

Fostering fifth graders' scientific creativity through problem-based learn

Abstract

The ability to think creatively is essential in solving problems in daily life. Scholars have noticed the needs for students to develop and practise the creative traits of being fluent, flexible and original, so that students will be able to make a connection to wider creative processes (Meador, 1997). For example, students could practise fluency in order to produce many ideas or solutions to a problem, but this may be more meaningful if their ideas were original and flexible. Felder (1987) stressed that creativity is an ability that teachers should inspire in their students through suitable environments and exercises. The learning environment should advocate the use of open-ended questions, where students have to determine what needs to be solved in a problem, as well as brainstorming and other techniques which encourage students to think of as many solutions towards a specific problem. On the other hand, exercises should encourage creative thinking by having multiple solutions. Researchers claim that problem solving, hypothesis generation, experiment design, and technical innovation all require a particular form of creativity peculiar to science (Lin, Hu, Adey and Shen, 2003). In school science, this reflects the concept of scientific creativity. In particular, scientific creativity as a domain is one of the most important areas contributing to the advancement of human civilization (Hu, Shi, Han, Wang and Adey, 2010). However, the potential of student's scientific creativity has not been widely studied in the primary school classroom. Therefore, there is a need for current practices in primary school classrooms to provide opportunities for students to cultivate scientific creativity. Problem-Based Learning (PBL) has been proposed for the sake of encouraging students to think creatively in solving a specific problem (Felder, 1987). According to Meador (1997), PBL can aid students to engage in the process of creative investigation as this process stimulates students' creativity in developing solutions. He also posits that this is due to the subsequent training in becoming more proficient in discovering and defining problems.