710/F

Use of Problem-Based Learning (PBL) in pre-service teacher education in a science teaching methodology course

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Pre-service teacher education programmes provide opportunities for learners to try out different teaching approaches and strategies. This study presents the use of problem-based learning (PBL) in a science teaching methodology course offered under pre-service teacher education by a mid-western university in USA. This course was followed by fifty pre-service teachers. Course contents were organized under several themes to develop professional knowledge and skills of pre-service teachers with a theory component and field experience. An inquiry approach to teach science and ways of solving problems were used throughout the course for fifteen weeks. In the last six weeks, these pre-service teachers learned how teachers can behave as researchers using problem-based learning (PBL) to find out solutions to their own problems. They identified a teaching dilemma from their teaching and developed lesson plans incorporating what they learned in the class and made presentations to receive feedback from the peers and the instructor before implementing them in school. They video taped the lessons in addition to notes of their observations in these science classrooms. Using these data, they did video analysis, observational analysis and analysis of student work and constructed a concept map on, "Effective science teaching." They developed Experience, Patterns and Explanation (EPE) tables to arrive at conclusions. They distributed one-page summary to all participants. In their power point presentations, they shared their classroom experience and how they have developed their pedagogical skills with content understanding. Analysis of concept maps, EPE tables, one page summary and their presentations revealed that providing opportunities for PBL made pre-service teachers empowered to bring their experiences to conduct science talks with their students help building science concepts. They were able to build confidence in their teaching and to get a better understanding of science concepts through the involvement in crafting problems. Teaching and learning in a context where there is ownership for teaching and learning, both teachers and learners are benefited to gain conceptual understanding.

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