



*Extended Abstract*

## **On Comparative Analysis of Mathematical Education of Serbia, Croatia and Finland**

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### **Introduction**

The topic of this paper is comparative analysis of mathematical education in compulsory educational systems of Serbia, Croatia and Finland. Educational systems of Serbia and Croatia are very similar, due to the fact that these two countries were part of the same country. After disintegration of Yugoslavia, Serbia and Croatia have commenced their transition processes and comprehensive reforms. They also have commenced reforms of their educational systems. This paper analyses how far are these countries reached in the reform of the selected segment of compulsory education, did some differences created between the observed countries and gives description and explication of these differences. In addition to support, comparison also covers the situation in Finnish education system, which is taken as an example of a successful system. Finnish education system is, according to numerous studies, one of the best in Europe and also, according to PISA tests results, performance from the Finnish students were always among the best.

A detailed analysis was conducted on the example of mathematics, given the importance of this science in modern society. With the development of science and technology and comprehensive advancement of civilization, the need to apply mathematical knowledge in everyday life also increases. Therefore, an applied mathematics is being more studied and many people and due to the lack of mathematical knowledge, or incapacity for its application, many problems are being created.

Further analysis showed that the applied comparative perspective provides to identify similarities and differences in the legal regulations, duration of compulsory education, assessment systems, representation and status of the subjects. In the first part of presentation are analyzed the regulations governing compulsory education in the observed countries. It is made a comparison of duration of

compulsory education and duration of individual cycles of compulsory education. Special attention is given to comparing the assessment systems of Serbia, Croatia and Finland. Particularly interesting are the differences in the representation of descriptive grades and the importance given to the descriptive grading in these three countries. It's analyzed the presence of self-assessment in Finnish educational system and the differences between the observed countries in terms of the progress in studies from grade to grade. The subject of comparison is also the representation and status of individual subjects in the education systems of Serbia, Croatia and Finland with a special emphasis on the differences in terms of the importance given to some subjects. Using of the modern technology is in the observed education systems is also considered. By comparing the presence of the modern technologies, many differences between Serbia and Croatia on one side, and Finland on another, are noticed. In the second part of presentation are analyzed the educational objectives, contents, educational standards and requirements in terms of knowledge and skills of students for the subject of mathematics.

## **Methods**

This review paper represents a comparative analysis, which is conducted by analyzing laws and other legal acts and another documents with regard to education in the observed countries. The emphasis was on the analysis and comparison of curricula and studying papers and books from this field, especially those related to mathematics and the use of technology in teaching. There are also studied and compared the textbooks and teaching materials for mathematics.

## **Results and Discussion**

A comparative analysis showed some differences and similarities between the observed countries. The most prominent are differences between Serbia and Croatia on one side and Finland on another. In terms of regulations, it is noticed that Finnish education system is much more decentralized than Serbian or Croatian. It is also noticed the absence of national curriculum, the document by which are provided guidelines for organizing the teaching process. When it comes to student assessment, it is noticed greater representation of descriptive assessment and self – assessment in Finnish education system, than in Serbian and Croatian. The differences in terms of representation and status of individual subjects are not particularly noticeable.

It is found that Finnish elementary schools successfully apply modern technologies in teaching process, while in other two countries still exist problems in this field, primarily due to the lack of adequate equipment in many schools.

A comparison of mathematical education in compulsory education systems of the observed countries didn't show essential differences in terms of teaching contents. On the other side, stand out the differences in terms of educational objectives and, especially, educational standards and requirements in terms of knowledge and skills. Among Finnish educational objectives, as opposed to Serbian and Croatian, it is emphasized development of mathematical thinking, while acquisition and application of knowledge are in the second place. In accordance with these objectives, Finnish description of good performance contain the entire group of requirements in terms of the development of thinking and working abilities. In this description it is also more insisted on application of acquired knowledge than it is case in Serbia and Croatia.

## Conclusions

It is indisputable that mathematical skills and competences of Serbian, Croatian and Finnish pupils are not the same. One of the indicators is certainly result of PISA test. Regarding the mathematics PISA tests, performances from the Finnish pupils were always among the best, and performances from the Serbian and Croatian pupils were considerably lower. Described differences certainly had, to some extent, an impact to final pupils' competences. It is expected that more intensive use of the modern technologies to support teaching and intensification requirements in terms of knowledge application could improve teaching process and final pupils' competences in Serbia and Croatia.

## References and Notes

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