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Engineering design – An approach to the development of creativity

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ABSTRACT

In a competitive world with limited resources, it is important to train our students in creativity. To maintain an edge over others, it is essential to produce unusual solutions to problems and challenges. Training students in divergent thinking is considered an essential element in the development of creativity. Ideas, whatever the nature may be, must be respected and encouraged. Engineering design enables students to be trained in creativity. Torrance tests provide a measure of originality, fluency, flexibility and elaboration.

Keywords: Creativity, engineering design, divergent thinking, creative environment, brainstorming, creativity measure.

INTRODUCTION

In an economy with limited supply of talent pool, the importance of training students in creativity can never be over stated. Creativity is defined as an ability which enables one to think of, dream up, visualize or imagine new or unusual solutions to problems and challenges [1,2]. Engineering design includes all the elements of a creative process. It is important for engineers to be trained in creativity, as they are the future problem solvers. Engineering design deals with the development of a product or process to fulfill certain needs. The designer has to generate ideas through brainstorming sessions. Ideas generated through such activity go through an evaluation process, where constraints are applied and select one that can be easily fabricated with least cost. With the knowledge of creativity, students are in a better position to apply it to their design. Design competition and award of financial incentives may provide students with the right kind of inspiration. This paper presents a brief description of the creativity, and applies important elements of it to engineering design.

CREATIVITY – A PROCESS

A person can fully and efficiently participate in a game, e.g a game of bridge, only when he/she is fully familiar with rules/process and procedure of the game. Creativity is a process and a knowledge of the process enables one to perform efficiently in the process. Creativity leads to an improvement of work processes; resources can be put to an optimal use; enable looking at things with different perspectives; identify multiple ways to resolve issues and difficulties. "Imagination is more important than knowledge" – Albert Einstein.