

A Development of Science Instructional Model Based on Stem Education Approach to Enhance Scientific Mind and Problem Solving Skills for Primary Students

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Abstract : STEM is an integrated teaching approach promoted by the Ministry of Education in Thailand. STEM Education is an integrated approach to teaching Science, Technology, Engineering, and Mathematics. It has been questioned by Thai teachers on the grounds of how to integrate STEM into the classroom. Therefore, the main objective of this study is to develop a science instructional model based on the STEM approach to enhance scientific mind and problem-solving skills for primary students. This study is participatory action research, and follows the following steps: 1) develop a model 2) seek the advice of experts regarding the teaching model. Developing the instructional model began with the collection and synthesis of information from relevant documents, related research and other sources in order to create prototype instructional model. 2) The examination of the validity and relevance of instructional model by a panel of nine experts. The findings were as follows: 1. The developed instructional model comprised of principles, objective, content, operational procedures and learning evaluation. There were 4 principles: 1) Learning based on the natural curiosity of primary school level children leading to knowledge inquiry, understanding and knowledge construction, 2) Learning based on the interrelation between people and environment, 3) Learning that is based on concrete learning experiences, exploration and the seeking of knowledge, 4) Learning based on the self-construction of knowledge, creativity, innovation and 5) relating their findings to real life and the solving of real-life problems. The objective of this construction model is to enhance scientific mind and problem-solving skills. Children will be evaluated according to their achievements. Lesson content is based on science as a core subject which is integrated with technology and mathematics at grade 6 level according to The Basic Education Core Curriculum 2008 guidelines. The operational procedures consisted of 6 steps: 1) Curiosity 2) Collection of data 3) Collaborative planning 4) Creativity and Innovation 5) Criticism and 6) Communication and Service. The learning evaluation is an authentic assessment based on continuous evaluation of all the material taught. 2. The experts agreed that the Science Instructional Model based on the STEM Education Approach had an excellent level of validity and relevance (4.67 S.D. 0.50).

Keywords : instructional model, STEM education, scientific mind, problem solving

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