Full Length Research Paper

Applying problem-based training approach into the training program on industrial ecology and environment

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Abstract

The training program on industrial ecology and environment hosted by Mahidol University is designed to provide an understanding of the principles concepts and practice of industrial ecology, which have direct benefits for the sustainable development of industrial sectors in Asia. In 2011, for the first time, the problem-based training (PBT) approach was used to design the course structure of the 3rd international training course on industrial ecology. Three modules, which are in-class learning, field study (learning by doing), and group discussion (analysis and synthesize idea), were offered as a framework for this course. Fourteen participants from nine participating countries in South Asia, Southeast Asia, and the Middle East joined this training program. Sustainability management of the Northern Region Industrial Estate (NRIE) and community area were delivered as a project study, which referred to the three main issues: 1) water quality of the Kuang river, 2) soil contaminated problem, and 3) community feedback to the NRIE. The results from the training program revealed that industrial activities in the NRIE did not affect the water quality in the Kuang river and soil quality around NRIE area. In addition, the local people who live within or near that area have positive attitude towards the NRIE. This training approach was a challenge for the majority of participants who had not previously been exposed to it. Participant’s feedback was overwhelmingly positive. Participant’s satisfaction level with the training program had a mean score of 4.92 (out of 5) with all participants agreeing or strongly agreeing that using the PBT methodology can enhance the transdisciplinarity between academics and practitioners, self-regulated learning, and collaboration.

Keywords: Industrial ecology, Problem based training, Sustainability management, Eco-industrial estate.

INTRODUCTION

Since the release of Our Common Future in 1987 and Agenda 21 in 1992, government and industry have emphasized on the concept of sustainability, which embraces the integration of economic, ecology and social dimensions. Industry plays a significant role in the economic prosperity of a country. Rapid industrial growth without environmental concerns has resulted in changing the unsustainable patterns of the natural resource consumption and increasing more pollution. In order to reach the sustainability of industry, the concept of industrial ecosystem, one aspect of the industrial ecology field, has been proposed. The example of an organized form of the industrial ecosystem is an eco-industrial park (Cote and Hall, 1995; Lowe and Evans, 1995).

The concept of industrial ecology has been emerged in Asia developing countries for more than 10 years. Many local institutes, such as university research center and research teams, have contributed to the conceptual knowledge of industrial ecology via training, academic...