SEEING THE DEVELOPMENT OF MATHEMATICS EDUCATION IN THE LIGHT OF KHUN'S THEORY OF SCIENTIFIC REVOLUTIONS

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In 1964 Kuhn formulated a theory of scientific revolutions, using the concept of paradigm shifts, where scientific knowledge undergoes radical changes rather than gradual evolution. His ideas about the incommensurability between competing paradigms and the role of normal science have influenced educational research. Even if this theory was originally developed for natural sciences, its frame can be useful for analyzing the development of other phenomena, in particular mathematics education in various countries. During my talk I will formulate the paradigms of mathematics education and present the historical and modern "revolutions" that motivated their shifts. I will discuss suitable examples of the pivoting moments from the past that shaped our Western modern education, for example introduction of compulsory education, introduction of secular education, and public education available to everybody. More modern education reforms that impacted teaching and learning include "New Math", or "No Child Left Behind Act" replaced later by "Every Student Succeeds Act". I will explain their motivations, pros and cons in the light of the shifts of the previously defined paradigms.

In the context of Indonesian education, the paradigm shifts went through different routes. Being currently the fourth largest (after China, India, and USA) education system with over 50 million students and 3 million teachers, Indonesian education was nationalized in 1945 and later went through transformations in the sixties and the seventies due to political changes. Regardless of multiple reforms, the schools remain not only under the responsibility of the *Ministry of Education, Culture, Research, and Technology* but as well under the *Ministry of Religious Affairs*. Facing a variety of geographical, organizational, and ethnic challenges, Indonesian mathematics education emphasizing ethnomathematics and realistic mathematics education was influenced by the ideas of Hans Freudenthal.

A part of the presentation will be devoted to the very recent sudden transformations worldwide that happened during the pandemic. In the context of previously defined paradigms I will discuss their shifts and challenges faced by teachers from Indonesia in the context of journal submissions send by researchers from that country.