THE EFFECT OF TEACHER EDUCATION LEVEL, TEACHING EXPERIENCE, AND TEACHING BEHAVIORS ON STUDENT SCIENCE ACHIEVEMENT

by

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A dissertation submitted in partial fulfillment of the requirements for the degree

of

Doctorate of Philosophy

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iii

ABSTRACT

The Effect of Teacher Education Level, Teaching Experience, and

Teaching Behaviors on Student Science Achievement

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Previous literature leaves us unanswered questions about whether teaching behaviors mediate the relationship between teacher education level and experience with student science achievement. This study examined this question with 655 students from sixth to eighth grade and their 12 science teachers. Student science achievements were measured at the beginning and end of 2006-2007 school year. Given the cluster sampling of students nested in classrooms, which are nested in teachers, a two-level multilevel model was employed to disentangle the effects from teacher-level and student-level factors. Several findings were discovered in this study. Science teachers possessing of advanced degrees in science or education significantly and positively influenced student science achievement. However, years of teaching experience in science did not directly influence student science achievement. A significant interaction was detected between teachers possessing an advanced degree in science or education and years of teaching science, which was inversely associated to student science achievement. Better teaching behaviors were also positively related to student achievement in science directly, as well

as mediated the relationship between student science achievement and both teacher education and experience. Additionally, when examined separately, each teaching behavior variable (teacher engagement, classroom management, and teaching strategies) served as a significant intermediary between both teacher education and experience and student science achievement. The findings of this study are intended to provide insights into the importance of hiring and developing qualified teachers who are better able to help students achieve in science, as well as to direct the emphases of ongoing teacher inservice training.

(100 pages)

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CONTENTS

| | Page |
|-------------------|--------|
| ABSTRACT | . iii |
| ACKNOWLEDGMENTS | . v |
| LIST OF TABLES | . vii |
| LIST OF FIGURES | . viii |
| INTRODUCTION | . 1 |
| LITERATURE REVIEW | . 4 |
| OBJECTIVES | . 26 |
| METHODS | . 27 |
| RESULTS | . 35 |
| DISCUSSION | . 60 |
| REFERENCES | . 71 |
| APPENDICES | . 79 |
| VITA | . 87 |

LIST OF TABLES

| Table | | Page |
|-------|---|------|
| 1. | Demographic Information for Four Schools from the 2003-2004 School Year | 29 |
| 2. | Demographic Information for the Sample | 29 |
| 3. | Descriptive Statistics for Student Science Achievement Test | 36 |
| 4. | Descriptive Statistics for Teaching Behavior Scores | 36 |
| 5. | Frequencies for Student Demographic Information | 37 |
| 6. | Frequencies for Teacher Advanced Degree | 37 |
| 7. | Frequencies for Years of Teaching and Years of Teaching in Science | 37 |
| 8. | Crosstab of Teacher Education Level by Teaching Experience | 38 |
| 9. | Descriptive Statistics for Retained Sample and Eliminated Sample | 39 |
| 10. | The Comparison of Random Effect Components of Model.1, 2, and 3 | 44 |
| 11. | Final Model with Random Component and Fixed Predictors | 46 |
| 12. | Interpretation of the Parameter estimates of Final Model | 47 |
| 13. | Comparison Between Null-Model, Model with First-Level Predictors, and the Final Model | 49 |
| 14. | Mediation Relationship Between Two Teacher Attributes, Teaching Behaviors, and Student Science Achievement | 56 |
| 15. | Mediation Relationship Between Two Teacher Attributes, Three Specific Teaching Behaviors, and Student Science Achievement | 58 |

LIST OF FIGURES

| Figure | | Page |
|--------|--|------|
| 1. | Teaching behaviors mediate the relationship between two teacher attributes and student science achievement | 34 |
| 2. | Normal quantile of student end of year science scores | 40 |
| 3. | Boxplot of student end of year science scores | 40 |
| 4. | Normal quantile of standardized residuals | 51 |
| 5. | Normal quantile of random intercept | 51 |
| 6. | Predicted relationship between years of teaching experience in science and student science achievement as a function of whether the teacher possessed an advanced degree | 53 |
| 7. | Predicted relationship between years of teaching experience in science and student science achievement as a function of student ethnicity | 54 |
| 8. | Mediation relationship between two teacher attributes, teaching behaviors, and student science achievement | 56 |
| 9. | Mediation relationship between two teacher attributes, teacher engagement, and student science achievement | 58 |
| 10. | Mediation relationship between two teacher attributes, classroom management, and student science achievement | 59 |
| 11. | Mediation relationship between two teacher attributes, teaching strategies, and student science achievement | 59 |