

## **A Proposal for Professional Development of Mathematics Teachers in the Kingdom of Saudi Arabia According to the Orientation of Science, Technology, Engineering and Mathematics (STEM)**

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**Abstract :** The aim of this research is to provide a draft proposal for the professional development of mathematics teachers in accordance with the orientation of science, technology, engineering and mathematics which is known by the abbreviation STEM, as a modern and contemporary orientation in the teaching and learning of mathematics and in order to achieve the objective of the research, the researcher used the theoretical descriptive method through the induction of the literature of education and the previous studies and experiments related to the topic. The researcher concluded by providing the proposal according to five basic axes, the first axe: professional development as a system, and its requirements include: development of educational systems, and allocate sufficient budgets to support the requirements of teaching STEM, identifying mechanisms for incentives and rewards for teachers attending professional development programs based on STEM; the second: development of in-depth knowledge content and its requirements include: basic sciences content development for STEM, linking the scientific understanding of teachers with real-world issues and problems, to provide the necessary resources to expand teachers' knowledge in this area; the third: the necessary pedagogical skills of teachers in the field of STEM, and its requirements include: identification of the required training and development needs and the mechanism of determining these needs, the types of professional development programs and the mechanism of designing it, the mechanisms and places of execution, evaluation and follow-up; the fourth: professional development strategies and mechanisms in the field of STEM, and its requirements include: using a variety of strategies to enable teachers to design and transfer effective educational experiences which reflect their scientific mastery in the fields of STEM, provide learning opportunities, and developing the skills of procedural research to generate new knowledge about the STEM; the fifth: to support professional development in the area of STEM, and its requirements include: support leadership within the school, provide a clear and appropriate opportunities for professional development for teachers within the school through professional learning communities, building partnerships between the Ministry of education and the local and international community institutions. The proposal includes other factors that should be considered when implementing professional development programs for mathematics teachers in the field of STEM.

**Keywords :** professional development, mathematics teachers, the orientation of science, technology, engineering and mathematics (STEM)

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