



TIMSS 2019 RESEARCH FINDINGS: A PERSPECTIVE OF EDUCATION IN SERBIA

Ivana Đerić, Nikoleta Gutvajn, Smiljana Jošić and Nada Ševa (Eds.). (2021). *TIMSS 2019 in Serbia: The results of an international research of the achievements of students of the fourth grade of primary school in mathematics and sciences*. Belgrade: Institute for Educational Research, 30 cm, 229 p.

In the past few decades, international researches based on standardised knowledge tests (PIRLS, PISA, TIMSS etc.) have become increasingly important as a basis for introducing changes within different educational systems. At the same time, such large-scale comparative studies have been criticised more frequently by philosophers, such as Konrad Liessmann, who claim that they have provoked the *madness* or *obsession with ranking lists* where the achievement in the test has become the only goal, while the educational ideal of enlightenment has faded. A book edited by Ivana Đerić, Nikoleta Gutvajn, Smiljana Jošić and Nada Ševa was published in October 2021 and it summarises key findings of the TIMSS 2019 research in Serbia and analyses different factors of students' achievement. This book does not debate the usefulness of international standardised tests and it only implicitly endorses the supporters of these tests. However, it can be said that the book successfully offers relevant arguments in favour of such researches by providing the model of interpretation which presents these researches as useful. Namely, the texts in the book do not focus on the ranking lists mentioned by Liessmann, but on understanding the reasons for different educational results. Also, although it has not been written anywhere explicitly, one gets the impression that most of the authors do not perceive the high score in the test as the ultimate goal of the educational system, but that they use this text as one of the tools for reflecting on the educational system. In that sense, the book provides an excellent basis not only for understanding virtues and setbacks of the educational system in Serbia, but also for designing directions for its improvement. What is more, bearing in mind that the Institute for Educational Research has been organising TIMSS researches in Serbia and publishing their findings since early 2000s, it can be concluded that this book, along with previous similar publications (TIMSS

2003 in Serbia, TIMSS 2007 in Serbia and two books dedicated to the TIMSS 2011 research in Serbia and TIMSS 2015 in Serbia), provides a basis for comprehensive and continuous monitoring of certain aspects of the primary education in Serbia.

Besides the introduction, the book consists of nine texts divided into four parts: (1) overview of the TIMSS 2019 research, (2) analysis of the factors of the achievement of students in Serbia, (3) the importance of motivation for learning and (4) analysis of students' responses in tests.

The first part of the book includes a text entitled *The concept of the international TIMSS 2019 research* where Ivana Đerić, the author of the chapter and the national coordinator of the research in Serbia, presents the methodological and content-related basis of the research. Moreover, she suggests that international comparative researches can be very important for creating concrete measures for the improvement of the quality of education, defining achievement standards and analysing contents present in the educational system.

A part of the book dedicated to the factors of achievement consists of three articles analysing the influence of both structural and school-related and individual factors on the students' achievement. The text entitled *Factors of achievement of the students in mathematics and sciences: TIMSS 2019 in Serbia*, written by Smiljana Jošić and Ivana Jakšić, shows that differences in students' achievement in mathematics and sciences can be largely explained by individual differences between students, and not so much by differences between classes and schools. Also, the authors have shown that the great explanatory potential of individual differences in comparison with differences related to schools and classes is relatively stable because similar findings have been obtained according to the data gathered in researches TIMSS 2019 and TIMSS 2015. However, besides psychological variables (such as self-confidence), the authors consider some characteristics that might be named structural (such as the social position of an individual, or more precisely, the socioeconomic status) to be individual differences. Furthermore, the most relevant individual differences are the ones related to the social position of an individual, which implies the unfairness of the educational system. Structural differences have been analysed more directly in the work written by Mladen Radulović and Dragana Gundogan where they analyse the influence of the cultural capital on the achievement in mathematics and sciences. Similar to the findings of the text dedicated to achievement factors, the authors of the work *Comparative analysis of the influence of the cultural capital on students' achievement: Serbia, the region and Western Europe* conclude that there are alarming educational inequalities in Serbia. They show that the cultural capital in Serbia makes up for more than one quarter of students' achievement which makes it a stronger predictor in the TIMSS 2019 research than it was in the previous cycle (TIMSS 2015), as well as a stronger predictor than in other countries of the region. Finally, this part of the book analyses the link between the achievement in the TIMSS 2019 tests and different parents' practices with children in the areas of mathematics and languages.

The work entitled *Early educational activities of parents with children and the school achievement of students in mathematics and sciences*, written by Rajka Đević, Jelena Stanišić and Milja Vujačić, shows that students whose parents did early educational activities with their children (such as reading, playing different games with letters, numbers, shapes, cubes etc.) have achieved a higher score in the tests in mathematics and sciences in comparison with the international average and in comparison with the Serbian average. Structural inequalities have been documented in this work as well since the authors have shown that parents with the higher level of education perform the mentioned activities more often with their children.

The part of the book dedicated to the importance of students' motivation for education includes three texts which analyse the importance of the motivation for the achievement, as well as the link between the motivation and school-related and family-related variables. The text entitled *Motivational profiles of students in mathematics: TIMSS 2019* answers the question of how relevant motivation is for students' achievement. Namely, the authors Nataša Lalić-Vučetić, Slavica Ševkušić and Snežana Mirkov have analysed motivational profiles of students and their relationship with the score in the mathematics test. With the help of the cluster analysis, the authors have determined 3 motivational profiles and have shown that students of different profiles have significantly different results. Also, they have concluded that there are no differences between boys and girls in terms of motivation to learn mathematics, as well as that the identified motivational profiles are relatively stable in the lessons of mathematics in the educational system in Serbia because similar results were obtained in researches TIMSS 2019 and TIMSS 2015. Bearing in mind the findings of this work which are about the importance of motivation for the achievement, it is extremely important to understand reasons why students' motivation is high or low. That is precisely the subject of the work *School climate and motivation for learning mathematics and sciences: mediation of peer violence*, written by Nikoleta Gutvajn, Marina Kovačević Lepojević and Gordana Mišćević. The research has shown that school climate influences self-confidence and motivation to learn mathematics and sciences, as well as the fact that students' assessment of their own sense of belonging to school is the most relevant among different aspects of the school climate. Also, the authors have emphasised the importance of peer violence which mediates between the sense of belonging to school and motivation to learn. Vladimir Džinović, Ivana Đerić and Dušica Malinić have treated motivation in the text *The way parents' aspirations and developmental and supportive activities influence children's self-confidence and motivation to learn mathematics and sciences*. This text shows that parents' aspirations directly influence children's self-confidence and motivation to learn mathematics, but indirectly they influence self-confidence through parents' engagement to prepare children for school. When it comes to sciences, it has been determined that parents' aspirations influence students' self-confidence, but not their motivation to learn this subject.

The last part of the book consists of two texts which analyse students' responses to some of the questions from tests in mathematics and sciences. The text entitled *Typology of mistakes made while solving assignments in geometry*, written by Jasmina Milinković and Nada Ševa, analyses typical mistakes made in the mentioned areas, whereas the work entitled *Mistakes made by students when solving TIMSS 2019 assignments in the areas of biology*, written by Jelena Stanišić, Sanja Blagdanić and Milica Marušić Jablanović, analyses students' mistakes in the test in sciences. Both texts analyse in detail students' typical mistakes giving the authors a valuable insight into the source of mistakes, types of assignments where students encounter problems, subjects which are especially challenging for students and suggesting which contents may become a part of the curriculum. Although it is difficult to highlight all findings of these works in this overview, it is important to emphasise that these two texts may provide concrete guidelines for changing educational practices, which are useful both for decision-makers in education and for the practitioners.

Finally, it is necessary to point out some values of this book which cannot be perceived after reading overviews of individual texts. There are few collections of works which manage to maintain subject-related focus and coherence to the extent this book has maintained them. It certainly makes it easier for readers to read each individual text, but to also understand the book as a whole. Also, besides a thorough analysis of findings, each text offers different educational implications which may be of use for all participants in education. Finally, as it has already been mentioned, the book provides a good model for a comprehensive analysis of findings of international standardised researches. It manages to avoid interpreting findings in the light of ranking lists and to focus only on understanding a concrete educational system. Bearing all that in mind, it can be concluded that this book is a valuable contribution to understanding contemporary educational system in Serbia, its virtues, setbacks and possible ways of improvement.

Mladen Radulović

Institute for Educational Research, Belgrade, Serbia