

Explorations in the Learning Sciences, Instructional Systems and Performance Technologies

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Gráinne Conole

Designing for Learning in an Open World

Foreword by J. Michael Spector

 Springer

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Foreword

This volume by Gráinne Conole in the Springer series entitled ‘Explorations in the Learning Sciences, Instructional Systems and Performance Technologies’ well exemplifies the aim of the series to promote dialogue across the somewhat artificial barriers that divide academic disciplines, scholarly communities and professional practitioners. The focus is on *learning design*, which she defines as designing for learning. The elaboration of learning design provided in this volume places emphasis on making the design process explicit and shareable as well as on gathering empirical evidence with regard to design processes. In order to make this kind of learning design a practical reality, she describes the context of modern education and the importance of pedagogical patterns and open educational resources along with the Web 2.0 technologies.

The book is organised into four main sections: (a) a rationale in terms of relevant theories and methodologies, related fields, and social and participatory media; (b) mediating artefacts and affordances; (c) design languages, design representations, visualisation tools and pedagogical planning tools; and (d) openness, open educational resources, online communities and Cloudworks. Recurrent themes that thread throughout the volume include (a) the centrality of design for learning and instruction, (b) the role of teachers in designing meaningful learning activities and (c) the as yet largely untapped learning affordances and potential of Web 2.0 resources.

Since the focus of the volume is on design, it is worth noting that design has in fact been a central concern in the instructional design field for many decades now. What Conole is proposing is renewed emphasis on design that takes into account new technologies and new instructional and learning paradigms. A formal approach to a design language was provided by Karl Eckel (1993) in *Instruction Language: Foundations of a Strict Science of Instruction*. In that volume, Eckel viewed instruction as an alternating sequence of teaching and learning activities that could be reasonably well specified and thus formally represented. Whilst many might be critical of Eckel’s objectification of instruction, few are likely to realise that his motivation was not unlike that of Conole’s. Specifically, Eckel believed that there was very little established and reliable pedagogical knowledge and that deficiency

made it very difficult to distinguish good from bad instruction. Little was known about why a particular teacher prescribed a particular learning activity or designed a lesson a certain way. By creating a formal representation for teaching and learning activities, Eckel believed there would be a basis for progress in what he hoped would become a science of learning and instruction.

Eckel's *Instruction Language* is surprisingly consistent with the earlier work of Jerome Bruner (1966) in *A Theory of Instruction*. In that book published more than a half century ago, Bruner proposed that a prescriptive theory of instruction with specific rules could be developed that would result in systematic gains in learning. Bruner's motivation was not unlike Eckel's—to improve learning, one must improve the quality of instruction, and that can be done by making instruction more scientific. Bruner is frequently cited as a founder of constructivism, whereas Eckel is more likely to be associated with instructivism; a close and careful reading of those two instructional scientists shows that their motivation was similar (improve learning by improving instruction) and their emphasis on scientific theory and methods quite compatible. Perhaps the popular labels of 'constructivist' and 'instructivist' have little real purpose in distinguishing things that matter for improving learning and instruction.

Conole now calls for renewed and serious attention to design nearly 20 years after Eckel's proposal for a formal language of instruction and more than 60 years after Bruner's seminal work. We are still in need of a theory of instruction of the sort that Bruner advocated, and we still need to make explicit and transparent designs as Eckel advocated. Meanwhile, educational technologies have changed dramatically. Bruner wrote *Toward a Theory of Instruction* before the advent of personal computers and the Internet. Eckel wrote *Instruction Language* before Web 2.0 and networked communities of professional practice. There have been other efforts to explore the topic of design in the digital age. Notable amongst these are the works by (a) Botturi (2008), who stresses the significance of visual representations of instructional designs; (b) Gibbons (2003), who argues that designers work in different layers when designing and the different layers have different focal concerns and activities; Boling and colleagues (2004), who emphasise the interaction between illustrations and intended meanings; and Jonassen (2011), who argues that designs should be aimed at improving problem-solving abilities. These four works are cited here because they address four themes that Conole has woven together in an engaging manner in this volume: visual representations that promote transparency, layers of design with different issues and concerns, the interaction between illustrations and interpreted meanings, and designs that promote higher-order learning and improved problem solving. The notion of new technologies and social media appears throughout Conole's volume and is also prominent in the four works cited as possible elaborations on themes she has woven together in this volume.

A key issue raised by Conole in her chapter on design languages and learning design is that teachers are not skilled or adept at designing learning activities and experiences, especially those involving the affordances of new technologies. Her investigation was focused on designers and faculty at the Open University of the UK. She made use of one of the technologies she advocates as an important support

tool for designers and teachers—namely, Cloudworks, which she describes in a separate chapter. It is noteworthy that her investigation included what both teachers and designers actually do. The focus then shifted to how best to support those design activities and improve learning designs that are then produced. The evidence she collected is consistent with what earlier researchers (Perez and Emery 1995; Rowland 1992) found with regard to design—that is to say that design is not a well-structured process with well-defined steps that proceeds in a linear fashion towards an established objective; rather, design can be somewhat messy, requires interactions with others who may have different areas of expertise and typically involves individual and creative perspectives. Conole emphasises the role of vision in an iterative cycle that includes visioning, gathering information, assembling resources, deploying a version, evaluating the outcomes and adapting as necessary.

There is also a discussion about design languages. Examples of design languages in music, architecture and chemistry are briefly presented to highlight desirable components of a language that supports design: context and background, beliefs and theories, and support for reflection and refinement. These high-level components are then described in the context of a learning activity, with the relevant concerns being the learners (who they are, what they know, their needs and motivation, their roles and modes of participation), the learning environment (the tools, resources, artefacts and affordances available to learners), the targeted learning outcomes (what the learners need or want to learn and be able to do and associated evidence of progress) and others involved in the process, interaction or activity. A learning activity is at the core of these four components, which means that the specific elaboration can and often should change as the learning activity changes.

The reader should recognise familiar aspects of systematic instructional planning in this chapter and throughout the volume. What is novel is the notion of a dynamic learning system constructed around individual learners and their various and varying situations. In that sense, Conole's treatment of design languages and learning design fits within what could be characterised as a systemic perspective on learning and instruction. This means, among other things, that there is emphasis on being flexible in terms of individual learners, the use of technologies and the overall approach. It is true that Conole advocates using Web 2.0 technologies when appropriate and she has made use of such a technology in developing this volume. However, her driving principle is that the evidence should drive the design. In other words, there can and should be a science of instruction, and this volume makes a valuable contribution to that science.

I close with a simple thought. Years ago, Gagné (1965) defined instruction as that which supports learning. While Gagné's evolved significantly towards a rich cognitive perspective on learning, his view of instruction as that which supports learning remained intact. The general enterprise in which Conole and those who have supported her work are engaged is the support of learning. Conole has chosen to focus on design as a critical aspect of supporting learning. It is unfortunate that the word 'instruction' has fallen out of use and avoided by many, perhaps based on the wrong-headed assumption that instruction is a rigid process with fixed steps that do not take individual learners or new technologies into consideration. The reality is that

instruction—the support of learning—is an important activity. Being an instructor (helping others learn) is a noble profession. Becoming better at designing meaningful and productive learning activities is critical for sustained success. This volume should help move the discipline forward.

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October 11, 2011

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Preface

So what on earth prompted me to write a book on learning design? I think the origins to this work stretch back to my initial experience of teaching in the early 1990s. I started my career as a lecturer in inorganic chemistry. Soon after I took up the post, a number of my colleagues passed on some of their courses for me to take over. My experience of education was solely based on my own learning at school and as an undergraduate (essentially around lectures, tutorials and laboratory classes). I am ashamed to admit I had no knowledge of educational theories and did not even know what a learning objective was! In addition to trying to design my teaching sessions based on this woeful lack of experience, I was struggling to build up a distinct research profile using the traditional methods of data collection and the writing of papers and project proposals.

I attended a staff development session which stated that it aimed to support teachers in developing their teaching practice. It was a disaster. The session was run by a staff development ‘expert’, who kept talking about constructivism and other esoteric educational terms I had never heard of. At the end, I was demotivated and frustrated. The session had been no help at all and indeed was counterproductive.

I suspect my initial experience of being a lecturer is not uncommon. We are primarily recruited based on our research expertise and subject domain knowledge, not on our teaching experience. Luckily today many institutions do have in place professional induction programmes for new lecturers, to introduce them to relevant educational theories and expose them to appropriate examples of good learning and teaching practice.

Nonetheless, my own frustrating experiences planted a seed in my mind around the question: What kind of support mechanisms can we put in place to support teachers in their teaching practice to enable them to develop effective approaches to the design of learning interventions? On reflection, I think this question has been at the core of my research work over the last 20 years. It has led me through a journey of development and evaluation of different technologies and ultimately to the open learning design methodology outlined in this book.

This is an exciting time in education, which is operating within an increasingly complex societal context, one of rapidly changing technologies and increasing financial constraints. New social and participatory media have much to offer for learning and teaching. To address this challenging context, we need to radically rethink the way in which we design, deliver, support and assess learning. The tools and methods described in this book are put forward as a means of trying to achieve this, with an underlying aspiration to transform teaching practice and ultimately enhance the learner experience.

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