Chapter 4

Design-Based Case Study: Refining Interventions Through Systematic, Iterative Methods

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ABSTRACT

Design-based case studies allow researchers to examine instructional innovations that are bounded by perspective, context, and time. Design-based case study is an approach that blends case study research with design-based research in order to more systematically examine the process and products of an intervention. This approach provides a framework for engaging in iterative cycles of data collection and analysis to determine if, how, and why goals of instructional innovations have been met. This chapter provides an overview of the design-based case study approach and responds to common concerns surrounding case study and design-based research and how design-based case studies address these concerns by building on the strengths of both approaches.

INTRODUCTION

Design-based case study emerged in an academic climate where design-based research (DbR) and case study research were often used and addressed in faculty and doctoral student research. The connection between design-based research and case study research became evident through discussions of how the methods of design-based research are implemented and shaped to confirm claims of reliability and rigor. The structure of case study research, specifically the use of structured protocols for guiding research and organizing findings, align with the iterative nature of design-based research. The blend of these two approaches strengthened studies on interventions by adding more rigor to the study. Over time, we began to identify this fusion as the design-based case study approach.

DOI: 10.4018/978-1-5225-5164-5.ch004
Design-Based Case Study

This hybrid of case study (CS) and design-based (DbR) research addresses many common concerns about each individual approach. In this chapter, we will discuss the claims and limits of case study and design-based research and propose a blending of the two that provides methodological synergy toward a more robust and rigorous approach. Design-based Case Study (DbCS) can be used to address research questions related to if, how, when, and why interventions were successful in meeting their goals. This approach has the potential to make substantial claims regarding elements of the intervention process and product, as well as the study of interventions, that can be customizable to other settings. Seeing the evolution of an intervention progress as it attempts to meet specific goals is extremely important to research on learning. Interactions, whether they are between teachers and students, mentors and mentees, or facilitators and participants, are surrounded by a context rich in variables that can be controlled and those that cannot.

Understanding Design-Based Case Study

An introduction to the intricacies of design-based research and case study research are needed to understand the nature of the Design-based Case Study approach (DbCS). Following this overview, detail will be provided on how case study methods support design-based research as the blended design-based case study is described.

An Introduction to Design-Based Research

Design-based research (DbR) has been used to study instructional innovations in the messy contexts of classrooms. Cobb and colleagues (2003) originally identified design-based research as including the following features: (1) a limited number of settings; (2) educational improvement through innovation; (3) theory testing and generation; (4) iterative refinement, and (5) the importance of theory to this iterative refinement. Gravemeijer and Cobb (2006) added a three-phase framework for conducting design-based research to accompany these five critical features. Phase I involved developing a contextual description and baseline of instructional needs so that a theory-based intervention could be conjectured. In Phase II, the ‘conjectured’ intervention to address the instructional needs is tested in daily microcycles and modified as needed. The iterative analysis of these small cycles would then be used to determine emerging patterns of what is learned about the intervention and how theory is being informed (Phase III).

In 2008, Reinking and Bradley provided a framework that suggests terms and procedures for proposing and conducting a design-based experiment, and these serve as the basis of the design-based case study approach presented in this chapter. The following questions guide the development of a design-based research study:

1. What is the pedagogical goal to be investigated, why is that goal valued and important, and what theory and previous empirical work speak to accomplishing that goal instructionally?
2. What intervention, consistent with a guiding theory, has the potential to achieve the pedagogical goal and why?
3. What factors enhance or inhibit the effectiveness, efficiency, and appeal of the intervention in regard to achieving the set pedagogical goal?