

Analysis of Key Factors and Recommendations to Increase the Efficiency of Primary Education in Bosnia and Herzegovina

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Summary

In the past ten years the number of enrolled students at primary education of Bosnia and Herzegovina was reduced from 380.955 to 304,972, which is almost 20% (76.023). In the same period the number of teachers involved in the education process increased from 22.217 to 24.484 or 10% (2.267). This means that the average class-size was reduced from 23.7 to 19.7 students per class, which resulted in increase of unit costs i.e. cost per student. As the education expenditures are distributed in the ratio of 90% wages and 10% for all other expenses, the efficiency of educational investment is significantly reduced.

Smaller class-sizes are usually considered a prerequisite for enhancement of teaching quality and are often supported by parents, teachers and public. Therefore, the focus in Bosnia Herzegovina in recent years has been on the reduction of the average class-size, while less attention was given to other segments of the educational system. In this regard, the goal of this analysis is to consider the real effects of smaller classes, point out possible limitations and suggest more efficient measures to enhance the teaching quality.

The two most prominent international student assessment studies – TIMSS and PISA – came to the conclusion that there is no correlation between class size and student achievement.

Further on, these studies highlighted teacher quality as crucial factor of student achievement.

Therefore, this analysis suggests a few steps aiming to halt the decrease of the average class size in Bosnia and Herzegovina, and points out the necessity of shifting the focus from teacher quantity to quality. First of all, it is necessary to harmonize the different country-wide standards stipulating the minimum number of students in the classroom and to create a legal presumption for regional harmonization. Increasing the average class size by one student would provide significant funds for education of the new and training of the older teachers.

In short, key recommendation can be summarized in four steps:

- Halting the trend of class-size reduction in Bosnia and Herzegovina and harmonizing the different standards and norms at the state level;
- Shifting the focus from teacher quantity to quality;
- Creating the necessary conditions for improvement of teacher quality; and
- Increasing the selection criteria for teachers as a precondition to strengthen the reputation of the profession and attract talents.

According to the TIMSS 2007 results, Bosnia and Herzegovina is among the countries with low and middle international education quality. The acceptance of these recommendations would create the foundation for the improvement of the education system in BiH.

Introduction

In the globalized world of the 21st century, we are witnesses of huge and far-reaching social, economic and political changes. We are witnessing the disappearance of traditional industries and the emergence of new dynamic sectors, increasing importance of technology as well as greater mobility of people with the effect of stronger competition on the labor market. All of the above mentioned significantly affects educational models and trends. By entering the European Union a new market will open up for the citizens of Bosnia and Herzegovina, which means that, in order to be competitive, their knowledge and skills will have to be harmonized with the European educational standards. At this point, the educational system of BiH leaves room for improvement in the area of quality and strategic approach to the new standards of education. Improving these two key segments will strongly influence long-term impact on the economic prosperity of the state. Accordingly, the imperative of every country should be to create a quality education system bearing in mind the optimal resource allocation through strategic approach to this sector. Financial resources should be equally allocated on class-size management, the improvement of teacher quality or school equipment in order to increase the quality of the teaching.

As a prerequisite for enhancement of teaching quality in Bosnia and Herzegovina, the education reform was focused on the class-size reductions, while less attention was given to other important segments. Arguments in favor of smaller classes are usually taken for granted. Class-size reduction measures usually enjoy strong support among parents, teachers and public. In this regard, the aim of this analysis is to consider the real effects of smaller classes, point out possible limitations, as well as to suggest more efficient measures to enhance the teaching quality.

Commonly it has been considered that smaller classes enable teachers to spend more time with each student and less time on classroom management, providing better education adapted to the individual needs of every student leading to better results.

Two of the most prominent international student assessment studies, TIMSS¹ (Trends in International Mathematics and Science Study) conducted by the IEA (International Association for the Evaluation of Educational Achievement) and the PISA study conducted by the OECD (Organisation for Economic Co-operation and Development), however, came to the conclusion that a linear relationship between individual achievement and number of students in the classroom does not exist. From this follows the conclusion that neither the quality of teaching, nor the development of the skills which are a precondition for greater achievement and success are determined by this factor.

The effects of smaller classes on education quality

The TIMSS results for 2007 testing showed that in 35 out of 50 participating countries, better results were achieved by students from bigger classes (from 25 to 40 students) than those from smaller classes (up to 24 students) in the same country. The same applies to Bosnia and Herzegovina which in 2007 participated in TIMSS for the first, and up to this day the last time. In only five countries students from smaller classes recorded better results than their colleagues from bigger classes.² However, it is important to note that those who displayed a dependency between class size and student achievement, on average, scored worse on TIMSS, while the countries

1 Together with this analysis, the CPU published an analysis on the importance of regular TIMSS testing in Bosnia and Herzegovina: Centre for Policy and Governance. (2013). *The Advantages of Application of TIMSS (Trends in International Mathematics and Science Studies) on Educational System of Bosnia and Herzegovina*

2 Draganić, L. (2013). Kvalitet i troškovi obrazovanja u BiH. Open Society Fund Bosnia and Herzegovina

where there is a small dependency achieved above average results.³

Findings from the OECD Programme for International Student Assessment (PISA) also suggest that systems prioritizing higher teacher quality over smaller classes tend to perform better, which also confirms other reports indicating that the increase in the quality of the teacher is a more efficient measure in improving student results.⁴

In the field of scientific research of education there is strong empirical evidence suggesting that teacher quality is a key factor in the quality of education, and that low student achievement indicate a low quality of the teaching staff. For the sake of this analysis, we will briefly review the most famous research at this moment. In 2008 John Hattie published the book '*Visible Learning*', which is probably the most comprehensive analysis of school performance ever and which has ranked him as the most influential scientist in the field of education in the world. This book is the result of 15 years research and synthesizes over 800 meta-analyses (involving 260 million students) on the influences on achievement in school-aged students. Hattie and his colleagues have found the most effective factors of successful teaching and educational programs.⁵

The most important factors by which school performance can be predicted are previous knowledge and basic cognitive abilities that are generally associated with other factors such as socio-economic status and parental commitment. As the dominant factor that can be influenced by schools, this research also highlights the importance of teachers. On the other side, out of 138 factors which influence school performance, class-size is merely on the 106th rank.⁶

3 WöBmann, L. I West, M. R. (2002). *Class-Size Effects in School Systems Around the World: Evidence from Between-Grade Variation in TIMSS*. Harvard University. PEPG/02-02

4 Education Indicators in Focus. (2012). *How does class-size vary around the world*. OECD

5 Hattie, J. A.C. (2009). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. London & New York: Routledge

6 Spiewak, M. (2013). *Hattie-Studie: Ich bin superwichtig!*. Die Zeit

Review of relevant factors that affect the quality of education in Bosnia and Herzegovina

In Bosnia and Herzegovina we observe a decreasing trend of students enrolled in primary education, which is in accordance with declining birth rates since 2004 year, while at the same time we observe an increase in the number of teachers.⁷ According to the Bosnia and Herzegovina Agency for Statistics, 304.972 students were enrolled in 1.883 primary schools at the beginning of the school year 2012/2013, which is 11.685 or 3.7% less than the previous school year. At the beginning of the school year 2012/2013, 24.484 teachers were employed at primary schools. In the school year 2004/2005 380.995 students were enrolled, while 22.217 teachers were employed. This means that over the course of ten years the number of enrolled students decreased by 20% (76.023), while at the same time the number of teachers involved in the education process increased by 10% (2.267). It follows that the student-teacher ratio is smaller than before, which would be justified only in the case in which it would affect an increase of the quality of education. Since this is not the case, it actually means the cost effectiveness of primary educations significantly decreased from year to year. The introduction of the nine-year education cannot justify such a drastic reduction in the student-teacher ratio.

With the exception of schools for children with special needs, which in general have much smaller classes, the average class-size in primary schools in the school year 2012/2013 was 19.7. According to the document '*Secondary Analysis of TIMSS 2007 in Bosnia and Herzegovina*' the optimal number of students per class is between 20 to 25, which means that Bosnia and Herzegovina is currently below the optimum number of students per class.⁸ However, there are significant differences within Bosnia and

7 The following data can be found on the official website of the Agency for Statistics of Bosnia and Herzegovina (<http://www.bhas.ba/>)

8 Agencija za predškolsko, osnovno i srednje obrazovanje BiH . (2009). *Sekundarna analiza TIMSS 2007 u Bosni i Hercegovini*.

Herzegovina. While the class-sizes between the high schools in both Entities are comparable, the class size in primary schools differs significantly and is smaller in the Republika Srpska. Differences between the Federation of Bosnia and Herzegovina are even higher ranging from 17.7 in Canton 10 to 24.3 students per class in the Central Bosnian Canton. As a result, significant differences in average costs per unit (cost per student) of primary education between the entities and especially between the cantons are evident. For example, the unit cost of Canton 10 for primary education is 40% higher than the cost of the Central Bosnia Canton.⁹

In BiH, the Ministry of Education and Culture of the Republika Srpska and the educational ministries of the Cantons in the FBiH are directly responsible for the class-size policy. These institutions are also creating and adopting standards and norms for the personnel, as well as the minimum, optimum and maximum class sizes. At the first glance, discrepancies between the Entities and Cantons become obvious when it comes to the norms defining class size. There is no obvious reason for the big differences between the minimum class size in the Bosnian Podrinje Canton Goražde (16) and for instance the Tuzla Canton (22). Cantons which set the minimum class size smaller than others could raise it, unless for obvious reasons such as demographic or geographic constraints. The average class size of most of the successful school systems (according to the TIMSS 2011 results) was not below 20 students per class (Ireland 24.1, Netherlands 22.4, Hungary 21, Portugal, Czech Republic and Denmark 20). Therefore it would be reasonable to harmonize the regulations in the RS and in the cantons of the FBiH with these European standards. At the Federal Ministry of Education and Science, currently there is a working group responsible for drafting educational standards and norms which would apply to all Cantons. The initiative certainly goes in the right direction, but since the recommendations of the Federal ministry of education are not legally binding, it remains to be seen to which extent will the cantons be ready to accept them.

9 Svjetska banka. (2012). *Bosna i Hercegovina: Izazovi i preporuke za reforme. Pregled javnih rashoda i institucija*. Report no. 66253-BA, p: 100-116

The basic indicators of the efficiency of the use of educational resources are the average class-size and the student-teacher ratio. Reducing the class-size and the student teacher-teacher ratio inevitably leads to decreased efficiency of the resource utilization. In May 2013 the average gross monthly wage in education was 1.308 KM. Multiplied by the number of teachers this means that it is necessary to allocate 384 million KM annually only for wages for education in Bosnia and Herzegovina. Compared to five years ago, this is an increase of 40 million KM annually.¹⁰ It is important to add that the expenditures in 2010 were distributed in the ratio of 90% wages and 10% other expenses, which leads to the conclusion that, in order to increase the efficiency of the education system, it is important to reconsider how to distribute the budget funds on education. This revision is necessary for greater efficiency and in order to achieve European standards in the educational system. This does not necessarily mean reducing the current number of teachers, but it offers the opportunity to retain the current personnel while at the same time improving their quality.

According to estimates by World Bank experts, an increase of the average class-size by one student, could result in reduced expenditures per students (and hence total expenditures) of approximately 4% for primary education and 8% secondary education. Estimates by the Centre for Policy and Governance show possible annual saving for Bosnia and Herzegovina of 24 million KM in primary and 21 million KM in secondary education. In BiH currently operate 2.196 primary and secondary schools which means that there is a potential saving of 20.000 KM per school annually. These funds could be reprogrammed and spent on education and training for teachers and educators, for investments in school equipment, remedial classes for lagging students etc.

The analysis also shows that the amount of spending on education is not a factor that could explain the inadequate quality of the

10 Data on average monthly gross earnings and the number of teachers can be found on the website of the Agency for Statistics of Bosnia and Herzegovina (<http://www.bhas.ba/>)

education in Bosnia and Herzegovina. BiH allocates roughly the same amount on education as other countries in the region. The problem is the efficiency of spending. The indicator of the adequacy of total expenditures on education is the share of the country's GDP that is being spent on education. With 4.5% of the GDP that BiH spends on education, its expenditures are almost the same as in the region (Croatia 4.3%, Srbija 5%, Slovenija 5.8%).¹¹ Further analysis show that increased efficiency of the use of education funds, that is to say the increase of class-size and the number of students per teacher, would lead to saving and create funds for necessary reforms, without significant increases of total education expenditures.

When we talk about the quality of the teachers and having in mind their previously noted importance, it is important to note that by far the largest number of students in BiH who participated in TIMSS 2007 have been taught by teachers that finished higher schools (79%), while only 19% were taught by teachers who had a university diploma. Among the teachers who took part in the mentioned TIMSS, none of them had finished postgraduate education.¹²

According to the Agency for pre-school, primary and secondary education (APOSOS) survey conducted in 2011, only 4% teacher had a specialization, master's degree or doctorate.¹³ As for the mathematics and mother tongue teachers APOSOS came to similar results as TIMSS. By comparison, in Finland which has almost the same average class size as Bosnia and Herzegovina, teachers are required to have at least a master's degree. While Finnish students regularly score among the best on TIMSS, the students from Bosnia and Herzegovina achieved below-average results in 2007, which leads to the conclusion that the quality of teachers directly influences student achievements.

11 World Bank data on public expenditure on education as percentage of GDP for 2008 – 2012

12 Dragnić, L. (2013). *Kvalitet i troškovi obrazovanja u BiH*. Open Society Fund Bosnia and Herzegovina

13 Agencija za predškolsko, osnovno i srednje obrazovanje. (2011). Projekt: *Definisanje standarda učeničkih postignuća za 3. i 6. razred devetogodišnjeg obrazovanja iz bosanskog, hrvatskog i srpskog jezika, matematike i prirodnih nauka*

In April 2013, a round table discussion 'Road to Recovery: *Raising the Quality of Compulsory Education in Bosnia and Herzegovina in Order to Achieve Innovation and Creativity*' was organized by the Centre for Policy and Governance in Sarajevo in cooperation with the Open Society Fund Bosnia and Herzegovina. On this occasion, representatives from the Federal Ministry of Education and Science and the Ministry of Education, Science and Youth of the Canton Sarajevo presented possible ways on how to improve the quality of the education system in BiH. In their conclusions they stressed that one of the major problems in enhancing the quality of the education is the lack of interest that the teachers show for additional training which is available through various forms of international cooperation. As one of the reasons for the lack of interest for professional training they have indicated a lack of knowledge of foreign languages at a level that would allow the teachers to follow the seminars.

Bosnia and Herzegovina is facing major challenges. If the trend of declining birth rates and hiring of new teachers continues, there will soon be a significant surplus of teaching staff. On the other side, a need for employment of new high-quality teachers remains. In the future it will be necessary to attract young talents for the teaching profession. In order to achieve this goal, the salaries do not have to be high, but they ought to be competitive. The conclusions of the World Bank indicate that at this moment they are, even though significant differences between the entities and cantons exist.¹⁴ Additionally, the status of the profession in society is an important element that defines the ability of the system to attract quality candidates. International examples show that all successful systems are highly selective in the process of choosing candidates who enter the teaching profession.

In the USA, there is currently an initiative to increase the classes for the best teachers and to use the budget savings for higher salaries for these teachers, and for additional training for

14 Svjetska banka. (2012). *Bosna i Hercegovina: Izazovi i preporuke za reforme. Pregled javnih rashoda i institucija*. Report no. 66253-BA, p: 100-116

those teachers who need it.¹⁵ A short-term strategy for Bosnia and Herzegovina could be to follow this direction. Additionally, when hiring new teaching staff the attention has to be paid that their qualifications are in accordance with those of their counterparts from the European Union.

Recommendations

Halt the trend of class-size reduction and harmonize standards and norms.

Declining birth rates will lead to further decline in student numbers in primary schools (and in the course of time in secondary schools) indicating the need to take appropriate measures regarding the class size and the rationalization of the primary schools network. Bearing in mind significant local discrepancies it is necessary to harmonize standards and norms stipulating the minimum class size. The previously mentioned initiative of the Federal Ministry of Education and Science should serve as a basis, but the ultimate responsibility lies on the Ministries of the Cantons and the Ministry of Education and Culture of the Republika Srpska. Following the education policies in Bosnia and Herzegovina and international trends, we suggest that the minimum prescribed number of students per class be 20, to increase the classes in those municipalities and cantons where fewer than 20 students attend classes and to stop the trend of declining average class size in those municipalities and cantons where the classes are still within optimal range.

Shift the focus from the quantity to the quality of teachers.

What successful educational systems in the European Union have in common is the quality and level of education of their teaching staff. Raising the average class size by one student would provide significant funds for more efficient educational investments. Increasing the quality of the teaching

staff through education and training of teacher and educators should be the priority. Smaller classes should be used only in special cases and in some schools.

Create the necessary conditions for improvement of teacher quality.

It is necessary to accelerate and intensify the process of establishing postgraduate and doctoral studies on pedagogical academies that would study new teaching concepts and models in a more comprehensive and detailed manner and work on professional training of existing staff. It is necessary to address the problem of the lack of human potential and other resources in pedagogical institutions and ministries responsible for the education of teachers. In order to attend international seminars for education and experience exchange it is necessary to introduce compulsory foreign language courses for teachers and professors as well as regular assessments.

Increase the selection criteria for teachers as a precondition to bolster the reputation of the profession and attract talents.

In addition to financial compensation which has to be competitive, the status of the profession within the society is an important precondition for attracting quality candidates for the teaching profession. It is necessary to revise the selection criteria so that the minimum qualification of new teachers is in accordance with those of their counterparts in the European Union. With the increase of the reputation of the profession teachers would gain an incentive for self-education as a significant precondition and obligation of professional development.

A large part of the prosperity of Bosnia and Herzegovina will depend on how human resources, knowledge and creativity are used in order to encourage innovation. Therefore, in order to improve the state of our educational system, it is necessary to revise the process of decreasing class sizes and employing teachers without a strategic plan and consultation with relevant institutions as soon as possible.

¹⁵ Mosle, S. (2013). *Does Class Size Count?*. New York Times

Schools should not provide a shelter for the unemployed, but places to work with children. Even though Bosnia and Herzegovina is still in the process of gaining full membership in the EU, it is important to approach the educational reforms in an efficient and timely manner, since achieving the results is a long-term process.

Research methodology – desk research, analysis and interviews

Desk research materials:

Agencija za predškolsko, osnovno i srednje obrazovanje. (2011). Projekt: *Definisanje standarda učeničkih postignuća za 3. i 6. razred devetogodišnjeg obrazovanja iz bosanskog, hrvatskog i srpskog jezika, matematike i prirodnih nauka*

Agencija za predškolsko, osnovno i srednje obrazovanje BiH. (2009). *Sekundarna analiza TIMSS 2007 u Bosni i Hercegovini*.

Agency for Statistics of Bosnia and Herzegovina (<http://www.bhas.ba/>)

Dragnić, L. (2013). *Kvalitet i troškovi obrazovanja u BiH*. Open Society Fund Bosnia and Herzegovina

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Hattie, J. A.C. (2009). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. London & New York: Routledge

Mosle, S. (2013). *Does Class Size Count?*. New York Times available on: <http://opinionator.blogs.nytimes.com/2013/05/04/does-class-size-count/>

Spiewak, M. (2013). *Hattie-Studie: Ich bin superwichtig!*. Die Zeit

Svjetska banka. (2012). *Bosna i Hercegovina: Izazovi i preporuke za reforme. Pregled javnih rashoda i institucija*. Report no. 66253-BA

Wößmann, L. I West, M. R. (2002). *Class-Size Effects in School Systems Around the World: Evidence from Between-Grade Variation in TIMSS*. Harvard University. PEPG/02-02

Interview with Lamija Husić, Advisor, Ministry of Education, Science and Youth of the Canton Sarajevo
Interview conducted on 24 August, 2013

Interview with Žaneta Džumhur, Head of Department for Analysis, Statistics and IT Support, APOSO
Interview conducted on 22 August, 2013

This analysis was conducted within the project 'Road to Recovery', supported by The National Endowment for Democracy (NED)

PRIMARY EDUCATION TRENDS IN BOSNIA AND HERZEGOVINA



In the school year 2004/2005 **380.995 students** were enrolled.



In the school year 2012/2013 **304.972 students** were enrolled.

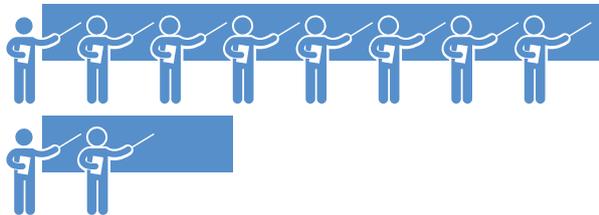


school year 2004/2005

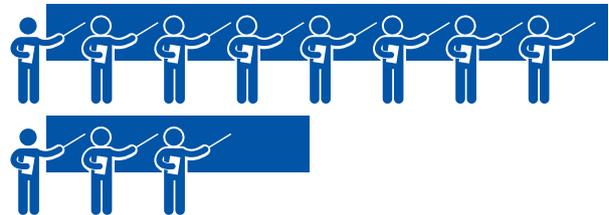
school year 2012/2013

The average number of students per class in

2004/2005 was **23,2**, and in 2012/2013 **19,7**.



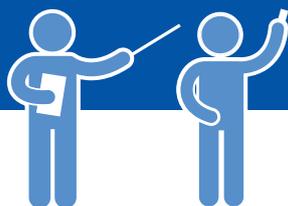
The number of **teacher involved** in the school year 2004/2005 was **22.217**.



The number of **teacher involved** in the school year 2012/2013 was **24.484**.

This means that over the course of

10 years



the number of enrolled students

decreased by 20% (76.023)

while at the same time the number of teachers involved in the education process

increased by 10% (2.267)



According to CPU estimates, increasing the class size by

ONE STUDENT

would result in reduction of expenditures and savings of

45.000.000 KM.

In BiH currently operate

2.196 primary and secondary schools

which means that there is a potential saving of

20.000 KM per school annually.

