

Chapter 3.8

Swarm-Based Wayfinding Support in Open and Distance Learning

Colin Tattersall

Open University of The Netherlands, The Netherlands

Jocelyn Manderveld

Open University of The Netherlands, The Netherlands

Bert van den Berg

Open University of The Netherlands, The Netherlands

René van Es

Open University of The Netherlands, The Netherlands

José Janssen

Open University of The Netherlands, The Netherlands

Rob Koper

Open University of The Netherlands, The Netherlands

ABSTRACT

Open and distance learning (ODL) gives learners freedom of time, place, and pace of study, putting learner self-direction centre stage. However, increased responsibility should not come at the price of overburdening or abandonment of learners as they progress along their learning journey. This pa-

per introduces an approach to wayfinding support for distance learners based on self-organisation theory. It describes an architecture that supports the recording, processing, and presentation of collective learner behaviour designed to create a feedback loop informing learners of successful paths towards the attainment of learning goals. The approach is presented as an alternative to

methods of achieving adaptation in hypermedia-based learning environments which involve learner modelling.

INTRODUCTION

Open and distance learning (ODL) gives learners freedom of time, place, and pace of study, putting learner self-direction centre stage. Brockett and Hiemstra (1991, p. 24) define learner self-direction as the learner's assumption of "primary responsibility for and control over decisions about planning, implementing and evaluating the learning experience," and Hiemstra (1994) notes learners' preference to take on responsibility for their own learning. However, taking on new responsibilities is not without its challenges. Brookfield (1985, p. 7) notes that although self-directed learning "has connotations of autonomy, independence and isolation," investigations have highlighted that "adults would like more, rather than less, assistance in their learning pursuits." Similarly, Candy (1991) writes that self-directed learners are often challenged to assume certain responsibilities, and that when deciding how to approach learning tasks, the self-directed learner is "confronted with the problem of how to find a way into and through a body of knowledge that is unknown at the outset. Without the benefit of any explicit guidance, a self-directed learner is obliged to map out a course of inquiry that seems appropriate, but that may involve a certain amount of difficulty and disappointment that could have been averted" (p. 283). Candy's description calls to mind the image of the distance learner as navigator, charting a course through educational waters, following Darken and Silbert's (1993) definition of navigation as the "process of determining a path to be travelled by any object through any environment" (p. 157). In subsequent work, Darken and Peterson (2002) use the term "wayfinding" to refer more specifically to the navigator's decision-making process. We use the term "educational wayfinding" to describe

the cognitive, decision-making process carried out by self-directed learners as they assume responsibility for choosing and sequencing their learning events. The wayfinding decisions with which learners are faced arise from the freedom offered to them by learning providers on their way to the attainment of particular goals. In some highly constrained situations, both the choice of learning events and their ordering may be fixed by a learning provider. More likely, learners may be permitted to select and order modules, perhaps to accumulate credit points towards a certificate. In this context, we note Yorke's (1999) warning that "as the unitization of curricula spreads through higher education, so there is a need for greater guidance for students to navigate their way through the schemes" (p. n/a). This provides the background to this chapter: difficulties in the educational wayfinding process can lead to learners not reaching their goals, or taking unduly long to do so. The rationale for our work is that self-directed learners can benefit from support in the educational wayfinding process, and we describe a new approach to supporting the educational wayfinding process which has the potential to address the drawbacks of existing approaches found in the literature. We examine a number of alternatives to the provision of such support, and introduce our approach to issue, which builds on self-organisation theory.

APPROACHES TO WAYFINDING SUPPORT IN ODL

There are a number of approaches to wayfinding support used today in ODL in addition to those identified in ODL research but not yet widely implemented.

The first approach involves fixing routes through materials in advance of their delivery, creating curricula or content plans to be followed by learners thereby reducing navigational choices. However, this preplanning limits the possibili-

10 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/swarm-based-wayfinding-support-open/24320

Related Content

Measuring Waste Recyclability Level Using Convolutional Neural Network and Fuzzy Inference System

Rawan Ghnematand Adnan Shaout (2022). *International Journal of Intelligent Information Technologies* (pp. 1-17).

www.irma-international.org/article/measuring-waste-recyclability-level-using-convolutional-neural-network-and-fuzzy-inference-system/306969

Intelligent Agent-Based e-Learning System for Adaptive Learning

Hokyin Lai, Minhong Wangand Huaiqing Wang (2011). *International Journal of Intelligent Information Technologies* (pp. 1-13).

www.irma-international.org/article/intelligent-agent-based-learning-system/58052

Fuzzy Logic Application in Improving Maintenance in a Beverage Manufacturing Company

(2018). *Fuzzy Logic Dynamics and Machine Prediction for Failure Analysis* (pp. 89-128).

www.irma-international.org/chapter/fuzzy-logic-application-in-improving-maintenance-in-a-beverage-manufacturing-company/197320

On Design and Development of QLIFEX: An Expert System for Social Area

Irena Atanasova (2018). *Intelligent Systems: Concepts, Methodologies, Tools, and Applications* (pp. 1287-1303).

www.irma-international.org/chapter/on-design-and-development-of-qlifex/205834

Planning a Fourth Industrial Revolution Organization: Critical Practical Considerations

(2018). *Organizational Leadership for the Fourth Industrial Revolution: Emerging Research and Opportunities* (pp. 42-56).

www.irma-international.org/chapter/planning-a-fourth-industrial-revolution-organization/198278