

USING NUMBER TALKS TO ADDRESS STATUS AND SELF-THEORIES IN A
FOURTH GRADE CLASSROOM

by

Toby Syrett

An Action Research Project Submitted to the Faculty of

The Evergreen State College

In Partial Fulfillment of the Requirements

for the Degree

Master in Teaching

2015

This Action Research Project for the Master in Teaching Degree
by

Toby Syrett

has been approved for
The Evergreen State College
by

Sunshine Campbell, Ph.D., Member of the Faculty

ABSTRACT

There are many reasons elementary school students struggle in mathematics, from less than optimal instructional practices, to negative teacher's beliefs, lack of culturally relevant teaching, low social and academic status effects in the classroom, and negative self-theories. Number talks present a container practice that can be used to work to address these and other limits on student achievement in math. This action research project investigates the effect of number talks on measured and expressed student status and self-theories over the course of the study period. Number talks can be a tool for teachers to not only promote higher levels of mathematical understanding and achievement by doing math, but by addressing teacher and student beliefs about themselves and their peers. During the course of this project, I assessed student's status and self-theories to look for patterns of change. I conducted follow-up interviews with students to get a finer grained picture of their feelings of the effect of number talks. My analysis shows that both status effects and self-theories for students shifted in overall significantly positive directions, and data pointed to number talks as a key ingredient in this shift. I recommend that teachers take up the practice as a tool for improving student outcomes. Mitigating status and changing self-theories has the potential for raising math and other academic achievement, as well as positively impacting students overall experiences in the classroom.

ACKNOWLEDGEMENTS

I would like to thank the students in the fourth grade classes I had the privilege of doing my student teaching with. These kids taught me more in the brief time we were together than I would have imagined possible. Books and theories are important, but real learning happens where the paint hits the canvas. Each student is like a book. If you are lucky, they will trust you enough to teach you how to read to find their immeasurable value and lessons about their self, and about you. After all, our students are the best teachers we can have.

I would also like to thank the mentor teachers I had the opportunity to work with. Their insights, guidance, and modeling was a positive and powerful force as I began the practice of instruction as a student teacher. The lessons and experiences I shared in their classrooms, hallways, playgrounds, and staff rooms shaped my direction and set me off in a positive direction.

I would also like to thank my faculty and peers in the Evergreen MiT program. Their insights and actions have shown me much about wisdom, service, humility, and the process of becoming a transformative educator. I especially want to thank Dr. Sunshine Campbell for her patience and guidance during this journey, and for introducing me to the practice of number talks and implications of status.

TABLE OF CONTENTS

	PAGE
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	iv
CHAPTER 1 — INTRODUCTION AND LITERATURE REVIEW.....	1
Changing Views on Math.....	1
Why Is Math So Hard	2
Number Talk Potential.....	5
Review of the Literature.....	6
Instructional Practices.....	7
Teacher Beliefs.....	11
Culturally Relevant Teaching.....	14
Status.....	16
Self-theories.....	20
Looking For A Solution.....	24
CHAPTER 2 — METHODS.....	28
Setting and Participants.....	28
Classroom Environment.....	29
How We Practiced Number Talks.....	30
Data Collection and Analysis.....	35
Surveys.....	36
Interviews.....	39
Video Recording.....	39
Research Journal.....	40
Limits Of Conclusions.....	40
Quality Indicators.....	41
Credibility.....	42
Transferability.....	42
Dependability.....	43
Confirmability.....	44

	PAGE
CHAPTER 3 — FINDINGS AND IMPLICATIONS.....	45
Findings.....	45
Increasing Academic Status.....	45
Increasing Incremental Self-theories.....	50
Summary of Findings.....	54
Connection Between Literature Review and Study Findings.....	54
Instructional Practices.....	54
Teacher Beliefs.....	55
Culturally Relevant Teaching.....	56
Status.....	56
Self-Theories.....	57
Implications For My Teaching Practice.....	58
Suggestions For Future Research.....	59
REFERENCES.....	60
APPENDICES	
A Math Status Survey Form.....	65
B Math Status Survey Results.....	66
C Self-theory Survey Form.....	67
D Self-theory Survey Results.....	68
E Math Smartness Survey Form.....	69
F Math Smartness Survey Results.....	70
G Number Talk Survey 2 Form.....	71
H Number Talk Survey 2 Results.....	72
I Student Interview Questions.....	76
J Potential Number Talk Mitigation to Instructional Barriers.....	77