



# **Comparative Evaluation of the Performance of Students of Rural and Urban Primary Schools in the Prefecture of Arta, Greece, in the 1<sup>st</sup> Grade of Secondary School (Gymnasium) During 2012/2013**

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## **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

**Aim:** To investigate whether and to what extent students attending small rural primary schools are "disadvantaged" compared to students attending urban schools as well as what are the differences in their performance and consistency in their attendance in the 1<sup>st</sup> grade of secondary school (gymnasium).

**Methodology:** we chose for our research the quantitative research approach, to study a large number of cases and analyze statistically the research data. More specifically, the choice of the sample which included all the students who studied in the secondary schools of the Prefecture of Arta and specifically in the 1<sup>st</sup> grade, after collecting their report cards, was considered more reliable. The sample of the research, therefore, consists of 364 students who used to study during the school year 2012-2013 in the prefecture of Arta in the 1<sup>st</sup> grade of secondary school (gymnasium) and was made by simple random sampling.

**Results:** As evidenced by the research findings, students who attended urban primary schools, achieve better performance in the first class of secondary school. In particular their average grade of achievement is higher especially in Mathematics and Modern Greek Language & Literature

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where they achieve also higher grades. However, as far as Science classes are concerned, no difference in grades is observed. Finally, regarding the continuous attendance of students, those who attended small primary schools had more absences during the school year.

**Conclusion:** The results of the research show a number of differences in the performance of students who have previously attended urban and rural primary schools, with those of urban schools being superior. However, the factors that constitute an obstacle to the proper and smooth operation of a rural school are numerous and also, the advantages of a rural school are difficult to be measured quantitatively.

*Keywords: Student academic performance; student evaluation; rural primary school; urban primary school; secondary school.*

## 1. INTRODUCTION

Assessing student performance is undoubtedly one of the most contentious issues in educational reality, which is of great interest to all those involved in the educational process. This is because school, through the process of evaluation and based on the requirements of social reality, creates the conditions for professional and social classification of individuals [1]. Also, the evaluation of student performance constitutes an organizational element of the teaching process and an extremely important indicator of the quality of the educational work [2]. Key points in the discussions of recent years, are the performance of students attending rural primary schools as well as the completion of their studies in Secondary Education. In addition, there is a tendency to stabilize the unsubstantiated view that rural schools are inefficient schools and therefore their institution should be abolished [3]. The question that arises, is whether and to what extent students attending rural primary schools are "disadvantaged" compared to students attending urban ones, as well as what are the differences in their performance and consistency in their attendance, in the first class of the secondary school (Gymnasium).

### 1.1 Conceptual Framework

The issue of student performance in school, and in particular its evaluation, is one of the oldest issues that concerns not only teachers, but also all those involved in education. It is an issue related to the pedagogical processes and goals and, more broadly, to the operation of the school, which, as a social creation, is necessarily and self-evidently linked to socio-cultural and economic factors and developments. It is precisely this connection of performance, and hence its evaluation, with narrower and broader functions, with goals and values of school and

society, that creates the complexity and the difficulty in their interpretation, use and, in general, treatment, to such an extent that the relevant theories, views and practices give a confused picture of this issue. Key elements that should be identified in each evaluation process are the general and specific objective of the evaluation, the object and the subject of the evaluation, the tools and the conditions of the evaluation [1]. Regarding the evaluation of students, according to the Greek Curriculum (2002), it aims to determine the achievement of learning objectives, explore the individual and collective progress of students, improve the quality of the educational process, identify learning difficulties and weaknesses of students, cultivate a research spirit, enhance students' self-confidence, develop social sensitivity, build their personality and acquire metacognitive skills. According to Konstantinou [1] "by the term "evaluation" we mean the process that aims to determine, as systematically, validly, reliably and objectively as possible the suitability, functionality and result of an educational and pedagogical activity in relation to its objectives but also with a specific methodology". The use of evaluation is an important aid in diagnosing both the strengths and weaknesses of students. It guides students in the right direction according to their inclinations and talents. It also provides feedback on the learning process and identifies points in the teaching process that can be improved. It also helps in making teaching decisions, in the areas where this is deemed necessary, and which, will provide feedback, in order to improve the object of the evaluation [4,5].

Both in Greek and international bibliography [6] the objectives of educational evaluation are agreed upon the following:

- the control and management of the educational system,

- the enhancement of the learning process,
- the design of programs, activities, institutions, mediums, etc.
- the improvement of the school environment and the climate in the classroom,
- the sharing of information to those interested in evaluation.

According to Goldstein and Lewis [7], educational evaluation has three main purposes:

1. To certify the qualifications of some people and choose some among them.
2. To enhance the learning process by providing an understanding of what one has learned and what further training is needed.
3. To draw conclusions about the operation of institutions and systems (comparison between them for competitive purposes, comparison of educational systems of different countries, etc.).

Student evaluation differs significantly from measurement and grading, which are more limited to the quantitative assessment of student attendance. The student's evaluation concerns his / her overall presence in the classroom and is not based only on the grades that the student gets from tests, standardized or not. It is something that is absolutely necessary in teaching and serves as a motivation for both the student and the teacher. A fair and objective evaluation of the student provides him / her with a clear idea of the progress he / she has made, encourages him / her to make more effort and orients the student in professional and social roles that he / she will be able to play in the future [8,9].

The most common classification of the forms of evaluation is made in terms of their relationship to each phase of the educational process and according to many researchers [6] is the following:

- A. Diagnostic or initial evaluation
- B. Formative or gradual evaluation
- C. Final or overall evaluation

Assessing student progress is a continuous and purposeful function, which is integrated into the teaching and learning process (Greek Curriculums, 2002). The description of an evaluation situation is one of the basic studies of the evaluator. It is beyond consideration to have

a description of an evaluation situation without the three essential characteristics: the object, the purpose / objective and the evaluation criteria [10].

In the 20th and 21st century many changes took place in Greek society, from technological to political, social and economic ones. Rural societies could not remain unaffected. In this process of transformation of the rural society, there were inevitable effects on the school as well, which affected its pattern, orientations, methods and finally its role [11,12]. The traditional rural school in the context of new developments has been differentiated, thus creating the institution of the multi-grade rural school as we know it today, attempting to adapt it to the data and the orientation of the urban school, in an effort to create equal educational conditions.

The multi-grade rural primary school, which is found especially in rural areas, has an increased potential for shaping and strengthening the spirit of teamwork and cooperation among students, due to its special operating conditions, but mainly due to the teaching process followed [3]. The institution of multi-grade rural schools was created in order to handle education in rural areas as a situation that gradually creates the need for a new concept, which is based on the philosophy of decentralization, preservation of local cultural traditions and ecological environmental perspectives [13]. As an institution, multi-grade rural schools initially arose from the need to implement a peculiar, functional, educational model, more under the influence of geographical, social and historical factors, than as a voluntary political choice [14].

Although the number of rural schools has decreased today due to urbanization, they still exist and occupy a high position in the demographics of primary schools. Apart from the lack of financial resources of the state for the recruitment of additional educational staff, the main reason for their existence is the morphology of the soil (many valleys, plateaus, mountains), resulting in the creation of small villages, remote settlements and the many small islands [15]. It seems that such small schools will continue to exist in the future due to both the geographical characteristics of the Greek land and the reduction in the number of births in Greece, in combination with the internal migration of residents to larger urban

centers [16]. "Regional schools" or "small schools" or "rural schools" [17], as they are called in the international literature, are an important parameter of educational systems worldwide. We tend to consider their existence synonymous with a past social and educational reality, precisely because in Greece they served the needs of a difficult period, during which the demand for knowledge and learning was initially a luxury for the Greek countryside, and then they were called to offer educational services with quality characteristics similar to urban schools, gaining the most important place in the demographics of primary schools [18].

The debate in Greek educational policy for decades is spent on developing arguments for their preservation or abolition. It is an indisputable fact, however, at an international level, that there is an ever-increasing tendency to reinforce the conditions conducive to small-sized school environments, with a wealth of research on this type of schools [19-23].

One of the main questions that is raised about rural schools is their level of effectiveness. The concept of efficiency, however, is a complex and multidimensional concept. A school goes beyond the typical characteristics of an organization (achieving goals, end result). The school provides knowledge and skills, general education and specialization, it forms perceptions and values. It is an institution that serves social and individual goals [24]. In the meaning of school effectiveness, the achievement of basic cognitive skills was initially used as a criterion, because it limited the school's goals only to those that can be measured. However, it was stressed that attention should be paid to social, emotional and psychomotor goals, as well as to take into account, in the measuring of cognitive goals, indicators related to the ability to solve problems and critical thinking, while at the same time other efficiency criteria should be used, in addition to the effects of the educational process on students, that concern the whole school as an organization [24,25].

Rural primary schools have been a controversial issue in many countries in recent years. In this debate, there are sayings and objections, proponents and critics, who each time, depending on the approach to the issue, present their arguments regarding the advantages and disadvantages of rural primary schools [3].

Critics of rural schools argue that they were "necessity" schools that have completed their cycle and can no longer meet modern educational and social demands, provide degraded and inadequate education and are therefore "educational and financial liabilities" [26]. On the other hand, the supporters of the rural schools link the existence of these schools with the rural society, the village, the "roots", and characterize them as "beacons of the areas where they are located", emphasizing that they have the conditions to offer satisfactory education (Fukaris, 2012).

The question that arises, then, is whether and to what extent students attending rural primary schools are "disadvantaged" compared to students attending urban primary schools, as well as what are the differences in their performance and consistency in their attendance, in the first class of the Secondary school (gymnasium).

## 2. MATERIALS AND METHODS

### 2.1 Research Questions

The main question that arises is whether and to what extent students attending small rural primary schools are "disadvantaged" compared to students attending urban schools as well as what are the differences in their performance and consistency in their attendance in the 1<sup>st</sup> grade of secondary school (gymnasium).

The research questions that this research was called upon to answer are the following:

1. Do students that attend rural primary schools have a lower performance on secondary school?
2. Do performances of students coming from rural schools differentiate from students coming from urban schools depending on gender?
3. Do students performances from both types of primary school, urban and rural, differentiate in the so called "primary" subjects (ie Modern Greek Language & Literature, Mathematics, Science)?
4. Do students attending secondary school differentiate depending on the type of primary school, urban or rural, that they had previously attended?

## 2.2 Research Method

In order to investigate and record the performance of students attending the first grade of secondary school in the prefecture of Arta, Greece, we chose for our research the quantitative research approach, to study a large number of cases and analyze statistically the research data.

In the present study we used a non probability sample, which means that the probability of selection of each student is unknown. In a sample of non probability we cannot apply statistical inference. We are, however, able to generalize the findings of the population survey, but not on the same statistical basis as the probability samples. The non probability sample, although not representative, is less complex and less expensive [27,28]. Simple random sampling was preferred, since each statistical unit of the population we are studying has the same probability of being selected as the unit of the sample [29]. Simple random sampling is the only method that provides us with what sampling theory requires: every member of the population has the same chance of being included in the sample. This is why simple random sampling was chosen for our research, since the students' report cards were chosen randomly.

More specifically, the choice of the sample which included all the students who studied in the secondary schools of the Prefecture of Arta and specifically in the 1<sup>st</sup> grade, after collecting their report cards, was considered more reliable. The sample of the research, therefore, consists of 364 students who used to study during the school year 2012-2013 in the prefecture of Arta in the 1<sup>st</sup> grade of secondary school (gymnasium) and was made by simple random sampling.

The survey was conducted during the school year 2012-2013, in October 2013 after the relevant approval of the Greek Ministry of Education. The anonymity of the students was preserved during the research. More specifically, visits were made to all secondary schools in the prefecture of Arta, from where the data of our research was obtained according to the strategy we analyzed above. During these visits, in the presence of either the Secondary School Principal or a fellow teacher, the report cards of each student were printed from the school's computer system, omitting the students' names.

Our research has some limitations regarding our ability to generalize results due to the small sample and our choice to focus on this particular prefecture of Greece. So it is not known whether our findings generalize beyond accounting students with similar school environments. Our reasoning for selecting this specific area was that this prefecture has many remote rural schools and a mountain terrain. In addition, another reason for selecting focusing our research on this area was due to the convenience that this area provided us to reach and process students report cards.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

The analysis of the quantitative findings of the research, in general, shows a tendency for students coming from rural primary schools to have lower performance as well as lower attendance compared to students coming from urban primary schools.

#### 3.1.1 General average of student promotion

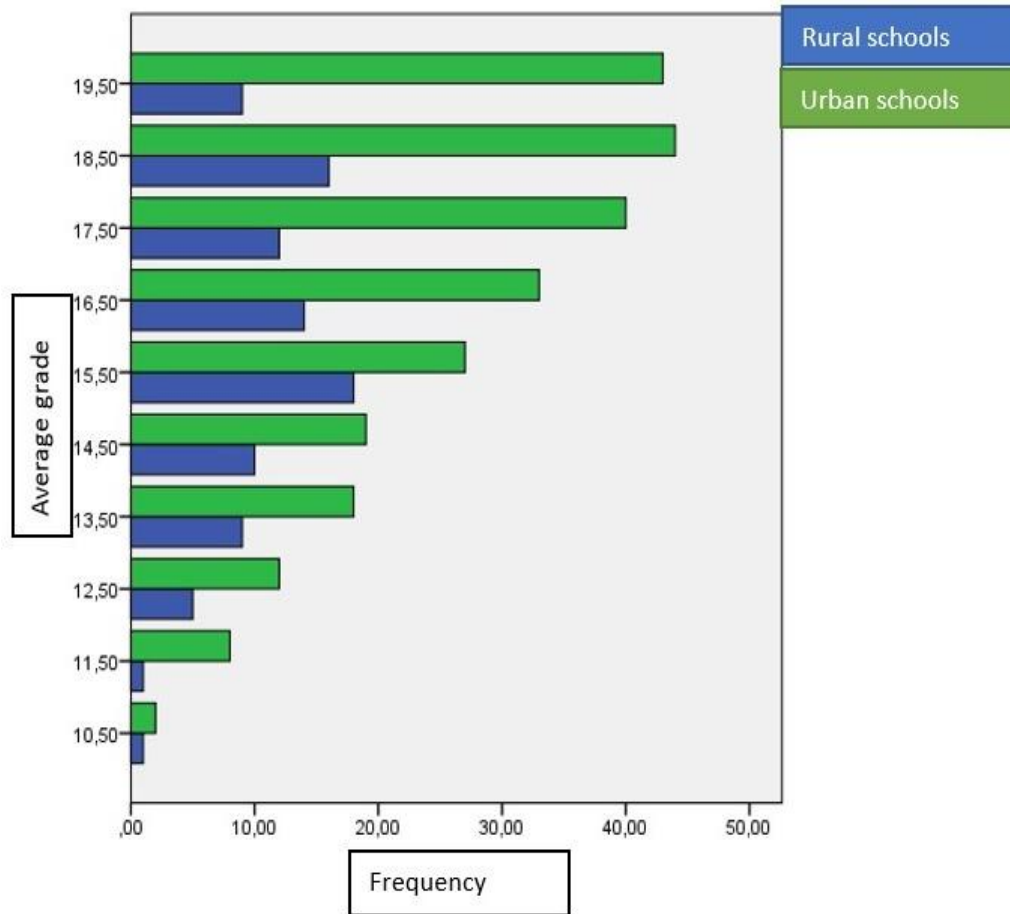
Regarding the general averages of the students' promotion, it was observed that, in both boys and girls, students that have attended urban primary schools had higher grades than those that have attended rural primary schools. The average value, that is, in relation to the general average grade of students in rural schools, is lower (15.95) than the corresponding one in urban schools (16.46).

Table 1 shows that the general averages of students' promotion (both those of girls and boys) coming from urban primary schools are higher than those coming from rural primary schools. It is also observed that the standard deviations in the general averages are similar. Furthermore, the data inform us that the girls are by a small number less than the boys in both types of schools.

What follows, is the distribution histogram of the general average grades of promotion of all students (regardless of gender) coming from urban and rural primary schools (Fig. 1). It is observed that there is a relatively consistent distribution of the general average promotion grade of students coming from urban primary schools in contrast to the tendency of the general average promotion grade of students coming from rural primary schools to accumulate at higher values (Fig. 1).

**Table 1. Basic descriptive statistics for the general average grade of boys and girls from urban and rural primary schools**

Parameter	Urban schools			Rural schools		
	Number of students	Mean	Standard Deviation	Number of students	Mean	Standard Deviation
Boys	145	16.02	2.46	55	15.3	2.16
Girls	121	16.9	2.24	43	16.61	2.07
Sum	266	16.46	2.35	98	15.95	2.11



**Fig. 1. Distribution of the general average grade of student promotion in the 1<sup>st</sup> grade of secondary school (students coming from urban and rural primary schools)**

The values of the general average grade of promotion of all students were then compared between the urban and rural schools. Following the application of this hypothesis test to the data, it emerged that the critical value of the hypothesis test (t-test) [significance (2-tailed): 0.043] is less than the significance level (0.05) and therefore the variation of the general average grade of promotion values between urban and rural schools is accepted at a level of statistical significance of 95% (i.e. in the 95% of

cases there are statistical differences between the values of the two comparable categories).

As it is evident, there is a common ground between the findings and our research hypothesis. This lower overall performance of students coming from rural primary schools may be due to the social environment or family traits of the students. Certainly the expectations of a family living in the city or in an urban center differ from the expectations of a family living in a

remote area of the Prefecture. Also the social and economic level of the family and the environment of the students may have played a role as well to a significant degree in the performance of the students. Finally, the teaching time available in a rural primary school where many classes are co-taught and the possibly poor material infrastructure of these schools are factors that may have influenced the school performance of students who attended rural primary schools. All the above agree with Konstantinou [1] who argues that a student's performance depends on their individual characteristics (biological, psychomotor, cognitive), his family characteristics (educational and socio-economic level of parents, family relationships and expectations), the social environment (peers, cultural and economic level of the area) and the characteristics of school reality (teacher-student relationship, classroom climate - authoritarian, competitive, collaborative - teaching and pedagogical means, etc.).

Regarding the performance of the students in the subjects of Modern Greek Literature, Mathematics and Science (Physics), our research showed some differences as well.

### **3.1.2 Performance in “primary subjects”, modern Greek language & literature, mathematics and science**

In the subject of *Modern Greek Language & Literature*, it was observed that on average the performance of the students coming from urban primary schools in the specific subject is higher than the corresponding values of the students coming from rural primary schools. It is also pointed out that the difference in the average performance of boys between urban and rural schools is greater than that of girls. This was clearly reflected in the average number of students (boys and girls) which is 15.57 for urban schools and 14.62 for rural schools.

At this point, it is worth noting that the reason why the performance of students in the subject of ancient Greek was not taken into account is on the one hand the non-existence of a corresponding subject in primary school and on the other hand the statistical equality between the two subjects after a t-test hypothesis was performed on the performance of all students in these two subjects. That is, the average grades of the students (regardless of gender and type of school) were found statistically equal at a level of statistical significance of 95%.

In the subject of *Mathematics*, it was also observed that the average performance of the students, both girls and boys, coming from urban primary schools is higher than the corresponding averages of the students coming from rural primary schools.

This is another instance where there is a convergence between the research hypothesis and the results of the research. These are basic subjects which are characterized by their difficulty but also by the need for continuous study and attendance by students in order to achieve high performance. The low performance observed in students coming from rural primary schools compared to those coming from urban primary schools may be due to the existence of a common curriculum for all schools in the country (urban and rural) as well as the reduced teaching time that exists in a rural school due to the coexistence with other classes and sometimes even their co-teaching by a single teacher. According to Fykaris (2002), the existence of a common curriculum creates stronger pressure on rural primary schools to achieve the same goals as bigger urban schools. He goes on to raise the issue of teaching time, which seems to have a basis, since it is required to teach the same contents of the curriculum during the same period of time, with the difference that in rural primary schools it is required to teach two, three or even six classes simultaneously.

Regarding the subject of *Science* (Physics & IT), we observe, on the contrary, that the results of the hypotheses that were carried out concluded that there is no statistically significant differentiation of the average grade in Science between students coming from rural and urban primary schools.

At this point there is a divergence from our initial research hypothesis, in contrast with the other two ‘primary’ courses mentioned above. In the case of Science there are no significant differences in student performance and this is particularly encouraging, showing a tendency of students and young people in general to adapt easily to new technologies for example, as the IT course shows us, no matter how far is located from the center where these technological developments take place. In addition, the use of critical thinking and the appropriate ground for forming working groups that these subjects provide, may have affected the performance of students. Rural schools provide a breeding ground to use collaborative learning and teamwork.

**Table 2. Basic descriptive statistics for the average number of absences of boys and girls coming from rural and urban primary schools**

Parameter	Urban schools			Rural schools		
	Number o students	Mean	Standard deviation	Number of students	Mean	Standard deviation
Boys	145	24.09	27.11	55	36.27	27.48
Girls	121	21.99	27.95	43	27.51	19.41
Sum	266	23.14	27.53	98	32.43	23.44

### 3.1.3 Consistency of attendance

The level of student attendance was checked as well, by comparing the absences of the students, whether they had attended a rural or an urban primary school.

Regarding all the student report cards on which there were available data (total number: 364), for the average number of absences per year, the descriptive statistics of Table 2 emerged.

From Table 2 it can be seen that the students coming from rural primary schools have on average more absences than the students coming from urban primary schools. In boys the difference in the average annual absences is 12 while in girls it is smaller (6).

On average, students from rural primary schools had 32 absences per year while students from urban ones had 23. These differences in the continuous attendance of students coming from rural primary schools compared to those coming from urban ones may be due to the poor quality of the road network in some areas of the prefecture which in combination with the severe weather phenomena, especially in the mountains, did not allow a part of the students to have safe access to schools on some days of the year.

### 3.1.4 Average student performance based on gender

In addition, the performance of students coming from both rural and urban primary schools was checked, based on gender. It was observed that in the case of rural schools, girls achieve one unit higher average performance than boys. In urban schools, it was also observed that girls achieve higher averages than boys but this differentiation is smaller than that in the case of rural schools.

#### 3.1.4.1 Average performance of students coming from rural schools based on gender

Table 1 earlier showed us that in the case of rural schools, girls achieve one unit higher

average performance than boys. This result is also evident at the schematic representation of the frequency distribution in Fig. 2. In the same figure it is worth noting that the frequency distribution of the average performance in girls is concentrated at higher values compared to boys.

After the implementation of the relevant hypothesis test, the result led to the critical value [p-value (2-tailed)] 0.003 which is less than the significance level (0.05) and therefore the differentiation of the means of the average performance of students coming from rural primary schools by gender at a level of statistical significance of 95% (ie in 95% of cases there are statistically significant differences between the average performance of boys and girls coming from rural primary schools) becomes acceptable.

#### 3.1.4.2 Average performance of students coming from urban schools based on gender

From Table 1 it is observed that within urban primary schools, girls achieve higher average performance than boys but this differentiation is smaller than in the case of rural schools. This finding can be observed through the schematic representation of the frequency distribution in Fig. 3, which is similar to that of rural schools (Fig. 2).

After the implementation of the relevant hypothesis test, the result leads to a critical value [p-value (2-tailed)] 0.002 which is less than the significance level (0.05) and therefore the differentiation of the means of the average performance of students coming from urban primary schools based on gender at a level of statistical significance of 95% (ie in 95% of cases there are statistically significant differences between the average performance of boys and girls coming from urban primary schools) becomes acceptable.

Related research showed that girls often believe that failures indicate incompetence, are

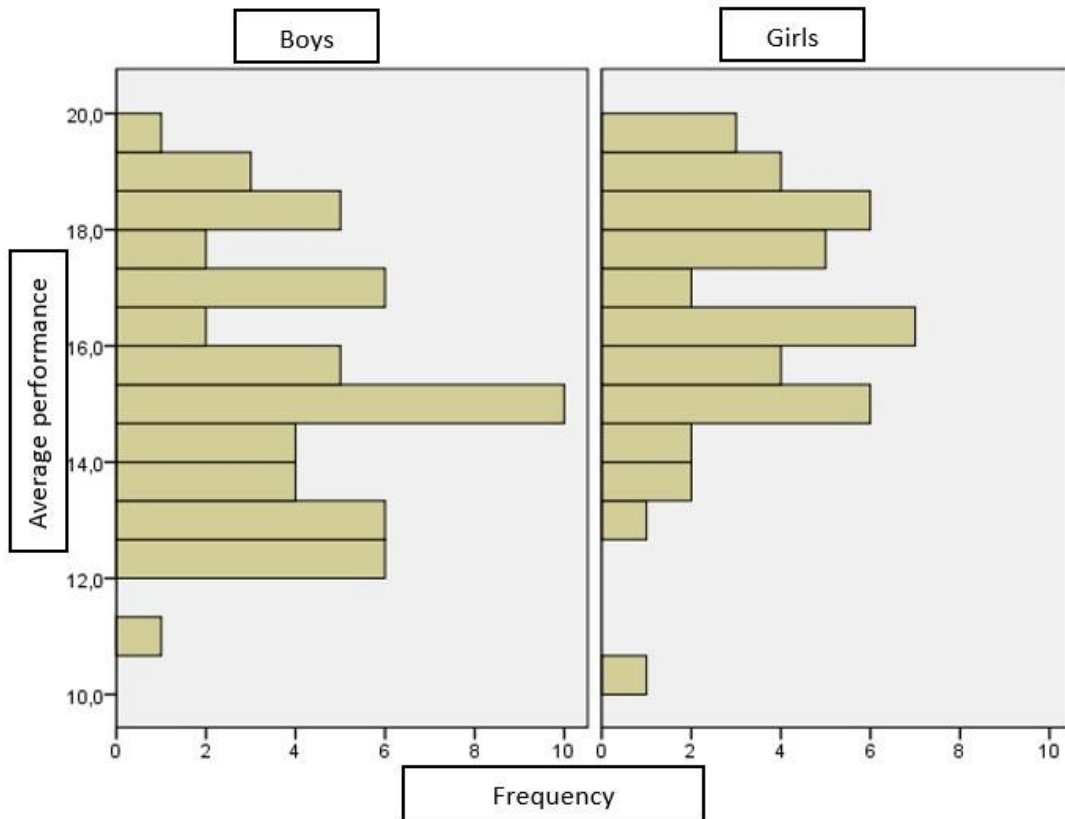


insurmountable and that they will continue to occur, no matter what effort they may make in the future, and with as many past successful experiences as they may have had. In other words this greater fear of failure that girls experience translates more easily into poor performance [30,31,32]. In a way, this is quite absurd since the results of our research showed the opposite: girls performed better than boys in both situations, either they had attended urban or rural primary schools. These findings are supported by findings from other studies, Hines, [33] and Stanley, (1993), which showed that on average girls performed better in literature, essay writing, foreign languages, reading and spelling. Nevertheless recent research of Stoet & Geary [34], boys scored higher than girls in mathematics, but lower than girls in reading. The sex difference in reading was three times as large as in mathematics. Last but not least, Marks [35] admits that in most countries girls perform better than boys in reading but worse in mathematics. In conclusion, one has to accept the OECD [36-38] findings which tell us that in general, girls outperform boys in reading and to a

lesser extent, that boys outperform girls in mathematics.

**3.1.5 Student performance per quarter**

Finally, the students' performance was checked on a quarterly basis. It was observed that in all the subjects examined there is a statistically significant difference in the grades of the students' quarters. This may be due to random factors for each student. These factors may include the difficulty of performing well at the beginning of the year, another random event such as the existence of an extracurricular obligation (eg examinations for foreign language certificates), it could also be due to the tendency of some students to perform better during the winter months due to the fact that they have entered a studying rhythm or due to the fact that the weather is not favorable for them to go out with their friends, while on the contrary in some mountainous areas the winter months may have negatively affected the performance of some students due to the difficulty of their daily life caused by the weather conditions.



**Fig. 2. Frequency distribution in rural schools between boys and girls**

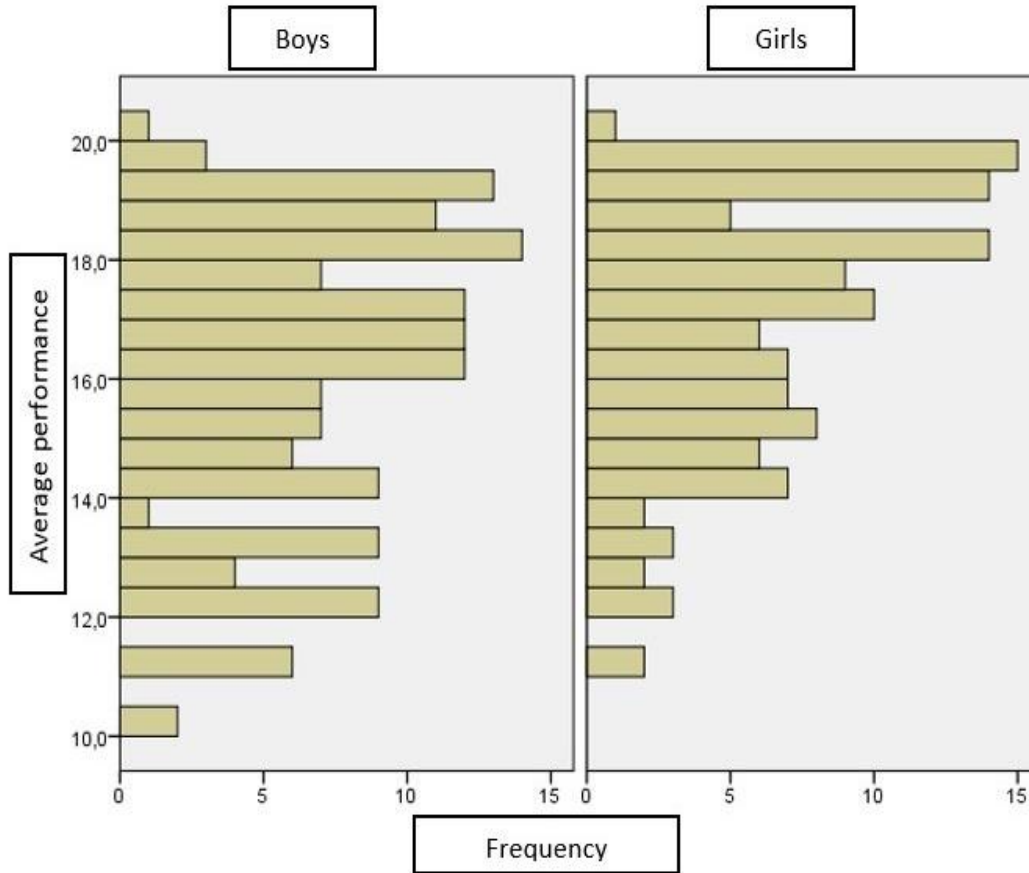


Fig. 3. Frequency distribution in urban schools between boys and girls

#### 4. DISCUSSION

As already noted, in all comparisons with the exception of the subject of Science, students coming from urban primary schools performed better in the first grade of secondary school (gymnasium) than those coming from rural primary schools.

In conclusion, based on the results of our research along with the above bibliographic references, we can assume that for this difference in student performance, the school reality of the rural primary school played an essential role. Curriculum constraints as well as limited activities due to the insufficient teaching time are some of the constraints imposed by the existing rural school. Furthermore, there is a decrease in motivation, due to the lack of a sufficient number of peers but also a decrease in expectations due to the educational and socio-economic environment of the parents [3], [1]. In addition to the above, it is argued that the

teachers of rural schools do not have increased formal qualifications, which are limited to their graduation degree, they are young and inexperienced and insufficiently trained for the requirements of the rural school. In a rural primary school, teachers, in addition to co-teaching many classes have to deal as well with the administrative responsibilities that result in frequent interruptions of the actual teaching process [23,15,39]. Furthermore, the small number of teachers teaching in rural primary schools, which may be limited to even one teacher, and the existence of a common curriculum for both urban and rural primary schools, creates stronger pressure on rural schools to achieve the same goals as urban schools and therefore is another factor that may have influenced the performance of these students in the first grade of secondary school [3,40].

Another factor, apart from the school reality mentioned above, which may be responsible for

these results of the better performance of the students of urban schools, may be the place of residence of the students. Many researchers [41-43,39] point out the parameter of the place of residence and its effect on student performance. The place and the conditions of living (family) and studying (school) largely determine, according to them, the type of social relations and ultimately the personality of the individuals. They also claim that the student's place of residence has a positive or negative effect on a student's status.

## 5. CONCLUSION

In conclusion, we would argue that the results of the research show a number of differences in the performance of students who have previously attended urban and rural primary schools, with those of urban schools being superior. However, the factors that constitute an obstacle to the proper and smooth operation of a rural school are numerous and have been mentioned above. Also, the advantages of a rural school, which we mentioned earlier in our work, are difficult to be measured quantitatively.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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