

Chapter 22

Teacher Effect Model for Impacting Student Achievement

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ABSTRACT

Teachers are a significant factor associated with student achievement. Research recognizes that the greatest determinate of student achievement is the teacher, yet questions remain as to what characteristics of teachers are the most influential and where these attributes can be influenced through professional development. This paper explores the teacher effect through the evaluation of the interaction among characteristics of four teacher profiles using Surveys of Enacted Curriculum®. This Teacher Effect Model was designed to evaluate the future impacts of sustained professional development.

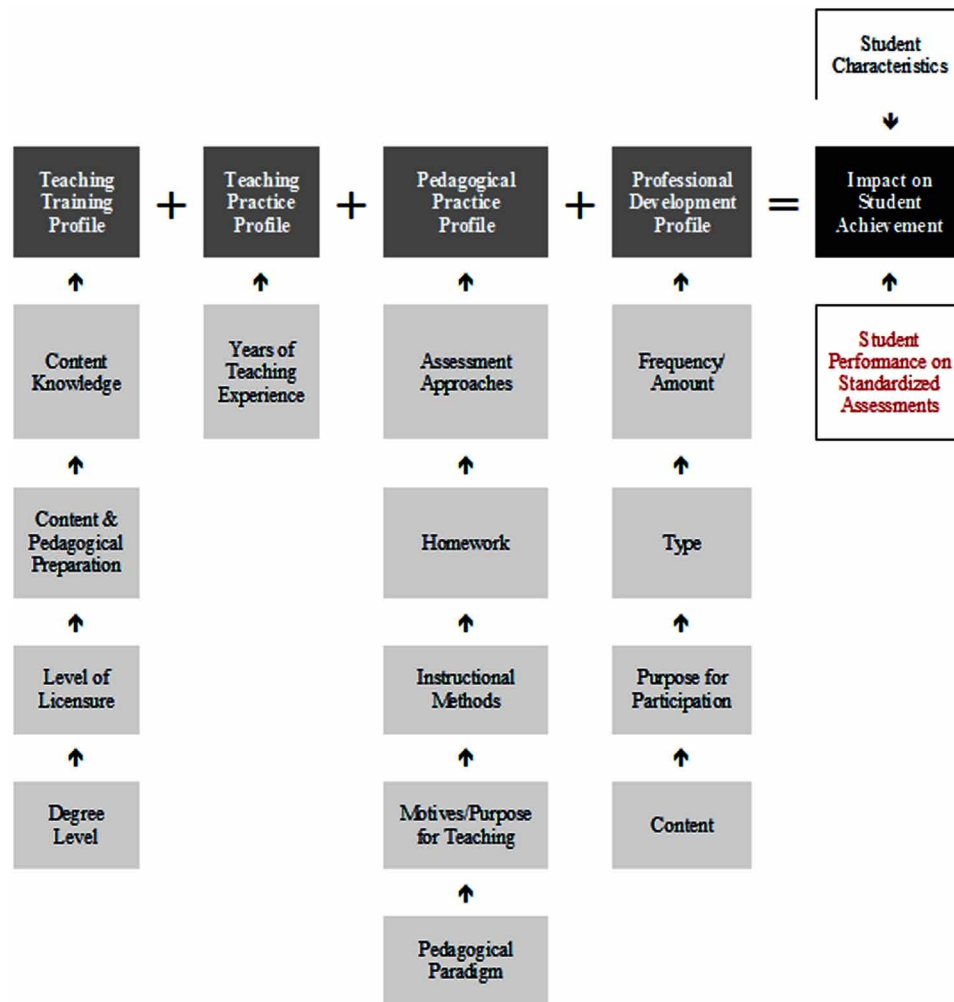
INTRODUCTION

The purpose of this study was to examine the teacher effect on student achievement as defined by a composite of four teacher effect profiles. These profiles include characteristics of teachers such as: teacher training, teaching experiences, pedagogical practices, and professional development. The interaction among these characteristics were used to identify the greatest determinates of student achievement in mathematics. The model was also used to identify targeted needs for professional development based upon data from student outcomes. Math achievement was evaluated based on student performance on state-mandated standardized tests. This Teacher Effect Models provides a framework for future analyses of the effect of intervention strategies for evaluating and improving professional development.

This research is part of The North Carolina Partnership for Improving Math and Science (NC-PIMS), a five-year grant funded by the National Science Foundation and the Department of Education to improve student outcomes in Math and Science through policy, professional development, and parent programs. A cascading model of program delivery provides training to 11 facilitators, 367 lead teachers and over 6,000 classroom teachers in mathematics. The goal of the grant is to provide quality, comprehensive training to teachers in an effort to decrease the achievement gap in mathematics while increasing the overall outcomes for all students in the participating districts. The Teacher Effect Model is being used

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Figure 1. The Teacher Effect Model



to determine the effectiveness of professional development offered by this NSF grant and inform and direct future professional development plans to maximize the effect of these interventions in improving student achievement.

The guiding research questions for this study are:

- What teacher characteristics best account for student achievement?
- Are there significant differences within teacher effect profiles in determining student achievement?

The Teacher Effect Model measures the effect of various characteristics of teachers and the interaction among these on student achievement. The Teacher Effect Model is a composite of four profiles: *teacher training*, *teaching experience*, *pedagogical practices*, and *professional development*. The four profiles were selected based upon an extensive research review of the variables that affect teacher quality. The premise of this model is that teacher quality can be linked to student achievement; therefore, under-

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