PEDAGOGICAL CONDITIONS OF TRAINING FUTURE PRIMARY SCHOOL TEACHERS BASED ON THE TIMSS INTERNATIONAL ASSESSMENT PROGRAM

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Annotation

This article describes the theoretical importance and content of training future primary school teachers based on the TIMSS international assessment program.

In the world, effective technologies for developing methodical training for future primary school teachers based on the TIMSS international assessment program are being applied to the educational process. The development of mechanisms for the development of methodological training of future primary school teachers based on the TIMSS international evaluation program, the development of models for the development of methodological training based on the TIMSS international evaluation program, as well as the creation of multimedia electronic resources based on international evaluation programs, and the evaluation of the quality of education, are being carried out on a large scale. Along with the work, it is noted that there is a need to "improve the process and tools for evaluating the quality of education, to put into practice the mechanisms that allow determnining the achieved results", to evaluate the level of students' knowledge based on international standards, and to implement the trends related to improving the quality of teaching mathematics and natural sciences.

All children can benefit from developing strong skills in and a deep understanding of mathematics. Primarily, learning mathematics improves problem solving skills, and working through problems can teach persistence and perseverance. Mathematics is essential in daily life for such activities as counting, cooking, managing money, and building things. Beyond that, many career fields require a strong mathematical foundation, such as engineering, architecture, accounting, banking, business, medicine, ecology, and aerospace. Mathematics is vital to economics and finance, as well as to the computing technology and software development underlying our technologically advanced and information based world. This chapter presents the assessment frameworks for the two TIMSS 2019 mathematics assessments:

• TIMSS Mathematics—Fourth Grade

• TIMSS Mathematics—Eighth Grade As described in the Introduction, the TIMSS 2019 Mathematics Frameworks for the fourth and eighth grades build on TIMSS' 24-year history of assessments every four years since 1995, with this being the seventh assessment in the series.

In general, the fourth and eighth grade frameworks are similar to those used in TIMSS 2015. However, there have been minor updates to particular topics to better reflect the curricula, standards, and frameworks of the participating countries as reported in the TIMSS 2015 Encyclopedia (Mullis, Martin, Goh, & Cotter, 2016). Also, because TIMSS 2019 focuses on the transition to eTIMSS, the mathematics frameworks have been updated and are appropriate for both digital and paper assessment formats. The goal is to capitalize on the benefits of computer-based assessment to begin incorporating new and better assessment methods, especially in the applying and reasoning domains Each of the two assessment frameworks for TIMSS 2019 is organized around two dimensions: • Content dimension, specifying the subject matter to be assessed • Cognitive dimension, specifying the thinking processes to be assessed Exhibit 1.1 shows the target percentage of testing time devoted to each content and cognitive domain for the TIMSS 2019 fourth and eighth grade assessments. The content domains differ for the fourth and eighth grades, reflecting the mathematics widely taught at each grade. There is more emphasis on number at the fourth grade than at the eighth grade. At the eighth grade, two of the four content domains are algebra and geometry. Because these generally are not taught as separable areas in primary school, the introductory or prealgebra topics assessed at the fourth grade are included as part of number.

The fourth grade data domain focuses on collecting, reading, and representing data, whereas at the eighth grade it includes more emphasis on interpretation of data, basic statistics, and the fundamentals of probability. It is important to highlight that TIMSS assesses a range of problem solving situations within mathematics, with about two-thirds of the items requiring students to use applying and reasoning skills.

The cognitive domains are the same for both grades, but with a shift in emphasis. Compared to the fourth grade, the eighth grade has less emphasis on the knowing domain and greater emphasis on the reasoning domain. Following this brief introduction, the chapter begins with the fourth grade content domains, identifying the three main content domains and the assessment topics within each domain. Next, Chapter 1 continues with the description of the TIMSS Mathematics—Eighth Grade content domains and, then, the descriptions of the cognitive domains for both the fourth and eighth grades.

LIST OF LITERATURE

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