A STUDY TO INVESTIGATE THE EFFECT OF PROBLEM BASED LEARNING AND HISTORY OF SCIENCE APPROACH ON CREATIVE THINKING OF TURKISH PRESERVICE SCIENCE TEACHERS

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Abstract

Nine decades ago, creativity was described as four stages; preparation, incubation, illumination, and verification by social psychologist Wallas (Wallas, 1926). Although some creativity researchers have suggested a new model of creativity (Cropley & Cropley, 2005), the four-stage model is still accepted as a cornerstone by many creativity researchers (Alvesson & Sandberg, 2011; Dewett, 2003; Dodds, Horng & Hu, 2008, 2009; Jalil, 2007; Kristensen, 2004; Mainmelis, 2002; Norlander & Gustafson, 1997, 1998; Patrick, 1937; Penaloza & Calvillo, 2012). Although creativity and imagination are crucial to the work of a scientist, most of students thought that scientists do not use creativity or imagination in their work (Dogan, 2011). In addition to this, creativity is innate, it needs to be enhanced in schools with learning and teaching material. For this reason; the aim of this study was to enhance Turkish pre-service science teachers’ creative thinking through problem-based learning (PBL) and history of science (HOS) approach. Quasi-experimental design involving two experimental groups (without control group) was employed non-randomly in this study. One group was included in PBL learning instruction and the other group was taught in HOS learning in an explicit and reflective way. The interventions lasted for two semesters. A total of 72 (8 male and 64 female) 3rd-year preservice teachers were enrolled in this study. Participants completed Torrance test of creative thinking questionnaire as pre-posttest to data collection instrument. The performances of the two groups were then assessed to determine whether there are any treatment effects as a result of different teaching approaches on enhancing preservice science teachers creative thinking. The responses were analyzed using a combination of content analysis (Silverman, 1999) and the constant-comparative method (Glaser & Straus, 1967) to determine patterns or themes in the data.

The finding indicates that PBL approach was more effective instruction than HOS approach to increase pre-service teachers’ creative thinking and intrinsic interest in the subject matter. Our experience indicates that PBL may enhance the long-term retention of scientific knowledge. PBL approach works best while preservice teachers are working to identification of problem and process of finding new solution to encourage the critical thinking and creativity.

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