Effectiveness of Learning Transportation Network Growth through Simulation

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Abstract

Computer simulation plays an increasingly important role in engineering education as a tool for enhancing classroom learning. This research investigates the efficacy of using simulation-based experiences to teach the topic of transportation network growth through an experiment conducted at the Civil Engineering Department of the University of Minnesota. It is important to note that there are several barriers to widespread adoption of simulation, one of which is the uncertainty over how to develop simulation models that are educationally sound and practical. The main contribution of this paper is that it offers a fully educated student's learning in terms of helping students develop a deep understanding of the development process of network patterns, and helped them develop some aspects of their judgment, problem-solving, and decision making skills. To achieve this, the experiment was designed to provide students with hands-on experiences in learning certain characteristics in terms of age, education level, course performance, and learning style. The study isolated factors and issues that prevent learners from benefiting the educational initiatives in the particular experiment, which provides valuable knowledge for designing future experiences to be adapted into simulation-based educational settings.

Key words: Simulation, Engineering Education, and Transportation Network Growth

Introduction

Conventional Approach to Teaching Network Growth Re...