This paper focuses on design and development research, a type of inquiry unique to the instructional design and technology field dedicated to the creation of new knowledge and the validation of existing practice. We have been writing about, and advocating for, this type of research for the past 15 years (Klein, 1997; Richey, 1997; Richey & Klein, 2005, 2007, 2008, 2014; Richey, Klein & Nelson, 2003; Richey & Nelson, 1996) and have often been asked to explain the differences between design and development research and design-based research. For example, we recently received the following suggestion for a manuscript revision:

Distinguish design and development research from design-based research – your definition is broader and focused on the need to conduct research to establish the foundations for models used to plan and implement instruction, as I read the piece. Readers might want to know how that is different from DBR, which also advocates empirical research but is probably narrower in scope than your conception (that is my impression, anyway).

This issue was the center of the vexation we discussed at AERA’s design-based research conference held in Athens, GA in September 2013. Our question was – What are the differences and similarities between design-based research and design and development research?

**Design and Development Research**

Design and development research is “the systematic study of design, development and evaluation processes with the aim of establishing an empirical basis for the creation of instructional and non-instructional products and tools and new or enhanced models that govern their development (Richey & Klein, 2007, p. 1). In its simplest form, design and development research is the study of the process and impact of specific design and development efforts, or the study of the design and development process as a whole, or of particular process components. Such research can involve a situation in which someone is studying the design and development work of others. However, it can also involve a situation in which someone is undertaking design and
development activities and studying the process at the same time. In either case, there is a
distinction between doing design and development and studying the process.

**Types of Design and Development Research**

As with all research endeavors, design and development research leads to knowledge production
and the ability to make predictions. Design and development research reaches these goals
through two large categories of studies: (1) product and tool research, and (2) model research.
These two major categories differ in terms focus and outcome.

The first type pertains primarily to studies of the design and development of products and tools. Often the entire design and development process is documented. However, some studies concentrate on one aspect of design and development such as formative evaluation. Many recent product and tool studies focus on the design and development of technology-based instruction. There is a tendency to combine the task of doing design and development and studying the processes in this type of research.

The second type of design and development research relates to studies of the development, validation or use of design and development models. These studies focus on the models and processes themselves, rather than their demonstration. While some researchers conduct model research in conjunction with the development of a product or program, others concentrate on a previously developed intervention. Model research may address the validity or effectiveness of an existing or newly constructed development model, process or technique. Furthermore, these studies often seek to identify and describe the conditions that facilitate successful design and development.

Design and development research encompasses studies with conclusions that are both
generalizable and contextually specific. This reflects the fact that product and tool research typically involves studies that describe and analyze the design and development processes used in particular projects, and are thus to a great extent context-bound. In contrast, model research studies are oriented toward a general analysis of design and development processes. These studies tend to be more generalizable than product studies.
Both types of design and development research can provide direction to others in the field, even studies whose conclusions are derived from particular projects and contexts. The lessons learned from these studies can apply to those who are confronting similar design and development projects. Model studies may generate new or enhanced models available for general use, but not all have such a comprehensive goal. They may explain the way in which existing models are used; they may also account for successes and failures of employing a particular model.

### Types of Design and Development Research

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<tr>
<th></th>
<th>Product &amp; Tool Research</th>
<th>Model Research</th>
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<tbody>
<tr>
<td><strong>Emphasis</strong></td>
<td>Study of specific product or tool design and development projects</td>
<td>Study of model development, validation or use</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Lessons learned from developing specific products and analyzing the conditions which facilitate their use</td>
<td>New design and development procedures or models, and conditions which facilitate their use</td>
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**Context-Specific Conclusions $\implies$ $\implies$ $\implies$ Generalized Conclusions**

### An Example of Design & Development Research

A recent study by Wilson and Klein (2012) provides an example of design and development research. The purpose of this study was to examine the use of the Jeffries/National League for Nursing Framework for Designing, Implementing and Evaluating Simulations (Jeffries, 2005). The research was carried out in a medium-sized hospital located in the southwestern United States. Participants were an instructional designer (who also served as the principal investigator), two graduate nursing education specialists, one unit based educator, and 27 registered nurses who had been in practice for less than six months. Design and development research was used to investigate the processes used to design the simulation, its implementation by faculty, and its impact on interprofessional communication in an acute care setting. Data collected from the designer, faculty and student participants were analyzed for evidence on how the framework
informed the design and implementation of the course, student achievement of course goals, as well as student and faculty evaluation of the course. These data were used to identify the strengths and weaknesses of the framework in this context as well as suggestions for improving it.

**Alternative Approaches to Design and Development Research**

Innovative approaches to addressing research questions often emerge at roughly the same time. This is the case with respect to design and development research. A different, yet complementary approach to design and development research is design-based research.

Design-based research is used to clarify the processes by which people learn, typically through their interactions with instructional materials and other learners. The Design-Based Research Collective (2003) indicated that this type of inquiry can be used to study learning in a specific context through the design and testing of instructional strategies and tools. This process occurs iteratively, until the strategy is shown to improve learning and the reasons for why it is effective have been integrated into existing theory. Design experiments tend to be a type of teaching-learning research that relies upon an iterative formative evaluation process. Design-based research informs the field about particular strategies that have been shown to be effective ways of applying learning theory. It is an innovative form of inquiry that incorporates product development and evaluation into the research process. However, it does not typically address design and development processes or models.
References


Klein, J. D. (2013, September). *Design and development research: A rose by another name?* Presented at the AERA Design-Based Research Conference, Athens, GA.


