

Assessing the Effectiveness of E-learning via User Profile Analysis: An AHP-based Dynamic Programming Approach

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ABSTRACT: *Electronic learning (E-learning) has been widely adopted as a promising tool by many organizations to offer learning-on-demand opportunities to individual employees (learners) in order to reduce training time and cost. While the success of information system (IS) models has much been investigated by researchers, little work has been conducted to assess the success and/or effectiveness of E-learning systems. The development of information technologies has contributed to the growth of on-line training as an important educational method. The on-line training environment enables learners to undertake customized training at any time and any place. Moreover, information technology allows both the trainers and learners to be decoupled in terms of time, place, and space. Here, we propose an assessment procedure by applying a dynamic programming approach to model the problem of shortest path in the user profile and using AHP (Analytical Hierarchy Process) to turn the qualitative parameters into quantitative values. A dynamic program is used to find the optimal path for the user in the E-learning environment. The validity and effectiveness of the proposed model are illustrated by two examples.*

KEYWORDS: *Electronic learning (E-learning), Adaptive Learning System, Virtual Learning Environment (VLE), Dynamic Programming, Analytical Hierarchy Process (AHP).*

1. Introduction

Modern societies have dramatically changed due to technological changes such as the development of information technology systems. Service industries have become knowledge oriented, production economies have become knowledge economies and production workers have become knowledge workers. Learners need to be flexible and adaptive if they are to function well in today's complex and global societies.

As part of the larger drive to change the curriculum, assessment needs to be reformed as well. Biggs' (1996) idea of constructive alignment amongst instruction, learning and assessment implies that these three elements should be based on the same underlying principles. The new assessment methods are not without problems either and some feel that the evidence against traditional tests is not as strong as has been claimed (Hambleton