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Infusing creativity into Eastern classrooms: Evaluations from student perspectives

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ABSTRACT

Infusing creativity elements into regular classroom was an important movement in recent Asian educational reforms. A large-scale research study was conducted in Hong Kong to explore the possibilities, outcomes and difficulties of this kind of curriculum change from students' perspectives. Based mainly on Western creativity literature, this study developed a set of methods for infusing creativity learning elements into regular science lessons. After its implementation, students perceived improvements in their attitudes, conceptions, abilities and behaviors in creative science development. Students characterized this creative learning as a kind of active and playful learning which encouraged them to think boarder and wider, to appreciate creative ideas, and to develop their curiosity, confidence and initiation in learning. Though this classroom reform originally aimed at creativity development, students considered better understanding of science knowledge and positive attitudes towards science learning as their major gains. Students' high-order creative developments, such as novel and innovative thinking, challenging authority and risk-taking attitudes, metacognitive development and transfer of learning, were found to be weak. In further analysis, these outcomes were found to be related to some typical characteristics of Eastern culture and educational system. This study argued that creativity education, which adopted this kind of infusion approach, was likely to be restrained by the subject curriculum, local educational systems and social cultures. It provided additional support to the domain-specific, contextual-based and cultural-embedded characteristic of creative learning. Some suggestions were made for creativity reforms in Asian societies.

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1. Introduction

1.1. Creativity education reform in the East

Nowadays, it is an international trend to integrate creativity in curriculum frameworks (Le Metais, 2003). Recently, governments of Hong Kong, Mainland China, Taiwan, Singapore, South Korea, Israel and other Asian countries have imposed curriculum reforms, which emphasized creativity development in their primary and secondary schools. One common feature of these countries is that they all recognize the importance of creativity across the curriculum, such as science, language, arts and so on. To cultivate creative citizens, Asian countries are undergoing vigorous education reform in a top-down process, in the strong support of their governments.

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In Hong Kong, creativity is now one of the three most significant "generic skills" to be developed across all subject curricula (Curriculum Development Council, 2002a). Like the situation of other Asian areas, the curriculum structures and the subject contents of the new curricula of Hong Kong did not have fundamental changes. In its suggestion, creativity is not taught as a separate subject, but to be infused into the regular curriculum, which is still highly conventional and knowledge-centered. Asian places are now in need of effective methods to infuse creativity elements into their regular classrooms (Cheng, 2004a).

1.2. Creativity development

In cognitive approach, divergent thinking first considered as the essence of creativity (Guilford, 1950). Cropley (2001) and Plucker and Runco (1999) recognized that the most popular method to enhance creativity in the past half a century has been the teaching of divergent thinking and the idea-generation strategies. Towards recent years, multiple and diverse perspectives were taken in creativity development (Fisher, 2004; Nickerson, 1999; Starko, 2010). In Vygotsky' theory, imagination, both a cognitive and affective attribute, is considered to be crucial in enhancing creative thinking (Eckhoff & Urbach, 2008; Lindqvist, 2003). Runco (1991, 1994, 2003) highlights the ability in problem-finding and evaluative thinking, whereas Mumford (2001) and Davis (2004a) draw attention to problem sensitivity in creative process. Teachers should encourage self-expression, individual construction of meaning, and personal creativity instead of consensual creativity (Runco, 2003, 2004, 2007). Student ideas are considered as creative if they are novel to students themselves, rather than breakthroughs to the field (Kaufman, Plucker, & Baer, 2008). Metacognition development, abilities in transfer and self-regulation of creativity are also highlighted in many recent studies (Davis, 2004a, 2004b; Fautley & Savage, 2007). In social psychology approach, Amabile (1996) and Hennessey (2000) suggest that creativity development is energized by intrinsic motivation rather than extrinsic motivation. Sternberg (2000) recommends that "a decision to be creative" is ultimately most crucial to the creativity development of a person. Combining the views of all these profound Western scholars, a full model of creativity education should include various cognitive and skill-based trainings, as well as the development of student interest, value and confidence in creativity pursuits.

1.3. Creativity in school curriculum

Governments of different places are developing curriculum models for integrating creativity into various subject contents. In *Eastern* places, Hong Kong government curriculum documents have suggested some general principles for developing students' creativity. It is stated that teachers should ask students to go beyond the given information, allow them time to think, strengthen their creative abilities, reward their creative efforts, value their creative attributes, teach them creative thinking techniques and the creative problem solving model, and create a climate conducive to creativity (Curriculum Development Council, 2002b). In Middle East, Israel initiated a new national educational policy called "pedagogical horizons for learning", which aimed at shifting education towards a focus on higher order thinking and deep understanding (Zohar, 2008). Similarly, governments of Singapore, Taiwan, Korea and Japan are also offering guidelines for teachers to foster creativity of students in various school subjects. In *Western* countries, England government proposed 5 kinds of student activities for creative learning, including questioning and challenging, making connections and seeing relationships, envisaging what might be, exploring ideas and keeping options open, and reflecting critically on ideas, actions and outcomes (QCA, 2005, p. 2).

Apart from government efforts, a number of researchers and scholars have studied how to integrate creativity into school curriculum. In USA, "Project Zero" study suggested learning experiences in multiple intelligences, arts, portfolio assessment, and creating a culture of thinking would foster creativity and understanding across school subjects (Veenema, Hetland, & Chalfen, 1997). Costa (2008) and Costa and Kallick (2000, 2009) suggested that school education should aim at developing 16 habits of mind, many of which are related to creativity development, including creating, imagining, innovating, thinking flexibly, questioning, posing problems, use of all senses, responding with wonderment and awe, taking responsible risks, thinking interdependently, thinking about thinking, and remaining open to continuous learning.

Williams (1969, 1986) has proposed a comprehensive creativity curriculum model. It consists of the interactions of three dimensions—subject matter content, classroom teaching strategies and student behaviors (i.e. learning outcomes). He suggested 18 teaching strategies for creativity development, for example, use of analogies, discrepancies, provocative questions, examples of change, creative writing, visualization skills and etc. The student behaviors in Williams' model included the cognitive ones (fluent thinking, flexible thinking, original thinking and elaborative thinking), and the affective ones (favor of risk-taking, complexity or challenges, curiosity and imagination). While many other literatures only suggested pedagogical methods, Williams offered a structural three-dimension model for creativity education across school subjects. Together with its empirical supports, Williams' model was still a useful reference for constructing creativity curriculum (Chan, 2005; Chen, 1995; Cheng, 2002; Maker & Schiever, 2005).

1.4. Creativity-related studies in science education

Science is recognized as one of the important subjects for developing creativity (Curriculum Development Council, 2002b). As early as in the 1980s, McCormack and Yager (1989) proposed a taxonomy of science education which included an "imagin-

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