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TOWARDS A MORE EQUITABLE EDUCATION: FROM RESEARCH TO CHANGE

BOOK OF PROCEEDINGS

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THE MOST SIGNIFICANT LEARNING STORIES: TIMSS ASSESSMENT ITEMS AS A PROMPT FOR PROFESSIONAL LEARNING[1]

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Introduction

Education policymakers in Serbia recognized that schools and teachers should include the results of International Large-scale Assessments (ILSAs) in further plans for improving the quality of teaching (Official Gazette of the Republic of Serbia, 14/2018). According to Đerić et al. (2020) and Mullis et al. (2020), in TIMSS 2019, teachers from Serbia identified Improving Students' Critical Thinking or Problem-Solving Skills (MATH: 54%; SCI: 56%) as one of the greatest needs for further professional development (PD). Thus, it is crucial to design effective PD programs to help teachers connect the TIMSS framework and data with their practice. Moreover, PD programs need to be constructed within a Universal Design for Learning (UDL) framework to promote inclusive pedagogy (Sanger, 2020; Schreffler et al., 2019). With this in mind, we developed a PD program entitled TIMSS 2019 for Teachers: Quest for Quality Questions (TIMSSQs).

The pillars of the program were grounded in the inclusive principles and values promoted within current theoretical models of professional learning and development (Koellner et al., 2023; Patton et al., 2015). This included: a) respecting the needs of teachers expressed in the TIMSS survey; b) encouraging practitioners'[3] active participation in the learning process; c) encouraging practitioners to reflect on their practice through the TIMSS framework and data; d) creating opportunities for building a professional

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3   Term *practitioner* includes all school professionals who work with students in an educational context, i.e., teachers and school counsellors.

learning community at the school level, e) promoting school counsellors' role as PD facilitators at the school level; and f) encouraging practitioners to collaboratively create teaching materials and resources that draw on the TIMSS framework and data.

The purpose of the hybrid TIMSSQs program was twofold. First, inspired by the TIMSS framework, the program aimed to strengthen teachers' competencies for creating quality questions as one of the key elements of critical thinking and problem-solving skills. The program introduced the key characteristics of TIMSS assessment items and empowered teachers to formulate quality questions. Teachers were introduced to the Question Formulation Technique (QFT; Rothstein & Santana, 2011)[4], which promotes equity and inclusion in classroom settings, as confirmed in the Serbian educational context (Ševa & Đerić, 2023). In third step, teachers applied creating assessment items based on the TIMSS framework, emphasizing the quality of the questions (high cognitive domain questions). Finally, they reflected on their learning through technique the Most significant learning stories (MSL; Dart & Davis, 2003).

Another goal of the TIMSSQs program was empowering school counsellors to act as PD facilitators at the school level and support teachers in further plans for improving the quality of teaching. School counsellors participated in workshops and analyzed and selected teachers' most significant learning stories (technique MSL; Dart & Davis, 2003). Based on workshop outcomes, school counsellors were provided with the opportunity to draft an action plan for teachers' application of actionable knowledge inspired by the TIMSSQs program.

The present research aimed to obtain practitioners' insights regarding the most significant professional learning resulting from the implementation of the TIMSSQs program and determine which participant-centered pedagogical strategies were reflected in PD facilitators' methods. The results of the research are to inform the further development of the TIMSSQs program.

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4   Creative Commons license: The Question Formulation Technique (QFT) was created by the Right Question Institute (rightquestion.org).

Methodology

Data analysis was based on the following research questions:

1. What do teachers identify as the most significant learning from the program?

2. Which teachers' learning do school counsellors (PD facilitators) deem to be the most significant in the applied program and why?

3. How do school counsellors (PD facilitators) plan to support the sustainability of the program's effects in their professional learning community?

Research participants included 26 class teachers (ISCED Level 1) and subject teachers (STEM, Serbian Language and Literature, History, and other social science subjects; ISCED Level 2) and four school counsellors from two primary schools in Belgrade, Serbia. In Serbia, class teachers are responsible for teaching both mathematics and science in the lower grades of primary school. In the higher grades, each STEM subject is taught by a different teacher.

Data were collected through individual and semi-structured group interviews. Two instruments were used for data collection. The first instrument was an adaptation of the protocol for selecting the most significant learning story (technique MSL; Dart & Davis, 2003), containing eight questions (e.g., How will this new learning change your practice? Describe WHY this learning was the most significant to you). The second instrument was the focus group guide based on the protocol for selecting the most significant learning story (technique MSL; Dart & Davis, 2003). It contained questions like: Of all the listed significant learnings, which one do you think is the most important? Why is it the most significant for you? Why do you like this story?

The analyzed data included: a) teachers' narratives about professional learning experiences during the implementation of the TIMSSQs program in the form of the most significant learning stories (technique MSL; Dart & Davis, 2003) and b) transcripts of the interviews with school counsellors held during the workshop.

A qualitative content analysis was conducted (Elo & Kyngäs, 2009). First, the most significant learning stories were deductively coded using the following categories: Expressed Overall Contentment With the Program, Learning Outcomes, Implications of the PD Program for Further Practice, and Explanation of the Most Significant Learning. Subsequently, the data from the interviews with school counsellors were coded

inductively. Namely, two coders (researchers conducting the study) read the material, defined the categories individually and collaboratively, and reached a consensus on the final decision.

Results, Discussion, and Conclusion

Teacher perceptions of the PD program suggest that it promotes reflection on teaching methods, an understanding of the importance of questions, and the development of skills required to formulate good research questions. In line with previous findings (Phillips & Duke, 2001; Wragg & Brown, 2001), the results showed that lower cognitive questions dominated teachers' practices. Furthermore, teachers acknowledged the necessity of open-ended research questions of a higher cognitive level. Despite the clear message and video examples showing how the QFT is used in the classroom, students were not credited as creators of open/research questions. Instead, teachers focused on improving their skills in creating TIMSS-like assessments. A majority of participants stated that they would use more open-ended questions of a higher cognitive level that resembled TIMSS assessment items. They believed that such questions could improve students' critical thinking, self-confidence, and motivation in the long run. Despite the inclusive nature of the QFT, teachers did not emphasize this, perhaps due to not having tested this technique in practice (Ševa & Đerić, 2023). Teachers seemed to view the use of the QFT and TIMSS-like assessment items as a means of controlling learning and discipline in the classroom (Hayes, 2002; Roehrig & Luft, 2004; Stokhof et al., 2017), which is not consistent with the participatory and inclusive nature of the UDL. According to school counsellors, the learning story identified as the most significant stated that changes in teachers' practices after professional learning were possible if implemented in a continuous, procedural manner, with experimentation in practice. Furthermore, the most significant learning stories reflected teachers' need for lifelong learning.

Despite the positive effects of the program, school counsellors recognized a need for further learning on the formulation of quality questions and facilitation of critical thinking and problem-solving. They further identified a lack of systematic support in the initial education phase as well as in later in-service professional development. School counsellors did not recognize the QFT as a useful tool for incorporating students'

questions into the teaching process and further development of UDL teaching in their schools. They suggested that the program's continuation should provide teachers with additional support through cyclical meetings in the context of professional learning communities within their schools. School counsellors believed that teachers needed to continuously reflect on the introduced techniques, test them in practice, and exchange initial experiences with colleagues and PD facilitators.

TIMSSQs should be further developed to include the implementation of the QFT in practice, which may provide a deeper understanding of its inclusive nature and enable schools to develop professional learning communities that focus on improving students' and teachers' critical thinking and problem-solving skills.

Keywords: Question Formulation Technique (QFT), Universal Design for Learning (UDL), critical thinking, problem-solving skills, PD facilitators

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