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# Design Research in Education: A Practical Guide for Early Career Researchers

Louis Major, Rupert Wegerif

## 1.0 Article

The emergence of educational design research as a methodological framework has been driven by a range of factors. These include the need to close the gap between educational theory and practice in addition to demand for rigorous and systematic ways of developing practically relevant educational materials, activities and environments. The term 'design research' is used for a family of approaches that feature design as an integral part of the research process. Importantly, the intention of such design is not only to solve 'real-world' educational problems or to help learners to achieve particular goals, but to advance scientific knowledge. Educational design research gives us insights into the features of successful education and reveals the causal processes that lead to learning. In design research, therefore, design *and* research are complimentary and intertwined: the design is research-based and the research is design-based (Bakker, 2019, p. 4).

With roots extending back a number of decades, design research is known under various names, and similar approaches under the 'umbrella' of design research include design experiments (Brown, 1992; Collins, 1992) and design-based research (Hoadley, 2002; Design-Based Research Collective, 2003). Despite this, design research is still considered by many in the educational research community to be a methodological newcomer. This may be one reason why the approach has received relatively limited attention in most methodological texts relating to educational research.

Design research continues to evolve as a genre of research. Often viewed as difficult to conceptualise and implement, undertaking rigorous design research can be challenging. This is particularly true for researchers early in their careers for whom experience, time and resources are typically limited. *Design Research in Education: A Practical Guide for Early Career Researchers* aims to offer an accessible introduction to the essentials of design research. Geared specifically towards junior researchers, the book succeeds in providing a timely contribution to this still developing field in a way that will be of interest to experienced research-

chers also. Most of the key publications on design research are not suitable for early career researchers or for research conducted as part of a research degree such as a doctorate. This book aims to fill that gap in the market. Its ambition is straightforward: to present an accessible introduction to design research as an approach that can be taught and learned.

Authored (and in part edited) by Arthur Bakker, who draws on his experience undertaking design research dating back to the early 2000s, the book consists of two main elements. Part I (Chapters 1-9) considers the theory and practice of design research. Amongst other things, in this section Bakker explores the theoretical background and history of design research and offers practical advice on how to conduct it. Topics covered include developing research questions, considering research quality, and writing up the outcomes of design research. A further chapter, targeted at academic advisors, discusses the process of supervising design research. Part II (Chapters 9-22 - some of these sections are very short) is largely dedicated to different examples from design research projects. Contributors include PhD and other students. Chapters aim to provide readers with further insights, for instance, into issues that early career design researchers may face when embarking on a design research study, or on how courses to teach design research may be designed. Note, while all of the chapters comprising Part I are authored by Bakker, 13 other contributors also feature in Part II.

*Design Research in Education* is well-written, at a level appropriate for the intended audience. The text largely succeeds in realising its aim of providing an overview of the main features of design research. The use of short 'question and response' textboxes, comparative tables, and figures in most chapters support points made in the text and helps with the accessibility of key ideas. Particularly interesting and amusing also are the two 'intermezzos' that follow Chapters Two and Three. Inspired by the writings of Plato and Lakatos, these present fictive dialogues between two different research approaches and ways of doing research and are genuinely insightful.

Arthur Bakker has conducted an impressive amount of research in the process of writing this book: he refers to interviews and personal communications with many, perhaps most, of the leading figures from the education design research community. The considerable amount of literature cited at the end of every chapter means that this book offers one of the most comprehensive reviews of extant work on educational design research. The comprehensive summary of the history of design research (albeit focusing

mostly on the US and Dutch perspective; Chapter Two) will be of wide interest. Some early career researchers may be inclined, however, to skip over the latter parts of this chapter to progress to the more practical focused advice that forms the majority of Part I. Such chapters make a number of important contributions to topics that have previously received little attention. Examples include the tricky issue of the structure of research questions in design research (pp. 81-82) and a careful consideration of the argumentative grammars used in design research, for instance, presenting a discussion on reasoning structures intended to alert early career researchers to the types of claims they are able to make (p. 99).

Despite Part I's focus (in the most part) on practical research issues, the guidance that is offered is occasionally quite abstract, perhaps too abstract. Chapter 5, for example, considers research quality in design research. At only around six pages long excluding references, the presented discussion remains at a rather theoretical level. While a general introduction is provided to issues such as validity and reliability, the strategies offered for addressing these are not outlined in detail. This is not to suggest such discussion isn't valuable: it is perhaps more likely to provoke useful reflection in the reader, than offering a clear recipe or simple formula to follow. Nonetheless, this approach may leave some readers disappointed if they are looking for a more 'step-by-step' guide to educational design research.

The chapters in Part II, which take up around half the book in total and differ significantly in character from those preceding it, provide concrete examples of design research in action. The section begins with reflections from an experienced academic on the design of a course that has successfully introduced students from a range of disciplines to design research. This piece exemplifies core course activities and is followed by several short chapters demonstrating the range of design research projects (under-)graduate students have undertaken. Longer contributions by PhD students also consider specific elements of the design research process, for instance, writing a research proposal. These chapters are interesting, but may not all be seen as essential resources by readers since each is very specific in its focus.

The book concludes with a series of short chapters co-authored by Bakker offering illustrations that deal with specific issues such as the role of the teacher in design research or the use of 'conjecture maps'. These offer what the Dutch call 'kijkje in de keuken' (a 'peek into the kitchen') of design research (p. 275). Through these examples which offer insights into how others have tackled some of the issues that

arise in practice Bakker is trying to reproduce for the reader as much as is possible of the experience of a situated cognitive apprenticeship, learning how to do educational design-based research for themselves by first vicariously participating in the experience of others.

*Design Research in Education* is important reading for early career researchers interested in undertaking design research. The book's practical strategies for "cutting up the elephant" (p. 135) along with its theoretical insights and rich pointers to other work mean that it is also likely to be of interest to a wider audience including academic advisors, examiners, course developers and more experienced educational researchers. Its publication adds to the growing significance of design research within the field of educational research. This book succeeds in its aim of making educational design research more accessible as an option for both early career researchers and more experienced researchers.

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#### Author Profiles

**Louis Major** is a Senior Research Associate. His research focuses on the use of digital technology for educational purposes, in particular, the role of technology in supporting educational dialogue and interaction. He is interested in methods for research synthesis and has experience leading systematic reviews. He has also undertaken design-based research (DBR) to support the development of both technology tools and pedagogy, and is interested in how this approach may be developed to further close the gap between education practice and theory.

**Rupert Wegerif** is full professor of Faculty of Education at the University of Cambridge, United Kingdom. He is interested in researching dialogic education, especially research that helps to develop a new dialogic theory and practice of education appropriate for the Internet Age. To that end he tends to do design-based research on educational dialogue, especially dialogue mediated by technology. He founded and co-convenes the Educational Theory SIG of EARLI.

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