Design-based research and the learning designer

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The role of the learning designer has expanded from the commonly known activities of an instructional designer to incorporate a range of new roles, largely prompted by new technologies. In this paper, we articulate an approach that further extends the role of the learning designer to encompass evaluation and design-based research, in collaboration with the subject matter expert. Such collaboration is professionally enhancing for both parties, and adds to the sum of knowledge on the effective design of learning environments, by documenting and disseminating the learning design process.

Keywords: learning design, instructional design, design-based research, evaluation

Introduction

In the current climate of increased accountability and quality assurance in higher education, the role of the learning designer is crucial in supporting academics to develop quality products in online, blended and face-to-face university courses. The learning designer (LD) usually works closely with a subject matter expert (SME) or university teacher, and possibly a team of other experts, to develop a classroom-based or technology-based learning environment. Much expertise and intellectual effort is invested in these collaborations using contemporary learning theory and best instructional design practice to underpin practical designs that consider the local context. The close partnership between the learning designer and the SME often results, not only in a product of excellence, but also in the discovery and implementation of design principles that could be disseminated beyond the context of their initial use. Often this wisdom is lost with the completion and implementation of the learning environment, when the focus moves to the teacher's operation, and the learning designer's role diminishes or ceases.

In this paper, we describe an approach to the expansion and extension of the traditional role of the learning designer to encompass evaluation and design-based research, in collaboration with the SME. Such collaboration is professionally enhancing for both parties, and importantly adds to a knowledge base on the effective design of learning environments – by documenting and disseminating the learning design process – and the creation of design principles to achieve valued learning outcomes and to benefit the profession as a whole.

Instructional designer to learning designer

The role of the instructional designer has largely grown and evolved from the systems approach delineated by instructional design theorists such as Gagné, Briggs and Wager (1992) and Dick and Carey (1990). Kenny, Zhang, Schwier, & Campbell (2005) analysed instructional design (ID) and instructional systems design (ISD) theories that can be traced back to work of Robert Gagné. These models of instructional design began to proliferate in the 70s, and by 1980, over 60 such models existed. Kenny et al., found that these models were largely linear and systematic, but concluded: 'Few if any designers actually use models to confine their practice' (para 1). Instructional designers spend much of their time completing the tasks now popularly (and generically) known as the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation. There is a great deal of research that has shown the role of the instructional designer is diversifying and expanding to encompass a range of tasks beyond those prescriptively described in a systems approach (Visscher-Voerman & Gustafson, 2004). The movement to more constructivist learning environments in higher education has also changed the traditional instructional design role, and this is perhaps evident in the change of title that is preferred by many such practitioners – from instructional designer to *educational designer* or *learning designer*.

Constructivism and the web: The changing role of the learning designer

The movement from linear, closed system learning designs to more constructivist approaches has expanded the activities that a learning designer undertakes, and now incorporates activities such as: providing advice on pedagogical principles (Liu, Gibby, Quiros, & Demps, 2002); supervising personnel, professional meetings, academic research, marketing/sales, and professional development (Cox & Osguthorpe, 2003); evaluating learning materials (Wilson, 2005; Allen, 1996); acting as surrogate students (Roberts, Jackson, Osborne, & Somers Vine, 1994); and project management (Kenny, et al., 2005). However, the role of the learning designer also encompasses a range of much more prosaic tasks, such as: advising on writing style and readability (Roberts, et al., 1994); proofreading, designing layout and appearance of materials, and checking copyright issues (Allen, 1996). The growing trend of web courses has also led to the development of learning design roles that are targeted to the affordances of web-based delivery. Such approaches focus the efforts of a learning designer on activities such as: team development, appropriateness of technology to address learning needs, formative evaluation in the form of iterative feasibility testing, technology training for learners, development of policies for ownership of materials (Bichelmeyer, Misanchuk & Malopinsky, 2001); and determining the *pedagogies*, *resources*, and *delivery* strategies of a learning environment (Herrington, Herrington, Oliver, Stoney, & Willis, 2001). Others have provided in-depth exemplars and templates of learning designs for a range of approaches, such as rule-based, incident-based, strategy-based, and role-based designs (Oliver, Harper, Hedberg, Wills, & Agostinho, 2002; Learning Designs, 2003).

Limitations and real-world constraints

In reality, the specific expertise and contribution that a learning designer brings to any particular learning environment is often determined more by their own particular context and work environment than by any adherence to a procedural or theoretical model of instructional design. For example, in the Australian higher education context, access to a learning designer is limited and often competitive. Any teacher wishing to acquire this expertise must compete with others for a timed and costed service, often termed a *service-level agreement*. In effect, the level of service is limited to those aspects of a course that occur in the analysis, design and development stages rather than the implementation and evaluation stages. Critically, learning designers usually have little opportunity to evaluate the learning environments that they have been instrumental in creating, as they are, of necessity, moved to the next project once implementation is achieved. Such failure to employ evaluation functions in all stages of a learning design can result in ineffectual and unsatisfactory learning environments for both teachers and students. As noted by Reeves and Hedberg (2003): 'Decisions informed by sound evaluation are better than those based on habit, ignorance, intuition, prejudice, or guesswork … far too often people make poor decisions about the design and implementation of interactive learning systems because they lack pertinent information' (p. 5).

Evaluation as a critical role for learning designers

Reeves and Hedberg (2003) describe six functions of evaluation that can be conducted throughout the life of a project: *review, needs assessment, formative evaluation, effectiveness evaluation, impact evaluation,* and *maintenance evaluation*. While noting that these evaluation functions are only rarely effectively employed in learning systems design and development, they urge instructional designers and developers to go even further: 'We argue that … instructional designers, project managers and evaluators can do more than simply conduct evaluations; they can extend the reach of their evaluations and contribute to design principles regarding interactive learning systems through a process called development research' (p. 280). Development research, also known as *design experiments* and now more commonly as *design-based research*, is a research approach that is particularly suited to the exploration of significant education problems and technology-based solutions – the kind of challenge faced every day in the working life of a learning designer. The design-based approach (Brown, 1992; Reeves, 2000; van den Akker, 1999) comprises four phases depicted in the first row of Figure 1 (Reeves, 2000).

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A learning designer is often employed to work on a project in higher education as part of a semester course or subject, rather than an entire degree. In such a context, where a specific educational problem can be identified and an appropriate solution implemented, principles of design-based research can be readily employed to guide the efforts of the learning designer and SME to the development of on-going

and valuable design principles for future practice. In Figure 1, we have mapped the phases of design-based research against the generic stages of a learning design (the ADDIE phases), and the six evaluation functions described by Reeves and Hedberg (2003).
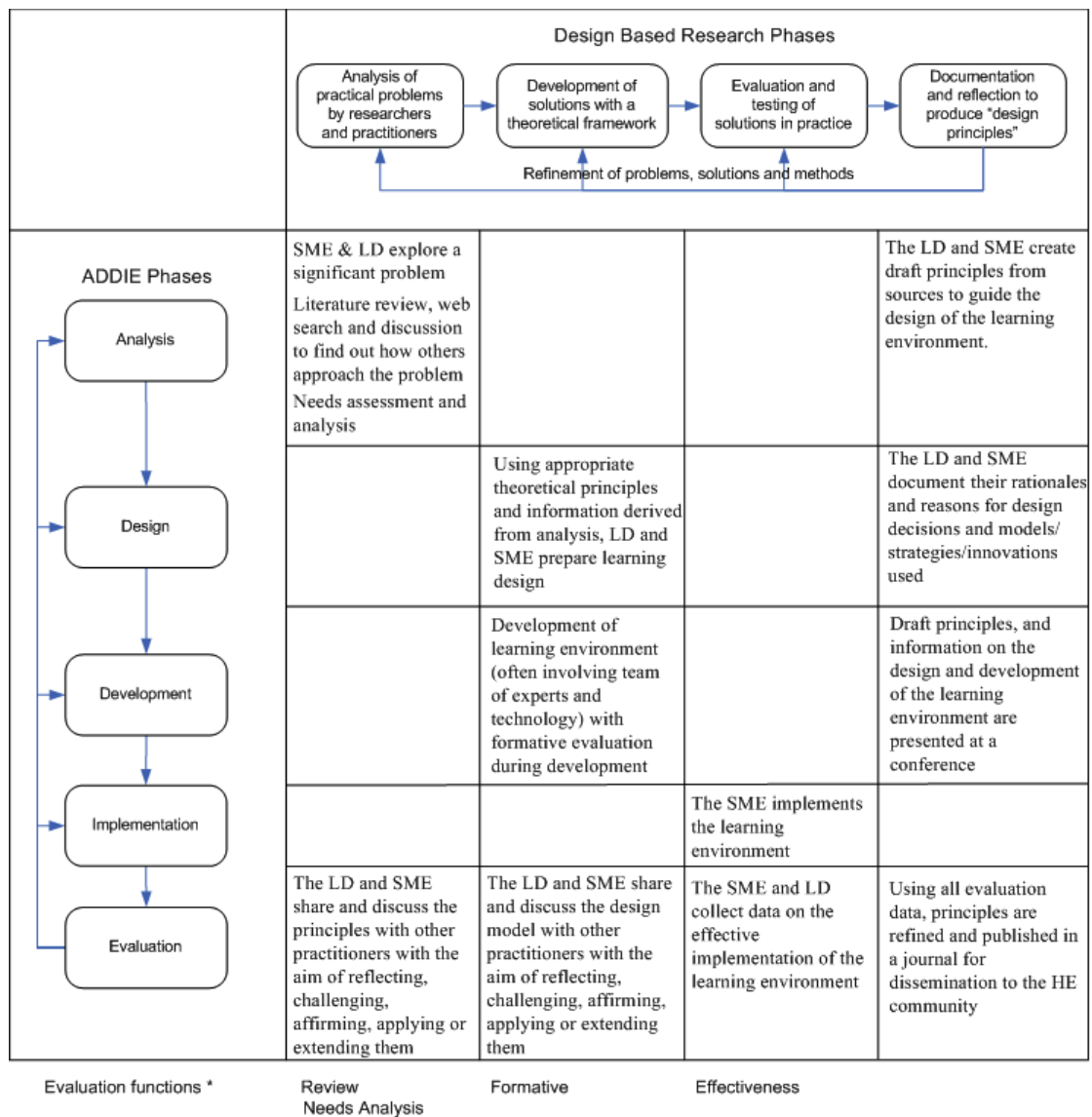
*Impact and maintenance evaluations are conducted only after a learning system has been operating as intended for a year or more.

Figure 1: Extending the role of the learning designer through design-based research

The table shows that the stages of design-based research can prompt the natural products of a learning design collaboration between SME and LD to be shared and distributed. The design and proposal stage can readily form the basis of a short or brief paper at conferences such as ascilite or other professionally-oriented conferences, and valuable feedback and advice can inform and improve the design. After implementation, the evaluated learning environment, together with the design principles, can be described and published in a refereed journal. In so doing, the scholarship of teaching and learning developed in the learning design process is not lost to the profession as a whole.

Conclusion

The framework proposed in this paper articulates an approach that extends the role of the learning designer to encompass evaluation and design-based research, in collaboration with the subject matter expert. Our intention is to further develop and describe these principles for future practices in educational development. A design-based study will be undertaken to determine the applicability of this process for the field of learning design. The expected benefits are twofold – firstly, to report and describe practical insights associated with this approach; and, secondly, to present our findings on the implementation and evaluation of an authentic learning design. The value of this approach is that it is focussed on designs and processes that respond to the local context; it is grounded in theory and yields knowledge or guidelines that can be shared and used by others to improve educational practice – demonstrating a commitment to theory constructions and explanations while solving real-world problems.

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