learn mathematics. According to the Law on Upbringing and Education in Primary and Secondary School, the school is obliged to organize additional classes for students who need learning assistance. Additional classes are organized for a certain period of time when such a form of assistance to students is needed. Prema Pravilniku o normi rada nastavnika u srednjoskolskoj ustanovi ukupan broj sati dodatne i dopunske nastave ne može biti veći od broja razrednih odjeljenja u srednjoskolskoj ustanovi, s tim da jedan nastavnik može izvoditi najviše 4 sata sedmično dopunske ili dodatne nastave.² Relatively small schools, with the aim of their own advancement, have a great interest in participating in cantonal or state competitions, and in accordance with that, they assign hours of additional classes to teachers, ie students, depriving them of additional classes. When everything is taken into account, it is clear that the school can organize only one hour a week of additional classes in mathematics. One hour a week is not so bad if it were not for a class in which students from, for example, first, second and third grade car mechanics, some students from the mechanical engineering class, and nurses / technicians come to additional classes in mathematics. This is a real situation that can happen in school, and it really happens, and it is clear that

such structured supplementary classes can be very difficult to perform and, unfortunately, have no effect.³ The question is when and how much should students use this type of teaching:

- It is organized as needed, and how long it will take and which students will be involved varies throughout the year;
- The student may be included in supplementary classes once, over a longer period of time or occasionally;
- The regular teaching program is also a supplementary program.

Each hour of additional school classes must be organized as much as possible, which means that for each student (or group of students) should be determined goals and tasks, content in stages, choose appropriate methods and forms of work, teaching aids and the like. The main form of work in supplementary teaching is individual work.

What we need to take into account when organizing extracurricular supplementary classes is the following:

- Identification of students who need help and diagnosis (closer examination of the student's difficulties and search for the cause of their occurrence);
- Identifying mathematical content that the student has not mastered;
- Development of a program for each student involved in additional classes in writing;
- Monitoring and controlling the student's further progress in supplementary and regular classes.⁴

Reasons for the failure of supplementary teaching in mathematics

Perhaps the previous example best illustrates the reasons for the failure of school supplementary classes in mathematics, but we will try to single out some more. These are certainly an insufficient number of hours in which classes are realized (1 hour per week), for all students of one teacher, so students from several different classes can be in the classroom at the same time. The problem is also that additional classes must be organized in the seventh hour in order to be available to a larger number of students. It is a term when students are already quite tired and do not have the strength or will to learn content that is already difficult and uninteresting for them. Additional classes should not be taught by the same teacher who teaches regular classes. Namely, it often happens that teachers turn additional classes into a mechanical extension of regular classes, and the teacher explains mathematical contents to the student on the same examples and in the same way as he did in regular classes. Supplementary teaching could be more effective if, for example, two mathematics teachers from the same school were "replaced" by supplementary.

¹<https://element.hr/wp-content/uploads/2020/06/unutra-13501.pdf> (Accessed 05.01.2021 00:22)

²<http://www.propisi.hr/print.php?id=8361> (Accessed 05.01.2021 00:51)

³<https://hrcak.srce.hr/file/279558> (Accessed 05.01.2021 01:09)

⁴<http://evropskiuniverzitet-brcko.com/02-ID/023-Mon/Osnovi-metodike-nastave.pdf> (Accessed 05.01.2021 01:22)

This idea would be quite complex organizationally in some schools, but with more hours of such teaching it could significantly reduce the amount of private instruction.⁵ Some of the reasons are more:

- Short duration of the hour (45 minutes), and relatively long time interval between hours (one week);
- Stabilized and accumulated educational deficit in mathematics is very resilient, and can only be eliminated by long-term and permanent influences;
- Improper organization of additional classes due to didactic, methodological and psychological unpreparedness of teachers;
- When students are identified for additional classes, the cause of the difficulties is not sought;
- The student's difficulties are sometimes caused by some psychological problems, for which the teachers are not educated enough;
- When the need for additional classes ceases, the further progress of students in regular classes is not monitored enough until the problems accumulate more seriously again.⁶

After-school remedial teaching of mathematics

Mathematics as a school subject in primary and secondary schools is a significant problem for quite a number of students. Supplementary classes that are organized and conducted within regular schools reduce this problem, but not significantly. That is why many students and parents resort to the so-called. instructions, i.e. extracurricular supplementary teaching of mathematics. We are witnessing a growing interest and demand for private tuition, especially since the entrance exam became a ticket to higher education institutions.⁷ It would be wrong to view the phenomenon of instruction solely from the perspective of something that is only good or only bad. The effects of using instructions are most often both positive and negative. Private instruction or instruction can help students with lower educational attainment to master certain teaching contents and achieve better results in the exams they take, and provide those with better achievement with the possibility of further development of their own abilities and achievement of individual educational goals. In case of illness or some other justified reasons for absenteeism, the instructions help the student to master the missed material. On the other hand, attending instruction can lead to excessive reliance of students on the help of instructors and, consequently, less interest in schooling, as well as more frequent absences. However, instruction often causes feelings of incompetence, helplessness, and makes it impossible to acquire self-directed skills.⁸ Success in school requires students to successfully learn a range of subjects.

⁵<https://hrcak.srce.hr/file/279558> (Accessed 05.01.2021 01:34)

⁶ https://marul.ffst.hr/~irenavz/sadrzaji%20predavanja_files/METODIKA%201-teorijske%20osnove/A10.%20PREDAVAN-JE-DOPUNSKA/DOPUNSKA%20NASTAVA.ppt (Accessed 05.01.2021 01:46)

⁷<https://hrcak.srce.hr/file/279558> (Accessed 05.01.2021 01:46)

⁸<https://hrcak.srce.hr/file/279558> (Accessed 05.01.2021 01:52)

⁹http://darhiv.ffzg.unizg.hr/id/eprint/10956/1/Mihalic_Vlatka.pdf (Accessed 05.01.2021 02:03)

¹⁰https://www.idi.hr/wp-content/uploads/2014/03/Privatne_instrukcije_2011_Ristic_Dedic_Jokic.pdf (Accessed 05.01.2021 02:03)

Few, however, manage to excel in all subjects. Math is still an absolute favorite subject when it comes to seeking instruction. “Supplementary classes are organized and performed for students who find it difficult to progress in mastering the teaching content through regular classes” (Selimovic, Tomic, 2011, p. 324).

The emergence of private instructions

Private instruction is defined as additional instruction in school subjects. It is teaching outside of regular classes, and it refers to the subjects and contents that the student learns within the official education system. The term private instruction includes private lessons given by an individual instructor to one or a group of students, but also organized courses such as preparation for the state matura or college enrollment. Private instruction does not apply to extracurricular activities such as coaching a sport, learning an additional foreign language, attending music or dance school, etc.⁹ For an increasing number of students and their parents, participation in the teaching and learning process in the formal education system is not enough to satisfy their own desires or meet the minimum requirements that the system places on them. As a result, a significant number of students and their parents opt for additional tuition services outside the official system. At the beginning of the 21st century, the emergence of private instruction was declared a “world megatrend” in education.¹⁰ The emergence of private instruction is very complex, and the effects of using instruction are usually both positive and negative. Therefore, it is wrong to approach the analysis and consideration of this phenomenon from the position of exclusivity. Private instruction allows students with lower educational attainment to stay in the educational race, and those with better educational attainment to further develop their own abilities and achieve individual educational goals. On the other hand, attending instruction can cause students to rely excessively on the help of instructors, but also a lack of interest in schooling, as well as more frequent absences. At the same time, the consequence of private instructions can be the difficulty of teaching in the official education system. The increase in the use of private instruction can be understood in the context of a number of problems related to the effectiveness of the formal education system, the decline in the quality of teaching in schools, the (in)adequacy of the school achievement evaluation system and student overload. The use of private instruction is gaining momentum in countries where the school system fails to respond to the needs of modern society as well as to the individual needs of students, especially the needs of students with disabilities or students with special needs.

Namely, curricula are too extensive, focused on content or factual knowledge, and not on outcomes and competencies; teaching methods are often targeted at teachers rather than students, and content is fragmented, too extensive, and unrelated to personal experiences. All of this burdens students and does not prepare them appropriately for the challenges of professional and personal life. It is therefore not surprising that many students, through private tuition, seek a way out of overcoming the shortcomings of the education system.¹¹ Private tuition, instruction, learning assistance is usually understood as support for fulfilling school obligations. Private tuition is defined as additional tuition instruction provided by a private tutor for a fee, and is present at all levels of education. The curriculum for primary school prescribes compulsory subjects within which certain topics, key concepts and educational achievements are determined. Students do not learn all the knowledge of science in any subject, but only the choice determined by the Curriculum for primary school. The importance of educational strategies in teaching and social forms of work in the articulation of teaching are an important prerequisite for student success in the educational process. Grading is defined as joining a certain grade for the achieved results of students, ie classifying students into certain categories according to learning achievements and agreed criteria. Dissatisfaction with the assessment is one of the key reasons for using private instruction. The reasons for going to instruction are the need to supplement knowledge, preparation for high school and incomprehensibility of teaching topics. Most students would not omit any topic from the Curriculum, but there is a statistically significant number of students who would omit some topics in the subjects. Extracurricular supplementary teaching of mathematics is a means of pedagogical intervention in situations in which the procedures of regular teaching cannot achieve satisfactory results for a part of the students. It is organized for students who have difficulty mastering parts of the prescribed program in regular classes, so they need additional help. Its goal is to compensate for losses in knowledge or skills, and thus enable students to successfully learn mathematics. At the secondary level, both basic types of private instruction appear - individual lessons and group preparatory courses for college enrollment - and different reasons for taking instruction can be analyzed, both those related to enriching knowledge and skills and those related to overcoming. "holes" in students' knowledge, correcting negative grades and the like. Users of private tuition have less and less confidence in the educational value systems that it should provide, so they "must" turn to additional educational services.¹²

Characteristics of private instruction service providers

Private instruction providers are teachers who work in the official education system, and the main way to reach an instructor is through the recommendations of acquaintances and friends. A significant number of providers are students and experts in the field (eg mathematics or physics engineers), but also teaching staff of higher education institutions. How widespread the instructions have actually become is shown by the appearance of the so-called Education Centers. As a rule, they offer two types of services, namely private lessons and group preparations for the state matura. In addition to the above, it should be mentioned that preparations for the state matura are sometimes carried out in the organization of public institutions, cities or cantons.¹³

Causes of widespread occurrence of instruction

Analyzing the motives for using learning aids, Fox (2008) singled out four most common reasons: improving grades, preparing for school papers and tests, "filling in gaps" in knowledge, and acquiring better learning strategies. The importance of assessment is important for the life of each individual child. The foundation of psychophysical health, which is self-esteem and self-confidence, in school children largely depends on school success. Children who fail at school rarely have the opportunity to experience success in another area of life and thus compensate for the feeling of failure. Poor grades are the most common source of stress in school-age children. Stress is an integral part of life, as is poor grades, but serious problems are possible when stress becomes chronic and when a child loses a sense of control over what is happening to him. Persistent exposure to stress can cause serious health and mental health problems. In addition, the possibility of continuing education depends on school success, and behind the same grades (numbers) sometimes lie completely different knowledge and work habits. The increase in the use of private instruction should be viewed in the context of a number of problems related to the effectiveness of the formal education system, comprehensive curricula, (too) large number of textbooks, declining quality of teaching in schools, (in) adequacy of school achievement evaluation learning, low motivation for teaching, often noticeable lack of peer or parental help, and many other.¹⁴

¹¹<https://hrcak.srce.hr/file/279558> (Accessed 05.01.2021 02:03)

¹²https://marul.ffst.hr/~irenavz/sadrzaji%20predavanja_files/METODIKA%201-teorijske%20osnove/A10.%20PREDAVAN-JE-DOPUNSKA/DOPUNSKA%20NASTAVA.ppt (Accessed 05.01.2021 02:03)

¹³https://www.idi.hr/wp-content/uploads/2014/03/Privatne_instrukcije_2011_Ristic_Dedic_Jokic.pdf (Accessed 05.01.2021 02:22)

¹⁴<https://hrcak.srce.hr/file/279558> (Accessed 05.01.2021 02:43)

AL FRAMEWORK

Subject of research

The subject of this research is to examine, determine, analyze and present the representation of extracurricular supplementary teaching in mathematics in secondary education.

Research goals

1. Through the historical development and methodology of teaching mathematics to show the position of mathematics as a science in society;
2. Analyze the circumstances in which today's high school students find themselves and explore what leads to the emergence of math instruction and why they are increasingly in demand;
3. Investigate the level of attendance of extracurricular supplementary mathematics classes with regard to various factors.

Research tasks

1. To present the historical development of mathematics as a science;
2. Define the concept of mathematics teaching methodology;
3. List the forms and types of teaching mathematics;
4. Define extracurricular supplementary teaching of mathematics and the reason for its existence;
5. Show how to organize and prepare an hour of extracurricular supplementary mathematics classes;

Interpretation of research results

First hypothesis: There are differences in the attendance of extracurricular supplementary mathematics classes according to the gender of the students.

6. List the shortcomings of extracurricular supplementary teaching of mathematics and present the measures we can take;
7. Do research on the prevalence of extracurricular supplementary mathematics teaching in secondary schools.

General hypotheses

- H1: There are differences in the attendance of extracurricular supplementary mathematics classes according to the gender of the students.
 H2: Extracurricular supplementary mathematics classes are attended by students with above-average socio-economic status in the family.
 H3: There are differences in the attendance of extracurricular supplementary classes with regard to the school success of students.
 H4: Students sometimes use extracurricular supplementary mathematics instruction due to the overload of the mathematics curriculum.
 H5: Students find that extracurricular math classes are always used to increase their grades.

Sample research

This research will cover the population of students from I to IV grade of high schools from the area of Central Bosnia, 300 students. The sample as a subset of a population is taken for the purpose of examining the characteristics of that population and it should be representative with its abundance, sexual and age diversity. The survey was conducted through personal engagement, with the help of principals, pedagogues and high school teachers.

Table 1. Indicators for arithmetic mean, standard deviation and error

Gender	Mean	Std. Deviation	Std. Error Mean
Male	3.09	.561	.09
Female	3.07	.66	.10

Table 2. There are differences in the attendance of extracurricular supplementary mathematics classes according to the gender of students.

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	3.48	.07	.16	78	.87	.02	.14	-.25	.29
Equal variances not assumed			.16	76.16	.87	.02	.14	-.25	.29

After the obtained tables in SPSS and already known parameters that must be taken into account for this first hypothesis, such as the size of Sig. which when, in the Levene section, with Test for Equality of Variances, greater than .05 the first row of the table should be used. Since this is the case in our example (.07), we read the results from the first row of the table obtained in SPSS. The value of $t = .16$ as well as its significance Sig. = .88, which is above the limit value of .05 indicates that there is no statistically significant difference in the attendance

of extracurricular supplementary mathematics classes with regard to the gender of students. The mean value of this difference in the Mean Difference field can also be loaded here and it is .02. At the end of the table you can also load the lower (Lower) and upper (Upper) limits of the interval which with a probability of 95% contains the actual values of this difference and which contains the calculated value of Mean Difference. From the above we conclude that the first hypothesis has not been confirmed.

Second hypothesis: Extracurricular supplementary mathematics classes are attended by students with above-average socio-economic status in the family.

Table 3. Indicators for arithmetic mean, standard deviation and error

In order to assess the socio-economic status of his/her family?	N	Mean	Std. Deviation	Std. Error Mean
Above average	10	3.06	.55	.18
Below average	53	3.05	.58	.08

Table 4. Extracurricular supplementary mathematics classes are attended by students with above-average socio-economic status in the family.

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.31	.58	.06	61	.95	.01	.20	-.39	.41
Equal variances not assumed			.06	13.02	.95	.01	.19	-.40	.43

After the obtained tables in SPSS and already known parameters that must be taken into account for this first hypothesis, such as the size of Sig. which when, in the Levene section, with Test for Equality of Variances, greater than .05 the first row of the table should be used. Since this is the case in our example (.58), we read the results from the first row of the table obtained in SPSS. The value of $t = .06$ as well as its significance Sig. = .95, which is above the limit value of .05 indicates that there is no statistically significant difference in the attendance of extracurricular supplementary

mathematics classes with regard to the socio-economic status of the student's family. The mean value of this difference in the Mean Difference field can also be loaded here and it is .01. At the end of the table, you can also load the lower (Lower) and upper (Upper) limits of the interval, which with a probability of 95% contains the actual magnitudes of this difference and which contains the calculated value of Mean Difference. From the above, we conclude that the second hypothesis has not been confirmed.

Hypothesis three: There are differences in the attendance of extracurricular supplementary classes with regard to the school success of students.

Table 5. Indicators for arithmetic mean, standard deviation and error

	Mean	Std. Deviation	Std. Error Mean
Your grade point average this school year	2.00	1.04	.12
	3.08	.61	.07

Table 6. There are differences in the attendance of extracurricular supplementary classes with regard to the school success of students.

	Test value = 3					
	t	df	Sig (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Your grade point average this school year	-8.57	79	.00	-1.00	-1.23	-.77

The value of $t = -8.57$ as well as its significance $Sig. = .00$, which is below the limit value of $.05$ indicates that there is a statistically significant difference in the attendance of extracurricular supplementary mathematics classes with regard to student achievement. The mean value of this difference in the Mean Difference field can also be loaded here and it is -1.00 .

At the end of the table you can also load the lower (Lower) and upper (Upper) limits of the interval which with a probability of 95% contains the actual values of this difference and which contains the calculated value of Mean Difference. From the above, we conclude that the third hypothesis has been confirmed.

Hypothesis four: Students sometimes use extracurricular supplementary mathematics instruction due to the overload of the mathematics curriculum.

Table 7. Indicator of the total number of respondents and the arithmetic mean.

N	Valid	300
	Missing	0
	Mean	3.31

In the mentioned research, there are a total of 300 respondents and 0 missing respondents. The mean value is 3.31.

Table 8. Students sometimes use extracurricular supplementary teaching of mathematics due to the overload of the mathematics curriculum.

	Percent	Valid Percent	Cumulative Percent
Valid			
Never answers for me	13.8	13.8	13.8
Rarely answers for me	13.8	13.8	27.5
Sometimes answers for me	26.3	26.3	53.8
Often answers for me	20.0	20.0	73.8
Always answers for me	26.3	26.3	
Total			

The first column contains the categories of the variable using private instruction due to curriculum overload, never responding to me, rarely responding to me, sometimes responding to me, often responding to me, and always appropriate to me. In our case, the percentages, as found in the second Percent column, are 13.8% never, 13.8% rare, 26.3% sometimes, 20.0% frequent, and 26.3% always. The third column Valid Percent talks about the percentage of respondents in relation to the valid number of respondents 300 in this case. The last column of the Cumulative Percent gives the

cumulative percentages, ie it represents the sum of the percentages of the given students with the percentages of the previous students. Since the average value is 3.31, this means that students sometimes attend extracurricular supplementary mathematics classes due to the overload of the mathematics curriculum. Accordingly, we conclude that the fifth hypothesis is confirmed. We also have a graphical representation of the data, in a bar chart.

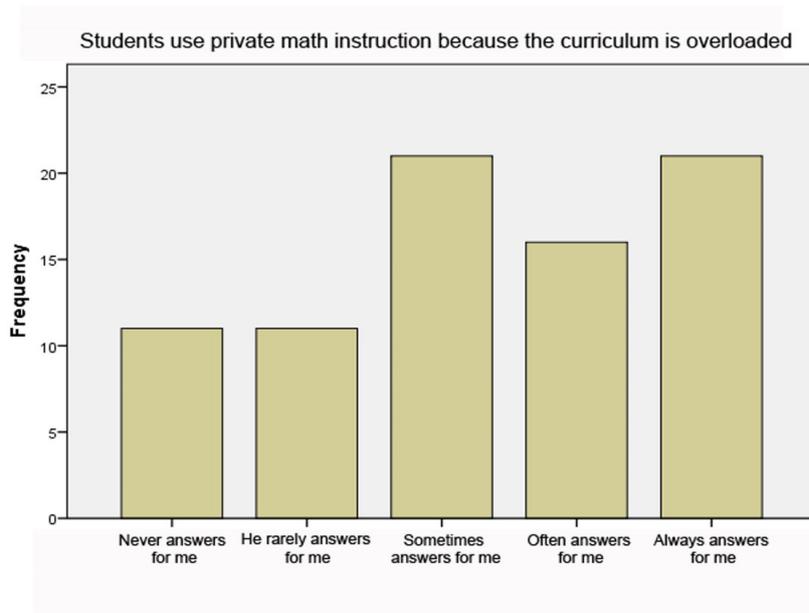


Figure 1. Graphic presentation of data on the use of extracurricular supplementary mathematics teaching due to curriculum overload

Hypothesis Five: Students believe that extracurricular mathematics instruction is always used to increase their grades.

Table 9. Indicator of the total number of respondents and the arithmetic mean.

N	Valid	300
	Missing	0
	Mean	4.10

In the mentioned research, there are a total of 80 respondents and 0 missing respondents. The mean value is 4.10.

Table 10. Students always use extracurricular supplementary mathematics instruction to increase their grades.

	Percent	Valid Percent	Cumulative Percent
Valid			
Never answers for me	2.5	2.5	2.5
Rarely answers for me			
Sometimes answers for me	7.5	7.5	10.0
Often answers for me	16.3	16.3	26.3
Always answers for me			
Total	25.0	25.0	51.2
	48.8	48.8	
	100	100	100

The first column contains the categories of the variable using private instruction due to curriculum overload, never answers for me, rarely answers for me, sometimes answers for me, often answers for me, and always answers for me. The second column of the Frequency table contains the designations of the categories for which the frequencies were determined and next to them the total sample size. In our case, the percentages, as found in the second Percent column, are 2.5% never, 7.5% rarely, 16.3% sometimes, 25.0% often, and 48.8% always. The third column Valid Percent talks about the percentage of

respondents in relation to the valid number of respondents 300 in this case. The last column of the Cumulative Percent gives the cumulative percentages, ie it represents the sum of the percentages of the given students with the percentages of the previous students. Since the mean is 4.1, this means that students often attend extracurricular supplementary mathematics classes to increase their grades. Accordingly, we conclude that the sixth hypothesis has not been confirmed. We also have a graphical representation of the data, in a bar chart.

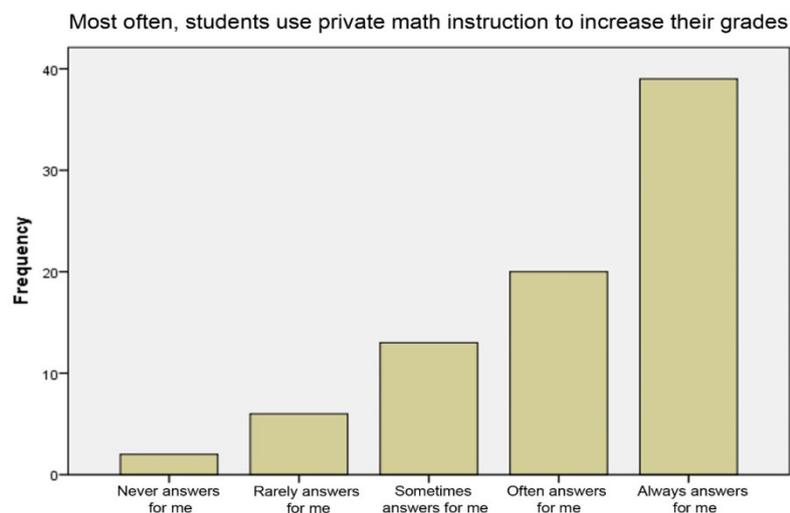


Figure 2. Graphic presentation of data on the use of extracurricular supplementary mathematics teaching due to the increase in grades.

DISCUSSION AND CONCLUSION

When it comes to mathematics, it is a subject that requires systematic and regular work, which students do not do. It is also a subject that is designed in such a way that if you do not adopt a part of the content at a satisfactory level, it is very likely that it will cause significant problems in the adoption of other content. The basic function of instruction at the high school level is to correct or increase one's grades. Students use instructions to correct units or correct poor grades and before the test itself. The fact of using instructions before the examination itself or in the case when "worst grade" have already been obtained, confirms the irregularity and unsystematic work of students and the need to quickly acquire some knowledge before the examination itself. Second and more important, the instructions are mostly used by students who perform less well in mathematics. The system, through the improvement of the model of additional classes and greater individualization and differentiation in regular classes, should provide these students with better support and help them acquire the basic knowledge and skills necessary to meet the minimum required for passing the grade. The analysis of the causes of the emergence of private instruction clearly indicates the insufficient development of learning competence as a key element underlying the demand for private instruction services. Students do not have the habit of regular learning, they are not independent in learning, the system does not teach them how to learn, and their teachers claim that they do not know how to learn. In an environment of such dominant learning patterns, as well as a general lack of motivational readiness of students to invest effort and dedicated learning, private instruction emerges as a mechanism that (from a student perspective) quickly and effectively "solves the

problem", helps prepare for the test, corrects negative grades, "Filling gaps in knowledge", etc. However, this often does not ensure the acquisition of lasting knowledge and skills in certain areas of learning, does not develop a positive motivational basis for independent learning and hard work, nor strengthens various key competencies of students needed as a basis for participation in lifelong learning. All of the above points to the need for systematic work on fostering the "learn how to learn" competence. The introduction of a program to encourage this competence could, in addition to the development of competence in students and teachers, also have positive effects on curbing the emergence of private instruction.

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