INSTRUCTIONAL DESIGN IN THE CONTEXT OF CLASSROOM-BASED RESEARCH: DOCUMENTING THE LEARNING OF A RESEARCH TEAM AS IT ENGAGED IN A MATHEMATICS DESIGN EXPERIMENT

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This study documented the learning of a research team as it engaged in the process of instructional design. An 11-week classroom teaching experiment conducted in a seventh-grade classroom and the planning year prior to the teaching experiment were the sites for the research team's instructional design investigation. The goal of the teaching experiment was to support students' development of statistical understandings related to data analysis through the design of an instructional sequence. Two computer-based data analysis tools were integral aspects of the instructional sequence and served as primary means of supporting the students' learning. This dissertation clarified the instructional design decisions made by the research team and described how those decisions created learning opportunities. These decisions emerged as the research team continually tested and revised its conjectures about how to support students' mathematical development as it designed the instructional sequence. To this end, this dissertation focused on critical issues that guided the research team in its initial attempts at instructional design. These critical issues were tracked from the planning year throughout the classroom teaching experiment in order to understand what the research team learned about (a) the

mathematics involved in teaching and learning statistics and (b) how to support students' development of ways to reason statistically while engaging in data analysis.