

THE EFFECTS OF STUDENTS' PRESENCE IN MATHEMATICS LESSONS

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Abstract

This paper aims to determine one of the factors that affect students' success in mathematics subject. The results of this paper were obtained by processing the questionnaire that was sent in electronic form, the same was sent to students who attended the subject of mathematics during their studies. The questionnaire was completed by 83 students, 66 of whom are female. The largest number of students who answered the sent questionnaire are students in the faculty of Pedagogy, Faculty of Natural Sciences and Mathematics, Economics, etc. From the elaborated questions, we have concluded that 78% of the students say that attendance in classes on the subject of mathematics increases success in this subject. The students (78% of them) say that attendance in mathematics lessons increases their understanding of mathematics subject, while 65% of the students think that attendance in mathematics lessons also increases communication with the teacher and communication between the students. In this paper, it has been proven that the hypothesis for the positive correlation exists between variables such as presence in class in the subject of mathematics increases success in the subject of mathematics, and presence in class in the subject of mathematics affects the increase in communication with the teacher.

Keywords: success in mathematics, motivation, self-confidence, communication, understanding

Introduction

Mathematics provides an effective way of building mental discipline and encourages logical reasoning and mental rigor. In addition, mathematical knowledge plays a crucial role in understanding the contents of other school subjects such as science, social studies, and even music and art. How important is the knowledge of mathematics and the basic knowledge of mathematics can be seen by comparing it with the ability to read. We conclude that numeracy is analogous to literacy in that it is similarly essential for making various decisions in everyday life and that a new focus on explanatory theory is needed to address common errors in understanding and application of numerical information (Valerie F. Reyna & Charles J. Brainerd (2007)).

From the years when high school became compulsory education in Northern R.M., higher education has also felt like compulsory education among young people. The schooling of young people and their success is one variable that is dependent on many other variables. One of them is the presence of students in the faculty, in the classrooms where the lessons are carried out, conveying knowledge not only from the literature provided but also from experience and other sources. This study is about the effects of students' presence in mathematics classes, knowing that it is a subject that requires constant dedication and a lot of work. The subject of mathematics is present from the beginning of education until higher education. This shows the importance and serious approach we should have towards mathematics. We live in a century when we are surrounded by information that has exponential growth and in which century this information should be used in development,

creation, and well-being. According to R. Moore (2002), some research stated that the presence in class (learning) is connected with the success of students (Launius 1997, Thomas&Higbee 2000), while in some R.Moore (2003) pointed out that there is no connection between success and attendance referring to Beaulieu 1984,1985. Also, R. Moore (2003) expresses his experience in teaching the subject of biology, in lectures with low student participation. Also, according to R.Moore (2003), students are only instructed at the beginning of the semester to be present in class, since participation affects their performance. Instructions and advice to be present in higher education lessons are missing because students in universities are adults and it is considered that they are responsible for their actions. In universities, an incentive to be present in teaching is also the assessment of the presence, which affects the final assessment of the student.

This study is about the effects of students' presence in mathematics classes, but it does not end there, debates and discussions should be initiated for other research about the effects of students' presence in the lesson and how to work that the students' participation in the lesson be as much as possible. How important the presence of students in mathematics classes and how much importance students give to this can be seen in the work of D.Romer (1993) where he states that the presence of students of the Faculty of Economics is greater, i.e. 61% in the subjects where mathematics is present, compared to other subjects where the attendance is 53%. D. Romer (1993) points out that the presence in the lectures affects the performances of the students, it is evident even only with their presence of 25% of the total number of lectures, while the students who are more interested in learning are more ambitious, are almost present in all lectures, which is also reflected in their achievements. D.Romer also suggests that due to the large absence of students from lectures in US universities, lectures should be mandatory for the reason that attendance is closely related to student performance. Jones (1984) also investigated the relationship between the presence of psychology major students and their grades (success). He has concluded that the low attendance in lectures has led to low student results, also the low grades have influenced the low attendance of students in the faculty. He has suggested that class attendance and grades may interact to produce a decrease in academic achievement in some students. Also, a study was done by Landin and Pérez (2015) where the relationship between class attendance of students of the History of Pharmacy course at the University of Santiago de Compostela (Spain) and their academic performance was investigated. The results from this study show that there is a positive relationship between attendance and academic achievement. Moreover, the relationship between attendance and performance among three groups of students in a Finnish university has been studied by Lukkarinen, Koivukangas, & Seppälä (2016). The first group is those who drop out before the final exam, the second group is those who must attend the class and the exam, and the third group is those who study independently and attend the exam. Attendance was found to be positively and significantly related to performance for the second group. According to Durden and Ellis (1995) in their study of economics students, attendance remains one of the important factors that contribute to student performance. It should be noted that according to Noh. N (2018), class participation is undoubtedly a factor that affects the final performance of students who have chosen the subject of statistics. To get a good grade in the statistics subject, she states that the student must present step-by-step solutions from the statistics subject. Therefore, students are expected to participate in class to understand how computation and correct ways to solve statistical problems are taught by the teacher. This also applies to the subject of mathematics, because it is the teacher who makes the subject clearer for the student.

The participation of students in the classes of each subject affects how they get to know each other more and discuss the contents they follow. The discussions affect that they benefit from each other about the material as well as in solving the obstacles that appear during the study. Considering that the subject of mathematics is a subject that requires prior knowledge and continuous learning, the discussions and ideas that unfold in the classrooms where the teaching takes place are certainly welcome for the students. During the lessons in mathematics subject, they can also find some point of motivation to proceed in solving and overcoming obstacles while studying. It is difficult to define motivation in mathematics classes because it is difficult to

define what motivation is and how it can be offered to the student. Students who judge that the subject of mathematics is present in every sphere of life and without mathematics they cannot move forward, they are determined to follow the lessons to better understand the material. Understanding the subject leads to better results, which is also the student's goal. For these students, teaching must meet the prerequisites defined by the students, because their motive is to achieve success - success. A successful, motivated person who manages to believe in himself and his abilities will be creative and appreciative. In the subject of mathematics, self-confidence is an inseparable part of knowing it, because this as a subject affects the knowledge of other subjects and the solution of problems from everyday life. Factors that can influence whether or not students attend lectures are the compulsory status of the subjects that are registered, the amount of support materials provided outside the lecture that can give the perception that attending lectures is not necessary, the assessment of the quality of the lecturer, student quality, perceived course difficulty, course delivery logistics, university accessibility and other commitments (Dolnicar et al., 2009).

My many years of experience in education in the role of a teacher shows me that the participation of students in the hours of realization of the material of mathematics course has a great impact on the success of the students. This can also be shown by the cases when we randomly ask a question to the student regarding some part of the material that he was not present, he answers that he was not present in that class, therefore he does not know the answer to the question. The presence of students in class also influences us as teachers to get to know our students better. This happens during various discussions, posing questions from both the student's and the teacher's side. In this way, the teacher creates an overview of the student, where he should be helped to overcome obstacles, or even encouraged to move forward with safe steps. The more research, the more evidence that attendance affects student success. The planning of practice in the teaching programs of each subject, where the teacher's experience is also expressed, would influence the increase of students' participation in the classroom. The more practice, the more application would be the more motivation for the student to be present in class. In this way, the student would experience the applicability of the course in his future profession as well as in everyday life, which is very dynamic, competitive, and challenging.

Methodology research and results

This study was carried out with the help of the electronic questionnaire distributed to the students of the University of Tetova who attended mathematics courses during their studies. The questionnaire was distributed in the summer of 2022 through Google Classroom and it was completed by a total of 83 students of the faculty of Pedagogy, Faculty of Natural Science and Mathematics, Economics, and others. The students who have completed this questionnaire are the students who have had mathematics as a subject. The questionnaire was completed by 83 students, 79.5% are female. Of these students, 42.2% are from the Pedagogical faculty, while 30% are from the Faculty of Natural Science and Mathematics. Students of the economic faculty cover a percentage of 23% and others are represented by 4.8%. Fourth-year students are represented by 57.8% of the total number of surveyed students, while third-year students are a total of 15.7%. Second and first-year students also gave feedback, which together represent 13.3% of the total number of participating students. In the questionnaire, the question regarding the average success that the students have achieved during their studies is presented. The largest number of students have an average grade of 7 (36.1%), followed by an average grade of 8 (26.5%). 16.9% of participating students have an average grade of 9, while 10.8% of students have an average grade of 10. Other questions presented in the questionnaire are scaled from 1-disagree to 4-strongly agree. It should be noted that the questionnaire used is statistically reliable since the value of Cronbach's Alpha coefficient is 0.863. This data is presented in Table.

Table 1. Cronbach's Alpha Coefficient

Case Processing Summary			
		N	%
Cases	Valid	83	100.0
	Excluded	0	.0
	Total	83	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.863	17

The subject of mathematics is a subject for which there are convictions that not everyone can learn it, but interest and dedication ensure excellent results. One of the questions in this research is how many students are interested in the subject of mathematics itself. The results obtained after processing the questionnaires show that 42.2% of students are very interested in the subject of mathematics, 30.1% expressed that they are interested, 18.1% of students expressed that they are very little interested while the remaining number shows that those participants are not interested at all. Concentration in lessons affects the understanding of the subject, therefore since mathematics is a specific subject it requires such a thing. Out of the total number, 38.6% of students expressed that they are very focused during math classes, while 36.1% of students expressed that they are a little focused, and 16.9% very little focused. Many factors affect students' concentration. From experience, I can say that the prior knowledge of the student has a great impact because in this way he can make the connection with the new knowledge that is elaborated during the lessons. Also, the teacher can have an impact on the concentration of the students with the mastery he possesses for the development of the content because mathematics as a subject can be dry, abstract, and distant making the students lose concentration. The application of mathematics in various fields of daily life is also an activity that is carried out during mathematics classes. The active participation of students in these activities makes it possible for the student to better understand the subject, experience its application in different situations, and be able to apply it in the future profession. In the question of the questionnaire, about how understandable are the activities in mathematics classes, 33.7% of the students stated that they fully understand these activities, while 34.9% agreed that they understand these activities. Only for 4.8% of the students, the activities during math lessons were not comprehensible at all. The teacher, in addition to realizing the material, also has an approach to meet the students' requirements to learn, this has been fully met for 60.2% of the students, while 26.5% of the students agree that the requirements have been met. On the other hand, 10.8% of students think that these requirements are partially met, while the rest think that these requirements have not been met at all. This paper shows that 78.3% of students completely agree that their presence in mathematics classes affects their understanding, while 10.8% of students who have completed the questionnaire agree with the position that their presence in mathematics classes helps them to understand mathematics. The number few who think that their presence in the classroom has little or no influence on the understanding of mathematics subject. The surveyed students also answered the question of how often they were present in mathematics classes. From the total number, 65% of them answered that they always (over 75% of the hours) were present in mathematics

classes, while 18% of them stated that they were present over 50% of the hours. It should also be noted that only 6% of students stated that they were not at all present in mathematics classes. I want to emphasize that the nature of the student, and the ambition to achieve success during studies affect success in the subject of mathematics, which characteristics also affect the completion of this questionnaire, which was carried out by posting it in the Classroom of the subject, where it is accessed most often by students who have more interest, are cooperative and are motivated by new things..

One of the questions of the questionnaire was whether the presence of students in the provided hours for the realization of the teaching material should be evaluated. In this question, 80% of students completely agree that their presence in the lesson should be evaluated, 11% of the students agree that the presence should be evaluated, while the rest declare that they do not agree at all or partially agree that the presence in the lesson should be evaluated. Starting from the fact that the majority of students think that the presence should be evaluated, then the percentage should be determined for the real evaluation of the student's presence. During the teaching process, either the teacher or the students ask questions that stimulate discussions, which are more than useful to get necessary information from both the teacher and the student. The next question of the questionnaire was how the presence in the classroom has influenced the increase in communication with the teacher, leading to a notable enhancement in student achievement. The students' answers are: 65% of them completely agree that communication with the teacher increases, while approximately 22% of them agree that being in the classroom increases communication with the teacher. From the total number, 3.6% do not agree at all that the presence in the classroom affects the increase in communication with the teacher and the rest partially agree that presence in the classroom can increase the communication with the teacher.

Objective assessment is one of the most sensitive points in the education process. Each student has his stance regarding the objectivity of the teacher during the evaluation. This questionnaire has collected data regarding the stance of students on the objectivity of their evaluation and is this evaluation more objective if they are present in the classroom. 56.6% of the students fully agree with the statement that the evaluation is more objective if the students are in the classroom. While 28.9% of them agree with the stance that presence affects the objectivity of the evaluation if they are present. The rest expressed that they partially agree or do not agree at all. (Tab. 2)

Table 2. Students' stance that class presence affects objective evaluation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	4.8	4.8	4.8
	Partially agree	8	9.6	9.6	14.5
	Agree	24	28.9	28.9	43.4
	Strongly agree	47	56.6	56.6	100.0
	Total	83	100.0	100.0	

Confidence breaks the worldview that math is not for everyone. Yes, it is not for those who do not want to learn and are not committed. Does presence in the classroom increase self-confidence regarding the subject of mathematics is the next question in the questionnaire of this study. The results of the students' answers regarding this question are presented in Tab.3. From the table it can be seen that 51.8% of the total number of students completely agree that presence in class increases their self-confidence. Only 30.1% of the total number of students who have completed the questionnaire agree with this position. 9.6% partially agree and 8.4% of students do not agree at all. These data show that more students need to be convinced that their performance will be more expressed and developed if they participate more in mathematics lessons.

Table 3. Students' stance that class presence increases their self-confidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	8.4	8.4	8.4
	Partially agree	8	9.6	9.6	18.0
	Agree	25	30.1	30.1	48.2
	Strongly agree	43	51.8	51.8	99.9
	Total	83	100.0	100.0	

A related question to all of the above is whether students' success in mathematics increases with their presence in the classroom. These data are presented in Tab.4, where 68.7% of students fully agree that class presence increases their success in mathematics. Only 16.9% of students agree with this stance, while the rest partially agree and only 7.2% disagree that class presence can increase their success in mathematics.

Table 4. Stance of students that present in class increases their success in the subject of mathematics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	7.2	7.2	7.2
	Partially agree	6	7.2	7.2	14.4
	Agree	14	16.9	16.9	31.3
	Strongly agree	57	68.7	68.7	100.0
	Total	83	100.0	100.0	

This paper has also proven the hypotheses related to the correlation of the variables that are part of this study. The hypotheses are proven and given as follows. While the table with the values of the correlation coefficient (Pearson) is given in Table 5 and Table 6.

After processing the questionnaire, the following hypotheses were confirmed in this paper:

H1: Attendance in class increases success in the subject of mathematics and is correlated with attendance in class increases communication with the teacher (0.705,0.000).

H2: Class attendance increases success in mathematics and is correlated with class attendance increases students' self-confidence (0.592, 0.000).

H3: Class attendance increases success in mathematics subject and is correlated with class attendance increases students' interest in the subject (0.637, 0.000).

H4: Class attendance increases success in mathematics subjects and is correlated with class attendance increasing the objective assessment. (0.539, 0.000).

Table 5. Pearson Correlation coefficient

		Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q21
Q21	Pearson Correlation Coefficient	.429**	.455**	.346**	-.217*	.423**	.460**	-0.1	.316**	1
	Sig.(2-Tailed)	0	0	0.001	0.049	0	0	0.55	0.044	
	N	83	83	83	83	83	83	83	83	83

Table 6. Pearson Correlation coefficient

		Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21
Q21	Pearson Correlation Coefficient	.455**	.18**	.303*	.705*	.548**	.539**	.592**	.637**	1
	Sig.(2-Tailed)	0	0.1	0.005	0	0	0	0	0	
	N	83	83	83	83	83	83	83	83	83

Table 6. Pearson Correlation coefficient

Conclusions and recommendations

After processing and examining the results obtained in this paper, the following conclusions and proposals were reached:

The students agree with the opinion that the presence in the classes of mathematics subject affects the increase of communication with the teacher as well as they agree with the opinion that the presence in classes of mathematics affects the increase of communication-discussion between students

The students agree with the opinion that the presence in the classes of mathematics subject affects the increase in the understanding of mathematics subject

Students agree with the opinion that attendance in mathematics classes should be evaluated, Attendance in mathematics lessons should be assessed, but using an instrument that will track students' attendance in class and will be accessible to both students and teachers (the LMS would certainly enable this). Students agree with the opinion that attendance at mathematics lessons increases success in mathematics.

During teaching, the teacher in the classroom plans and uses tools, techniques, and different forms of work, with which the teaching content becomes clearer for the students.

Also, after processing the data, the hypotheses about the correlation that exists between the presence in the class that increases success with the increase in communication with the teacher while the students are present in the class have been confirmed. Also, the correlation between the increase in success with the presence in the class and the increase in self-confidence of the students has been proven. The hypothesis proven in this paper is the correlation that exists between the increase in students' interest in the classroom and the increase in their success in the subject of mathematics. The proven hypothesis is the correlation between the increase in success with the presence of students in the classroom with the more objective evaluation of students while they are present in the classroom. From this, we can also say that the evaluation of students becomes more objective if the teacher uses the opportunity to get to know the students better by communicating, discussing, and exchanging ideas.

Since it has been concluded that the presence of students in the classroom has multidimensional effects that ensure the success of the student, teachers, institutions, and other participants in the education process should do their best for greater participation of students - researchers in the classroom. This would be achieved by ensuring the best possible conditions in universities, with the implementation of modern teaching methods, techniques, and tools that would motivate students more to participate in learning. Also, one of the incentives would be greater cooperation with teachers outside regular hours - participation in activities, research, and projects. Also, tracking the presence of students in class should be recorded with a measuring instrument not only at the teacher's level but also at the administrative level. In this way, students will be in the learning spaces and will achieve better results.

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