

XXVII SCIENTIFIC CONFERENCE

EMPIRICAL STUDIES IN PSYCHOLOGY

13 – 16TH MAY, 2021.

FACULTY OF PHILOSOPHY, UNIVERSITY OF BELGRADE



INSTITUTE OF PSYCHOLOGY
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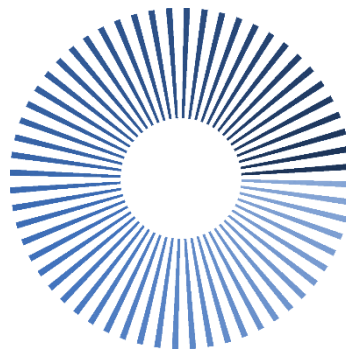
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TUNING FORKS (E. Zimmermann, Leipzig – Berlin)

Instruments for generating tones of a given frequency. They are used in studies of auditory sensitivity for determining the differential, absolute and upper thresholds. Figure shows a set of three tuning forks generating the C-major chord, each fork generating the tones of 256 Hz (c¹), 320 Hz (e¹), and 384 Hz (g¹) respectively. The forks were tuned to the pitch of the originals from the German Physico-Technical Imperial Institute (Phys.-techn. Reichsanstalt).

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TRENDS IN MATHEMATICS ACHIEVEMENT IN THE 4TH GRADE OF PRIMARY SCHOOL: TIMSS 2019 IN SERBIA**Nada Ševa**Institute for Educational research, Belgrade | nadaseva@gmail.com**Smiljana Jošić**

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Monitoring of changes in students achievement is important in a twofold way: it represents one of the main indicators of impact of current educational policies, at the same time providing information of further steps when it comes to the possible changes in teaching practices and other systemic changes. This paper presents trends in mathematics achievement of the 4th grade primary school students attained in three research cycles of TIMSS in Serbia: TIMSS 2011, TIMSS 2015 and TIMSS 2019.

The main finding from TIMSS 2019 indicates a significant drop in average mathematical achievement by 10 points in comparison to TIMSS 2015 (508 vs. 518 points). Serbian students in TIMSS 2019 maintained on average to be at the level of intermediate international benchmark, same as in previous TIMSS cycles. However, the observed lower achievement resulted in significant change in distribution of the students across different benchmarks, with significantly lower percentages in advance and high level benchmarks. Results across different content and cognitive domains showed that the difference between TIMSS 2019 and TIMSS 2015 was mainly due to the 28 points difference in content domain *Data* (489/TIMSS 2019 vs. 518/TIMSS 2015). In addition, there is a significant decline in TIMSS 2019 for cognitive domains *Application of knowledge* (509/TIMSS 2019 vs. 521/TIMSS 2015), as well as *Reasoning* (503/TIMSS 2019 vs. 517/TIMSS 2015 vs. 514/TIMSS 2011).

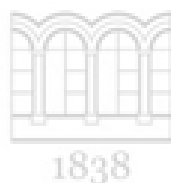
The observed results will be discussed in the context of relation between three levels of curriculum foreseen within TIMSS framework: intended curriculum (which topics are planned to be taught at the systemic level), implemented curriculum (which topics are taught before or during the year of testing) and attended curricula (which topics students learned). For example for content domain *Data*, teachers in TIMSS 2019 reported lower percentages of students that were *Not yet taught or just introduced* to the certain topics in comparison to previous cycle (implemented curriculum). However students in TIMSS 2019 had lower number of correct answers for several tasks repeated in two cycles from *Application of knowledge domain* (attended curriculum), indicating that attention of teachers should be oriented towards higher cognitive domains. Insights from this level of the analysis will provide policy-relevant information to help improve mathematics teaching and learning in the context of the first cycle of education in Serbia.

Keywords: TIMSS 2019, trends, mathematics achievements, primary school

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