Decision support

A utilisation focussed and viable systems approach for evaluating technology supported learning

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ABSTRACT

The paper uses a higher education case study to illustrate a participative *theory of change* approach to evaluating technology supported learning. The approach is informed by the Viable Systems Model (VSM) and utilisation-focussed evaluation and, falls within the tradition of facilitated modelling approaches to operational research. We argue that this approach worked well in engaging primary evaluation users in a process of collaborative action research to improving an educational development initiative and that the approach helped generate information relevant to answering its primary users' questions, to inform their specific decisions and actions relevant to their quality enhancement responsibilities.

Through a case study, concerning the evaluation of an educational development initiative in a large UK university, we illustrate how the VSM and utilisation-focussed evaluation could be used to: (a) conceptualise the connection between strategies and their components at different levels of organisation; (b) to clarify the role and interests of stakeholders in these strategies; and (c) to scope evaluation to be relevant to informing the decisions and actions of these stakeholders. The paper contributes to illustrate how VSM principles can underpin a *theory of change* approach to engaging primary stakeholders in planning an intervention and its evaluation in the context of educational development work, in order to improve evaluation to be more relevant to their needs. The paper should be of interest to researchers exploring the use of systems theory in evaluation, in particular in the context of educational development work in higher education.

1. Introduction

In this paper we use a case study to illustrate, a participative *theory of change* approach to evaluating technology supported learning (TSL). It is informed by the Viable Systems Model (VSM) and utilisation-focussed evaluation (U-FE) and, falls within the tradition of facilitated modelling approaches to operational research (OR). The purpose is to contribute to a body of published cases of soft OR applied to the evaluation of TSL, thus, explaining how theory is applied systematically in an intervention. This is to allow others to assess the relevance of the approach to their own contexts and, to gain some understanding of how to use the approach. This is presented not as a case of 'best practice' but as lessons learnt about implementing the evaluation approach used in a case study concerning an educational development initiative

in taught courses in the built environment disciplines of a large UK university.

A recent review of operational research and education (Johnes, 2014) suggested that despite the large provision of online courses, the OR in education literature, particularly vocational and e-learning education, still presents some gaps. He concluded that whilst some issues and problems such as efficiency, scheduling and resourcing in education have been well-covered using a variety of tools and techniques, this is an area in which operational researchers could make useful contributions (Johnes, 2014, p. 691). The aim of this paper is to contribute to addressing this gap.

The research context is that of educational development work in UK higher education (HE). The term *educational development* is used here to mean the "*systematic and scholarly support for improving both educational process and practices and capabilities of educators*" (Stefani, 2003, p. 10). We acknowledge that the term *academic development* is more popular in other parts of the world, but in the UK, this latter term is more commonly interpreted as subsuming educational development and covers a wider remit of developing academic staff in all areas of their practice.

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The paper is organised as follows: in the next section, we conduct a review of relevant literature to explain the rationale for the approach used in the case study. In Section 3, we provide some background to our case study, a complex educational development initiative in a large UK university. In Section 4, we describe the facilitated approach used with the university's stakeholders. In Section 5, we illustrate how the VSM principles were used to guide this facilitation and explain how this was found to be helpful. In Section 6, we discuss the results from the evaluation and reflect on the experience of implementing the approach. Section 7 provides our concluding remarks with some implications for future research.

2. Background literature

In this section, we explore the quality landscape in UK higher education, review research in TSL and consider the methodologies used in relation to what has been learnt. We draw from theory about intervention evaluation and systems thinking to assess its suitability for evaluating TSL to inform quality enhancement decisions and actions. In particular we consider program evaluation, utilisation-focussed evaluation, and facilitated modelling as approaches that bring to the fore the evaluation of the relationship between human activity and outcomes, the relevance of the evaluation to its intended users and the engagement of stakeholders. We discuss the interest in and relevance of using the concept of viable systems in modelling educational processes to guide the evaluation of TSL. We conclude this section with a summary of the arguments that justify the approach that will be illustrated in our case study.

2.1. Quality in UK higher education

It is a statutory requirement that the quality of HE provision in the UK be evaluated to provide accountability for government investment. This investment acknowledges the strategic importance of developing higher level skills needed in the UK labour market for it to remain competitive in a global market. The expectation is that institutions are adaptable and responsive to emerging skills needed by employers and to stakeholders' needs in the ways in which educational provision is met (UKCES, 2014). At the time of writing this paper the regulatory framework and process for oversight is in a period of significant change (Business, Innovation, & Skills Committee, 2016; DBIS, 2016).

A key challenge for the UK HE sector has been developing evaluation that informs improvement for a diverse group of stakeholders. Historically, there have been arguments that too much emphasis has been placed on driving improvement in UK HE through quality assurance (QA) activity at the expense of quality enhancement (QE) (Harvey, 2005; Harvey & Williams, 2010a, b). One of the main criticisms associated with QA activity in UK HE is its focus on a set of externally determined parameters that can be compared across institutions. This is framed by a *student as customer* perspective, with universities considered as businesses competing in a market (Houston, 2007, 2008a). This is a view being reinforced by current changes in the sector (DBIS, 2016). Hence, one source of data for this comparison is a national student satisfaction survey, often mirrored by internal surveys at different levels or organisation (course, department, faculty). These standardised surveys are often unpopular with staff (Bamber & Anderson, 2012), and student responses low (Nair, Adams, & Mertova, 2008). Whilst the purpose of these surveys is also purported to be to inform decisions about improving the student experience and student learning (Harvey, 2003), they focus on a narrow range of generic aspects of their experience, such as assessment and feedback and student support, and there is limited qualitative data

to help in the interpretation of the reasons for students' responses. It is therefore argued that this data is inappropriate for helping educators understand how their efforts support student learning in a specific context (Harvey, 2002; Houston, 2008a). In particular, this approach is questioned for its value in providing information usable at local level given the variability in local context (Ashby, Richardson, & Woodley, 2011; Harvey, 2003; Williams & Cappuccini-Ansfield, 2007) and between subject disciplines (Gibbs, 2010).

In the recent context of external quality review of UK HE institutions, academic quality is described as "*how well the learning opportunities made available to students enable them to achieve their award*" (QAA, 2012). The focus is on the transparency of policies and procedures, and the effectiveness of institutions' own approaches to monitoring, evaluation and improvement (QAA, 2015). The specific internal approaches that institutions use for this are not prescribed. However, this notion of academic quality implies making judgements about the relationships between processes and outcomes in the educational context. It has been argued that this, and the accountability to multiple stakeholders, means that quality criteria can be difficult to precisely specify and measure due to the increasing complexity this brings (Gibbs, 2010; Houston, 2007, 2008a).

An approach now widely relied on for quality enhancement in HE is for new academic staff to undertake professional development to become reflective practitioners actively engaged in experiential learning (Kolb, 1984; Schön, 1983) to inform improvement in their practice. This approach assumes change to be driven by individuals continually testing and improving their (often implicit) theories about the relationship between their activity and its effects in their local contexts. This has been argued to be too simplistic because it neglects to consider both the wider context of simultaneous change initiatives, and the more complex social and political influences on developing and sharing a concept of good practice (Trowler, Fanghanel, & Wareham, 2005). A more systematised and formalised approach to the inquiry through educational action research has been recommended for building capacity, improving rigour and developing transferable knowledge (Kember, 2002; Marks-Maran, 2015). Others have suggested that for organisational change to occur, this process needs to be undertaken and organised at the collective level (Biggs, 2001; Vince, 2002). Whilst some progress has been made with this aspiration (Bruce, Flynn, & Stagg-Peterson, 2011), collaborative research has also been found to be challenging in this context, particularly around issues such as establishing amongst collaborators a shared vocabulary, goal (Jacobs, 2016) and perception of importance and relevance of the research (Greenbank, 2007).

2.2. Technology supported learning and its evaluation

The use of technology in learning, teaching and assessment has become an important dimension of UK higher education strategy (HEFCE, 2009), and hence educational development work. The most recent (at the time of writing) of a periodic survey that monitors trends in this context (Walker et al., 2014) reported that *enhancing the quality of learning and teaching* is the primary longitudinal driver for using technology, but *lack of academic staff knowledge* was the second most important barrier to developments in this area (after *lack of time*). It has been argued that this lack of knowledge is due to existing evaluation and research not being based on appropriate assumptions of learning as complex socially constructed activity (Bennett & Oliver, 2011; Cox & Marshall, 2007; Oliver, 2011). Whilst the term *technology enhanced learning* is gaining favour over the term *e-learning* with its emphasis on added value to the learning process, there continues to be lack of clarity and debate about what exactly is meant by *enhancement* and how