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Self Efficacy And  
Mathematical  
Problem Solving  
Efficacy  
And Mathem  
atical  
Problem  
Solving

**It has been argued  
by some that boys**

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**are inherently  
better in  
mathematics than  
girls (Halpern,  
2012; Summers,  
2005). However,  
according to  
international  
assessments such  
as the Trends in  
Mathematics and  
Science Study's  
(TIMSS) and**

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Self Efficacy And  
**Program for  
International  
Student**

**Assessment  
(PISA), boys do  
not always  
outperform girls in  
mathematics  
(Mullis, Martin,  
Foy, & Arora, 2012;  
OECD, 2014). As  
such, something  
other than biology**

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**might better explain variations in mathematics performance. One explanation may be self-efficacy, a label used to describe judgments people make about themselves in terms of whether or not they have**

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**the capability of  
doing something  
(Bandura, 1995;  
Bandura 1997).  
Self-efficacy has  
been found to  
have a significant  
effect on academic  
achievement  
(Bandura, 1995;  
Bandura 1997);  
Borman &  
Overman, 2004;**

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**Fast, Lewis,  
Bryant, Bocian,  
Cardullo, Rettig, &  
Hammond, 2010;  
Pietsch, Walker &  
Chapman, 2003).**

**This dissertation  
explored the  
relationship of  
gender, self-  
efficacy, and  
mathematics  
achievement on**

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**the TIMSS  
assessment as a  
way to change  
biological  
arguments that  
boys are  
inherently better  
than girls in  
mathematics. The  
country of focus is  
the United States  
and the students  
studied were**

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**fourth grade  
participants who  
took the 2007  
TIMSS test (n =  
7,896) and eighth  
grade participants  
who took the  
TIMSS 2011 (n =  
10, 477). Self-  
efficacy was  
examined through  
responses to  
selected TIMSS**



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**student  
background  
questionnaire  
statements that  
represented self-  
efficacy. Results of  
this study show  
that gender on its  
own is not a  
significant  
predictor of  
mathematics  
achievement. A**

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**positive relationship exists between self-efficacy and mathematics achievement. Further, high self-efficacy is the greatest predictor of mathematics achievement studied in this dissertation. High**

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**self-efficacy gave boys a greater advantage in mathematics than girls at both grade levels. This work supports the importance of self-efficacy to mathematics achievement and diminishes the significance of**

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Self Efficacy And  
gender to the  
same end. --  
Abstract. Solving

**"This book is an important resource for pre-service and in-service teachers, as well as families in applying the theory of self-efficacy to support learners in**

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**becoming  
confident and  
assured in their  
ability to  
understand and  
apply  
mathematical  
principles and  
procedures.  
Coupled with  
classroom ready  
mathematics  
instructional**

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**strategies, the  
book provides  
readers with the  
background, tools  
and strategies  
needed to carry  
content success  
and confidence  
forward to remain  
persistent in  
solving all future  
mathematical  
problems"--**

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**The purpose of this study is to examine the influences certain factors have on the mathematical motivation beliefs of students in a predominantly African American setting.**

**Mathematical motivation beliefs,**

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**for the purpose of  
this study, are  
defined as the  
components  
mathematical self-  
efficacy and  
mathematical  
value, both  
represented as  
dependent  
variables in the  
study. 4  
independent**



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**variables were studied as potential influences regarding mathematical motivation beliefs. The variables included parental influences, teacher influences, mathematical anxiety, and the en**

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Self Efficacy And  
vironment/setting.  
Mathematical  
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**This research was conducted using 2 high schools in a rural area in East Mississippi. The 1st high school was predominantly African American and the 2nd high school was predominantly Caucasian. 4**

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Self Efficacy And  
**scales were  
selected for this  
research study.**

**The Mathematics  
Confidence Scale,  
developed by  
Dowling (1978),  
Mathematics  
Problems  
Performance Scale  
(Dowling, 1978),  
Fennema-Sherman  
Mathematics**

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Self Efficacy And  
**Attitude Scale**  
(Fennema, 1976),  
and My Class

**Activities Survey**  
(MCA, Schweinle &  
Mims, 2009) were  
all used. Findings  
revealed that  
teacher influence  
predicted the  
mathematical  
motivation beliefs  
of students in a

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Self Efficacy And  
**predominantly  
African American  
school**

**environment the  
most. Findings  
also indicated that  
math anxiety  
significantly  
predicted math  
value and self-  
efficacy in both  
classroom  
environments.**

**Lastly, findings revealed that mathematical problem solving was significantly predicted by mathematical self-efficacy for students in a predominantly African American environment.**

**The PISA 2003**

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**Technical Report  
describes the  
complex  
methodology  
underlying PISA  
2003, along with  
additional features  
related to the  
implementation of  
the project at a  
level of detail that  
allows researchers  
to understand and**

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**replicate its  
analyses.**

**Investigating the  
Mathematical  
Dispositions and  
Self-efficacy for  
Teaching  
Mathematics of  
Preservice  
Teachers  
Determining  
Elementary  
Students'**



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Self-Efficacy And  
**Mathematical Self-  
efficacy and  
Attitudes Towards  
Mathematics  
Through Journal  
Writing  
Reciprocal  
Partnership  
A Dissertation  
Self-Efficacy and  
Mathematics  
The Effects of  
Online Homework**

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Self Efficacy And  
**on Achievement  
and Self-efficacy  
of College Algebra  
Students**

*While there has been much quantitative research done in the area of attitudes and self-efficacy beliefs, this study sought hear the voices of the middle school*

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Mathematical  
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*child. Therefore, this qualitative study investigated the attitudes toward mathematics and mathematics self-efficacy beliefs of middle school students in one middle school in western Kansas. The conceptual*

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Self Efficacy And  
*framework for this  
study is supported by  
the research of*

*Albert Bandura on  
Social Cognitive  
Theory. This study  
used a naturalistic  
inquiry approach  
and data were  
collected from  
multiple sources,  
including short-*

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Self Efficacy And  
*answer*  
Mathematical  
*questionnaires,*  
Problem Solving  
*classroom*

*observations, and  
one-on-one  
interviews. Coded  
data were examined  
for patterns, themes,  
and relationships.  
Middle school  
students in this study  
exhibited positive,*

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Mathematical  
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*negative, and  
variable attitudes  
toward mathematics,  
and both positive  
and negative  
mathematics self-  
efficacy beliefs.  
Students attribute  
their high  
mathematics self-  
efficacy beliefs to the  
teacher or the high*

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Self Efficacy And  
grades they receive  
on daily  
Mathematical  
Problem Solving  
assignments, as well

as the scores they  
receive on state and  
local assessments.

Conversely, middle  
school students have  
low mathematics self-  
efficacy beliefs when  
they feel

unsuccessful or

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*distressed, and they attribute those beliefs to the low grades they receive on daily assignments and assessments, as well as the distress of not understanding the mathematics.*

*Middle school students told their mathematical stories*



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Mathematical  
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*of the change in attitudes toward mathematics and mathematics self-efficacy beliefs, and attributed positive changes to the mathematics teacher. Negative changes in attitudes toward mathematics and mathematics self-*

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*efficacy beliefs were attributed to the amount of homework expected at the middle school level, as well as the lack of hands-on activities. The influence of the teacher, grades, and hands-on activities impact middle school students'*

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Self Efficacy And  
attitudes toward  
mathematics and  
mathematics self-

efficacy beliefs.

There is a  
relationship between  
attitudes toward  
mathematics and  
mathematics self-  
efficacy beliefs. Low  
mathematics self-  
efficacy beliefs and

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Self Efficacy And

*poor attitudes*

*toward mathematics*

*are related since low*

*mathematics self-*

*efficacy beliefs and*

*poor attitudes*

*toward mathematics*

*are highly*

*connected.*

*Conversely, high*

*mathematics self-*

*efficacy beliefs and*

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Self Efficacy And  
*good attitudes  
toward mathematics  
are highly related.*

*Middle school  
students' experiences  
impact both  
mathematics self-  
efficacy beliefs and  
attitudes toward  
mathematics.*

*Students'  
mathematics self-*

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Self Efficacy And  
*efficacy beliefs  
impact their  
attitudes toward  
mathematics.*

*"This study was to  
determine if test  
performance and  
levels of  
mathematical self  
efficacy of 9th grade  
students with  
learning disabilities*

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Self Efficacy And  
*improved after an  
intervention  
consisting of*

*organizational  
strategies,  
conferencing, and  
feedback." -*

*Abstract.*

*"Nothing in life is to  
be feared, it is only  
to be understood."*

*Marie Curie: Nobel*

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*Physicist This book written by a classroom teacher of mathematics brings a fresh, practical and relevant approach and a less-common perspective to the topic. The primary objective is to improve the self-efficacy of students*



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Mathematical  
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*when studying mathematics and by so doing improve the environment in which they learn and hopefully improve their cognition of the subject. All students need to be numerate citizens in the 21st century. Prior research linking self-*

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Self Efficacy And  
*efficacy and  
mathematics  
enrolment has*

*largely focussed on  
undergraduates.*

*This study sought  
input from Year 10  
and Year 8 students.*

*The research design  
is mixed methods  
with a quantitative  
survey followed by*

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Self Efficacy And  
*qualitative*  
*interviews. Self-*  
*Efficacy was*

*measured using two*  
*variables - Self-*  
*Rating and Self-*  
*Efficacy Score.*

*Mathematical*  
*Achievement was*  
*measured by*  
*students' Numeracy*  
*Scores from national*

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Self Efficacy And  
*government testing.*

*When students are  
considered by their  
Self-Rating category  
there are similarities  
across year levels.*

*Self-Rating  
categories displayed  
gender differences  
but the Self-Efficacy  
sources were gender  
neutral.*

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Self Efficacy And

Mathematical

Problem Solving

*Within the context of  
a 4-year high school  
mathematics*

*tracking system, this  
study explored*

*mathematical self-  
efficacy (MSE), or a  
person's belief in*

*one's mathematical  
capabilities. The aim*

*was to understand  
students' perceptions*

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Self Efficacy And  
Mathematical  
Problem Solving

*of (a) their MSE, (b) the effects of tracking on their MSE, and (c) changes in their MSE over time.*

*Tracking is a form of ability grouping used to sort students based on perceived academic ability or other*

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Self Efficacy And  
*characteristics. I*  
Mathematical  
*applied a qualitative*  
Problem Solving  
*instrumental case*

*study methodology*  
*with a multistage*  
*purposeful sampling*  
*procedure to select*  
*participants. I*  
*selected Grassy*  
*High School (GHS)*  
*as the setting*  
*because it provided*

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Self Efficacy And  
access to 12th-  
Mathematical  
graders from  
Problem Solving  
dominant and non-

dominant

populations and

their tracked

classroom learning

environments. In

addition, I had

collected MSE data

at GHS as part of an

exploratory study in



*2017 that allowed for comparing students' MSE at two points in time. Using surveys and interviews, I sought to understand the relationships among student demographic characteristics, characteristics of the students' tracked*

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Self Efficacy And  
*mathematics*  
*courses, and*  
*students' MSE. The*  
*survey included*  
*Likert-scale items*  
*focused on*  
*characteristics of*  
*MSE and classroom*  
*learning*  
*environments.*  
*Analysis of survey*  
*data consisted of*

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Self Efficacy And  
*comparing*  
Mathematical  
*descriptive statistics*  
Problem Solving  
*from the exploratory*

*study and this study*

*to understand how*

*different classroom*

*learning*

*environment*

*characteristics affect*

*students' MSE. I*

*collected 169*

*surveys and*

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Mathematical  
Problem Solving

*determined that 107 respondents met the inclusion criteria. I then selected 16 students for one-on-one, semi-structured interviews, which focused on students' perceptions of their MSE and their classroom learning environment*

*characteristics. I analyzed the interview data using a coding protocol, thematic analysis, and a cross-thematic matrix. I discuss three primary conclusions: (a) students entered classrooms with pre-established views of*

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Self Efficacy And  
*their MSE, (b)*  
Mathematical  
*students' classroom*  
Problem Solving  
*learning*

*environments played  
a role in their MSE  
development, and (c)  
students' MSEs  
played a role in  
other aspects of their  
mathematical  
dispositions. I  
provide educator*

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Self Efficacy And  
*and researcher  
recommendations to  
improve MSE*

*development in the  
high school  
classroom and to  
guide future  
research in the field  
of tracking. The  
findings of this study  
highlight the  
importance of rich*

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Self Efficacy And  
*and challenging*  
Mathematical  
*learning*  
Problem Solving  
*environments for all*  
*learners to eliminate*  
*unjust systems, such*  
*as tracking.*  
*Effects of Student-*  
*teacher*  
*Relationships on*  
*Student Achievement*  
*and Self-efficacy*



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Self Efficacy And  
*PISA 2003 Technical  
Report  
Post Hoc*

*Discernment of  
Developmental  
Mathematics  
Noncognitive  
Factors and Concept  
Transfer  
A Study on the  
Influences of the  
Mathematical*

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Self Efficacy And  
*Motivation Beliefs of  
Students in a  
Predominantly  
African American  
Environment in  
Mississippi  
How Elementary  
School Teachers  
Mathematical Self-  
efficacy and  
Mathematics  
Teaching Self-*

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Self Efficacy And  
*efficacy Relate to  
Conceptually and  
Procedurally*

*Oriented Teaching  
Practices*

**The volume addresses important issues of human adaptation and change.**

**This research addressed the following research question: which**

**specific variable has the greatest predictive power of mathematical literacy and problem solving competency while controlling for socioeconomic status (SES)? The variables that were studied were categorized as follows: demographic and personal history variables, attitudinal variables, behavioral**

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Self Efficacy And  
**variables, and school  
organization and  
structure variables.**

**Much of the existing  
literature cites SES as  
the most powerful  
predictor of math  
achievement. Using  
multiple linear  
regression modeling,  
this study found that  
many variables studied  
were determined to be  
significant predictors**

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**of mathematical  
literacy and/or  
problem solving  
competency while  
controlling for SES.**

**Every category of  
variables had at least  
one statistically  
significant predictor:  
demographic and  
personal history  
variables, attitudinal  
variables, behavioral  
variables, and school**

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Self Efficacy And  
**organization and  
structure variables.**

**The attitudinal  
variables had the most  
significant predictors  
of math literacy and  
problem solving  
competency and  
categorically proved to  
be the most powerful.  
The statistically  
significant predictors  
were categorized as  
major predictors and**

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**minor predictors of mathematical achievement. The variables with a significant but less powerful effect on math achievement are designated as minor predictors; these minor predictors include: gender, immigration status, student attribution to failure, perceived**



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Self Efficacy And

**math support, number  
of minutes in math**

**class, math education**

**of teachers, and class**

**size. The variables**

**with the greatest**

**significant and**

**powerful effect on**

**math achievement are**

**designated as major**

**predictors; these**

**major predictors**

**include: socioeconomic**

**status, math self-**

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Self Efficacy And  
efficacy, math anxiety,  
Mathematical  
and math teacher  
Problem Solving  
certification. The  
associated predictive  
powers of the major  
predictors were  
greater than the  
predictive power of  
SES, the control  
variable. Even when  
not controlling for  
SES, the attitudes of  
students' self-efficacy  
was the most powerful

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Self Efficacy And  
**predictor of math  
literacy and problem  
solving competency.**

**These results hold  
substantial  
implications in the  
areas of math literacy  
and problem solving  
competency for  
practitioners of math  
education and  
academic researchers.  
This study may be  
used to inform**

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pedagogical practices,  
districts, policy  
makers, and future  
areas of research.**

**Community colleges  
are calling to support  
students who are at  
risk of restricting their  
career options because  
they do not have the  
mathematical  
groundings to pursue  
math-related careers.**

**In response, I**

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**conceptualize a  
mathematics  
intervention program  
namely, Reciprocal  
Partnership, which is  
defined as the  
collaboration of  
student dyads to  
engage in reciprocal  
learning and teaching  
under the influence of  
constructive and  
collaborative  
environments that are**

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**structured by the  
Three Learning  
Situations framework.  
Reciprocal  
Partnership is  
proposed to enrich  
college students in  
their mathematical  
learning and to  
support their social  
development during  
their secondary-  
tertiary transition for  
mathematics**

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**knowledge and skills  
are strongly correlated  
with students's college  
success and career  
aspiration. Therefrom,  
the purpose of this  
research is to  
investigate the effect  
of Reciprocal  
Partnership on the  
mathematics self-  
efficacy and  
achievement of first-  
and second-semester**

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**college students  
through a mixed  
methods approach. It  
also examines the  
structure of Reciprocal  
Partnership to inform  
the design of effective  
intervention programs  
for mathematical  
learning. Data from  
final examination  
grade, and pre- and  
post-surveys were  
analyzed through**



**descriptive and  
inferential statistics,  
and were used to cross-  
validate findings from  
semi-structured  
interviews.**

**Quantitative results  
reveal significant  
effect of Reciprocal  
Partnership on the  
mathematics self-  
efficacy of only  
students in the first  
semester, and no**

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**significant effect on  
the mathematics  
achievement of both  
students in the first  
and second semester.  
However, qualitative  
results identify a  
number of benefits for  
both groups of  
students such as gains  
in mathematical  
knowledge and skill,  
confidence,  
motivation, social**

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**connection, and  
comfort. Results from  
this study suggest the  
emphasis of  
mathematics  
intervention programs  
on all three learning  
situations  
(exploratory,  
explanatory, and  
extensional) over only  
the explanatory  
situation to maximize  
learning outcomes.**

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Self Efficacy And

**The study aims to explore the level of suburban 5th grade students' mathematics self-efficacy, math anxiety, and academic achievement, to discover the possible interconnections between these parameters. The measures used to evaluate each included the Math Anxiety**

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Self Efficacy And  
**Rating Scale, the Self-  
Efficacy**

**Questionnaire, and the  
North Carolina End of  
Grade Assessment for  
the 2015-2016 school  
year. The 5th grade  
students (N=38) were  
divided into two  
clusters: 1) students  
with positive  
mathematical self:  
higher mathematics  
self-efficacy and self-**

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**concept and lower  
anxiety (n=7) and 2)  
students with negative  
mathematical self:  
lower mathematics self-  
efficacy and self-  
concept and higher  
anxiety (n=5).**

**Gender Differences in  
Mathematics  
Mathematics Self-  
efficacy, Mathematical  
Mindset and Their  
Relationship to Study**

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Self Efficacy And  
**Habits and  
Perseverance**

**An Overview of the  
Field and Future  
Directions**

**PISA The PISA 2003  
Assessment  
Framework**

**Mathematics, Reading,  
Science and Problem  
Solving Knowledge  
and Skills**

**PISA 2009 Technical  
Report**

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Self Efficacy And  
**Improving  
Mathematical**

**Performance and Self  
Efficacy Through  
Organization,  
Conferencing, and  
Feedback Among High  
School Students with  
Learning Disabilities**

This mixed-  
methods sequential  
explanatory study  
was used to



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Mathematical  
Problem Solving

determine if  
teachers'  
mathematical self-  
efficacy was  
impacted as result  
of a Math  
Foundations  
professional  
development. Over  
3 months, this  
5-day, 40-hour  
course utilized

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Mathematical  
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various strategies to impact in-service teachers' number sense knowledge.

-- The review of literature suggested that teacher preparation programs may not be adequately preparing teachers for the classroom.

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Anxiety and  
Mathematical  
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Anxiety and efficacy plague teachers as a result of their inadequacies. To improve teacher capacity, an effective professional development was needed to provide in-service teachers

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Problem Solving

opportunities to  
increase their  
number sense  
knowledge.

Research reflected  
that by improving  
number sense  
knowledge,  
efficacy would be  
impacted as well. --  
To ascertain the  
impact of this

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Self Efficacy And  
professional  
Mathematical  
development, two  
Problem Solving  
quantitative  
instruments—the  
Mathematics  
Teaching Efficacy  
Beliefs Instrument  
(measuring general  
and personal  
efficacy) and the  
Teacher Education  
and Learning to

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Self Efficacy And

Teach assessment  
(measuring number  
sense  
knowledge)–were

analyzed pre and  
postprofessional  
development.

Additionally,  
interviews collected  
qualitative data  
regarding efficacy  
and number sense

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knowledge  
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postprofessional  
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development. --

The conceptual  
framework for this  
study suggested  
that effective  
professional  
development would  
improve teacher  
content knowledge  
and improve

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instruction, which would lead to improving teacher efficacy. The results of the professional development determined that teacher efficacy improved but was not statistically significant, while



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number sense  
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knowledge  
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improved and was statistically significant as measured by the quantitative instruments.

Interviews reflected that teachers improved vocabulary,

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became more comfortable and confident with the math skills they were previously lacking, gained knowledge behind the “hows” and “whys” of mathematics topics they struggled to teach, and felt that

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they were able to support the students more in their classrooms; thus, participants reflected that the Math Foundations professional development had an impact on their mathematical self-efficacy.

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"This study examined the relationship between elementary teachers' mathematical knowledge for teaching (MKT) and their self-efficacy for teaching

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mathematics. Self-  
efficacy and MKT  
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are of high

importance with  
implications in  
regards to quality  
of instruction and  
the Common Core  
State Standards for  
mathematics.

Using the Content  
Knowledge for

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Teaching  
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(M) instrument, data for this study were collected from thirty-five elementary school teachers participating in the Improving Teachers' Monitoring of Learning Grant at

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the time. The data were concerned with these teachers' self-efficacy with the pedagogy and content of mathematics using the Self-Efficacy for Teaching Mathematics Instrument

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(SETMI).  
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Qualitative data were collected pertaining to teachers' perceptions of the positive influences and challenges of implementing the Common Core State Standards into their



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classroom. A correlational analysis was run with the data collected from the survey to test for a relationship between the two self-efficacy constructs and the MKT. The results indicated no

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statistically significant relationship between either of the two self-efficacy constructs and participants' MKT. The qualitative data responses revealed the themes of training and

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support as positive influences, while curriculum and time demands were seen as the major challenges. Further research should be conducted to continue examining the relationship between self-efficacy and MKT

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using a larger,  
random sample to  
help gain a more  
true representation  
of the larger  
population."--Boise  
State University  
ScholarWorks.

ABSTRACT:  
Community  
colleges are faced  
with increasing

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numbers of students who are unprepared to complete and receive passing grades for college-level coursework. Mathematics is one subject area in which many students often require

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remediation.

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Researchers have discussed remedial mathematics in community colleges as it relates separately to mathematical domain knowledge. However, there are no studies which examine how the

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relationships  
between and  
among attitudes  
toward  
mathematics, self-  
efficacy beliefs,  
and attributions for  
achievement  
influence students'  
acquisition of  
mathematical  
domain knowledge.

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The findings of this study showed that attitudes toward mathematics, self-efficacy beliefs, and attributions for achievement influenced mathematical domain knowledge acquisition among four students.



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The goal of this book is to bring together the concept of self-efficacy theory with practical how-to strategies for both teachers and parents to use in heightening their students' levels of self-efficacy. The

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book examines how self-efficacy theory relates to the acquisition of mathematical competence. The text also provides specific and practical how-to strategies for both teachers and parents in applying

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these principles to  
classroom  
mathematics  
instruction and  
activities. The self-  
efficacy practices  
and applications to  
mathematics are  
also suitable for  
families working  
with learners  
outside the school

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environment.

Acquiring mathematical skills requires more than knowing arithmetic tables, memorizing rules, and knowing proofs. It requires a basic belief that one is capable of obtaining this information,

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making sense of it, and applying and generalizing it in mathematical problems. In addition, a student must believe that obtaining these skills leads to a positive outcome, whether it is perceived to be a

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good or passing grade, comfort-level in tackling mathematical problems, being able to advance to the next mathematics course, being able to score highly on the math section of the SAT and/or be

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competitive for a desired job. The ability of students to achieve and exceed grade level competence in mathematics is addressed through the lens of Albert Bandura's Self-Efficacy Theory. This theoretical

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position states that one will persist in mastering a behavior (in this case, mastering mathematical principles and skills), in the face of obstacles or failures—to the extent that one believes he or she



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has the ability to do  
so, and that there  
is a desired

outcome for doing

so. The research

literature on the

role of self-efficacy

in mathematic

instruction is

examined to

demonstrate the

validity of using this

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concept to increase  
student (and  
parent/teacher)  
confidence in  
learning and  
applying grade-  
appropriate math  
content. Specific  
teaching  
methodologies will  
be provided that  
infuse self-efficacy

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strategies for  
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students. Lastly,  
teachers and

parents are  
provided strategies  
to increase their  
own self-efficacy  
when it comes to  
conveying  
mathematics  
principles to their  
child or student, as

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well as strategies to assess their students' level of self-efficacy over time. Teaching and learning mathematics so that students achieve success at their grade level or above can present a variety of

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challenges. One barrier that affects learners is the belief that one is not capable of learning mathematics or not naturally talented in the field, not a “math person.” As a result, learners may not believe

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they are capable of a positive outcome for achieving mathematics success. This book is an important resource for pre-service and in-service teachers, as well as families in applying the theory of self-

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efficacy to support learners in becoming confident and assured in their ability to understand and apply mathematical principles and procedures.

Coupled with classroom ready mathematics

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instructional  
strategies, the  
book provides  
readers with the  
background, tools  
and strategies  
needed to carry  
content success  
and confidence  
forward to remain  
persistent in  
solving all future



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mathematical  
problems.  
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Self-Efficacy in  
Changing Societies  
A Correlational  
Study  
The Differences in  
Mathematics Self-  
efficacy Scores  
Between Military  
Dependent  
Students and

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General Population  
Mathematical  
Students  
Problem Solving  
Attitudes, Beliefs,  
Motivation and  
Identity in  
Mathematics  
Education  
Identifying Factors  
Common Among  
Students who Do  
Not Fit the Typical  
Mathematics Self-

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efficacy and  
Achievement  
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Correlation

Learning  
Mathematics  
Successfully

*One purpose of this study was to determine if students in a non-traditional developmental mathematics course improved on five*

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*developmental  
mathematics  
nonsocial factors—math  
equanimity, math  
mindset, math self-  
efficacy, math  
belongingness, and  
college belongingness  
—believed to be  
relevant to student  
success. I also  
examined if changes  
in these factors*

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*predicted course achievement. Another purpose was to explore whether or not Foundations students would transfer their knowledge to place value problems involving varied bases and contexts. A final purpose was to investigate the utility of then-surveys that retrospectively*

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*measure participants'  
pre-intervention  
nonscognitive factors.*

*In response to policy pressures to increase completion rates, community colleges are experimenting with research-based strategies that create demand for learning, increase students' competence valuation, and improve their*

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*productive  
persistence. The New  
Mathways Project's  
Foundations of  
Mathematical  
Reasoning course is  
built around one such  
strategy. In this  
exploratory study (N =  
597), I investigated  
the impact of using  
Foundations on the  
development of  
students' noncognitive*

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*factors and on  
mathematical  
success. My student  
measures included:  
pre-post-then-surveys  
of noncognitive  
factors, math course  
grades, math final  
exam grades, percent  
attendance, a place  
value assessment of  
transfer, and one-on-  
one interviews. I used  
multilevel models to*



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*analyze my quantitative research questions and created evidence markers for qualitative analysis of the transfer assessment. I conducted interviews to provide additional insight. Students significantly improved their math equanimity, but had stable, mid-range scores on the*

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*other factors. Positive changes in math self-efficacy and low initial math equanimity were associated with higher grades. Pre-surveys of equanimity may be more accurate than then-surveys, but pre-surveys of math mindset, math self-efficacy, and math belongingness may be interchangeable with*

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*then-surveys. Contrary to popular findings, the then-surveys did not provide larger estimates of program effects than pre-surveys. Overall, students evidenced minimal transfer. Interviewees exhibited greater changes in noncognitive factors and evidenced more transfer than other*

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*students. This study provides valuable information for the potential users of the NMP materials. It contributes to, and points out complications with, transfer research. Lastly, it adds to research on retrospective measures, which are rarely used in*

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mathematics  
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education research.

*Elementary students' self-efficacy and attitudes towards mathematics can be challenging to measure. Bandura (1997) describes perceived self-efficacy as "not a measure of the skills one has but a belief about what one can do under*

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*different sets of conditions with whatever skills one possesses" (p. 37).*

*Attitudes in the educational setting represent a desired outcome relative to a specific target (McCoach, Gable, & Madura, 2013).*

*Efficacy and attitudes continue to influence educational*

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*attainments (Bandura, 1997). This sequential mixed-methods study explored grade 5 students' mathematical self-efficacy and enjoyment, after implementing a 10-week journal writing treatment. The research questions were: 1. Is there a difference between*

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*students exposed to journal writing and not exposed, after controlling for initial differences on the pre-test, with respect to: mathematical self-efficacy and enjoyment? 2. Is there a difference between male and female students, after controlling for initial differences on the pre-*



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*test, with respect to:  
mathematical self-  
efficacy and  
enjoyment? 3. Is there  
an interaction  
between gender and  
treatment group, after  
controlling for initial  
differences on the pre-  
test, with respect to:  
mathematical self-  
efficacy and  
enjoyment? 4. How do  
grade 5 students in*

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*the treatment group  
respond to journal  
writing prompts  
regarding  
affective/attitudinal  
and dispositions in the  
content of  
mathematics? 5. In  
what ways are gender  
perspectives revealed  
through the journal  
writing responses?  
The instrument was  
administered to grade*

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*5 participants in the journal writing treatment group (N=79) at one elementary school and the comparison group (N=51) from a comparable elementary school in the same district who were not exposed to the treatment. Two 2-way ANCOVAs revealed no significant*

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*differences (p  
This study examined  
mathematics self-  
efficacy and the  
characteristics of flow  
in the context of  
performing  
mathematical tasks. In  
particular, it explored  
the subjective  
experiences of 113  
undergraduate  
students enrolled in a  
developmental*

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*mathematics course  
while they were  
independently solving  
certain mathematical  
problems. This study  
supplemented the  
literature on the role of  
self-efficacy as a  
mediator of the effect  
of the challenge/skill  
ratio on flow by  
applying it to the  
context of  
mathematical problem*

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*solving. This study also expanded the discussion on how findings may indicate a direction for further research on mathematics anxiety. Additionally, the relationship between mathematics self-efficacy and flow-like experiences as measured by the Flow Short Scale was*

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*considered.*

*The purpose of this study was to explore the relationship between mathematical self-efficacy and mindset of developmental mathematics students. It also looked to concur with previous research findings showing students' mindsets can change*

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*through intervention.*  
Mathematical  
Problem Solving  
Effects of  
Mathematical Anxiety  
and Self-efficacy on  
Mathematics  
Achievement  
An Intervention to  
Enhance Mathematics  
Self-efficacy and  
Achievement of First  
and Second Semester  
College Students



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*An Examination of  
Predictors of  
Mathematical  
Problem Solving  
Achievement in  
Secondary  
Mathematics Students  
Establishing Growth  
Mindset Teaching  
Practices as Part of  
the Third Grade Math  
Curriculum to  
Increase Math Self-  
efficacy, Math Mindset  
and Student*

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Self Efficacy And  
*Achievement  
Mathematics,  
Reading, Science and  
Problem Solving  
Knowledge and Skills*  
Mathematical  
anxiety is a feeling  
of tension,  
apprehension or  
fear which arises  
when a person is  
faced with  
mathematical

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content. The negative consequences of mathematical anxiety are well-documented. Students with high levels of mathematical anxiety might underperform in important test situations, they tend

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to hold negative attitudes towards mathematics, and they are likely to opt out of elective mathematics courses, which also affects their career opportunities.

Although at the university level many students do not continue to

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study mathematics,  
social science  
students are  
confronted with the  
fact that their  
disciplines involve  
learning about  
statistics - another  
potential source of  
anxiety for students  
who are  
uncomfortable with  
dealing with

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numerical content.  
Research on  
mathematical

anxiety is a truly  
interdisciplinary field  
with contributions  
from educational,  
developmental,  
cognitive, social and  
neuroscience  
researchers. The  
current collection of  
papers

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demonstrates the diversity of the field, offering both new empirical contributions and reviews of existing studies. The contributors also outline future directions for this line of research. This study compared the

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effectiveness, in terms of mathematical achievement and mathematics self-efficacy, of online homework to textbook homework over an entire semester for 145 students enrolled in multiple sections of college algebra at a



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large community college. A quasi-experimental, posttest design was used to analyze the effect on mathematical achievement, as measured by a final exam. A pretest-posttest design was used to analyze the effect on

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mathematics self-efficacy, as measured by the Mathematics Self-efficacy Scale. The control group completed their homework using the textbook and the treatment group completed similar homework using an online homework

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system developed by the textbook publisher. All class sections followed a common syllabus, schedule, and homework list and completed a common, departmental final exam. Classroom observations were also used as a way

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to establish the similarity between groups. The results of the study found that while the treatment group generally scored higher on the final exam, no significant difference existed between the mathematical achievement of the

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control and treatment groups. Both the control and treatment group did experience significant improvements in their mathematics self-efficacy, but neither group demonstrated more improvement than the other. When

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students were divided based on incoming math skill level, analysis showed that low-skilled students who used online homework exhibited significantly higher mathematical achievement than low-skilled students who used textbook

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homework.

Exploratory analysis also showed that more students with low incoming skill levels and more repeating students received a passing grade when using online homework than did their higher-skilled, first-time counterparts,

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although the differences were not significant. Based on this study it appears as if online homework is just as effective as textbook homework in helping students learn college algebra and in improving students' mathematics self-



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efficacy. Online homework may be even more effective for helping the large population of college algebra students who enroll in the course with inadequate prerequisite math skills. Instructors and researchers should consider the

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possibility that  
online homework  
can successfully  
help certain  
populations of  
students develop  
understanding  
better than  
traditional  
approaches. This  
study has  
implications for  
mathematics

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instructors and for  
online homework  
system developers.

The United States  
has now been  
engaged in war for  
fourteen years, the  
longest war in  
American history. A  
war like this has  
created an  
atmosphere of  
extended

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deployments for members of the military resulting in separation from their family.

Deployments can affect many areas of family life, and the child's academics is one such area. A student's success often depends on his/her confidence,

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or “self-efficacy”, in academics. This can be affected by the inconsistencies of military life, such as constantly moving and transferring schools, which can shake that confidence causing him or her to struggle academically. The

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purpose of this study was to examine the mathematics self-efficacy of military dependent students and compare the results to the general student population. The Mathematics Self-Efficacy Scale (MSES) was used to

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quantify the results and a multivariate analysis of variance (MANOVA) was run to determine the areas of significance of the subscales and overall mathematics self-efficacy. The study was a quantitative, causal-comparative design comparing

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200 students - 100 military dependent and 100 general population - comparing each population's total mathematics self-efficacy, mathematical task self-efficacy, and math-related school subjects self-efficacy. The results



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are intended to determine whether, in this population, the military dependent students show a greater amount of self-efficacy than the general population. According to the results of the One-Way MANOVA, military dependent

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students did show a greater mathematics self-efficacy than general population students. Since the One-Way MANOVA showed a significant difference, one-way ANOVAS were run and the only significance found was that military dependent students

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were higher than the general population in math task self-efficacy.

This fourth volume of PISA 2012 results examines how student performance is associated with various characteristics of individual schools

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and school systems.  
Mathematical  
The Relationship  
Problem Solving  
Between  
Elementary  
Teachers' Self-  
efficacy for  
Teaching  
Mathematics and  
Their Mathematical  
Knowledge for  
Teaching  
Mathematical  
Motivation Beliefs

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Mindset and  
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efficacy in  
Developmental  
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Students in Higher  
Education  
Domain Knowledge,  
Attitudes, Self-  
efficacy Beliefs, and

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Attributions for  
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Working Together in  
the Community  
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Mathematics  
Classroom  
Mathematics Self-  
Efficacy and Flow in  
Developmental  
Mathematics  
Students  
An Examination of

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Elementary Math  
Anxiety, Self-  
efficacy, and  
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Academic

Achievement

This book records the state of the art in research on mathematics-related affect. It discusses the concepts and

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theories of mathematics-related affect along the lines of three dimensions. The first dimension identifies three broad categories of affect: motivation, emotions, and beliefs. The book



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contains one chapter on motivation, including discussions on how emotions and beliefs relate to motivation. There are two chapters that focus on beliefs and a chapter on

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attitude which  
cross-cuts  
through all these  
categories. The  
second dimension  
covers a rapidly  
fluctuating state  
to a more stable  
trait. All chapters  
in the book focus  
on trait-type  
affect and the

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chapter on  
motivation  
discusses both  
these dimensions.  
The third  
dimension  
regards the three  
main levels of  
theorizing:  
physiological  
(embodied),  
psychological

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(individual) and social. All chapters reflect that mathematics-related affect has mainly been studied using psychological theories.

The introduction of the psychological

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construct of self-efficacy is widely acknowledged as one of the most important developments in the history of psychology.

Today, it is simply not possible to explain phenomena such

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as human  
motivation,  
learning, self-  
regulation, and  
accomplishment  
without  
discussing the  
role played by self-  
efficacy beliefs. In  
this, the fifth  
volume of our  
series on

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adolescence and education, we focus on the self-efficacy beliefs of adolescents. We are proud and fortunate to be able to bring together the most prominent voices in the study of self-efficacy, including

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that of the Father  
Mathematical  
of Social  
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Cognitive Theory  
and of self-  
efficacy, Professor  
Albert Bandura. It  
is our hope, and  
our expectation,  
that this volume  
will become  
required reading  
for all students



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and scholars in the areas of adolescence and of motivation and, of course, for all who play a pivotal role in the education and care of youth. The PISA 2009 Technical Report describes the

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methodology  
Mathematical  
underlying the  
Problem Solving  
PISA 2009 survey.  
It examines  
additional  
features related to  
the  
implementation of  
the project at a  
level of detail that  
allows  
researchers to

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understand and  
replicate its  
analysis.

Previous research  
has shown that  
mathematical self-  
efficacy is  
positively  
correlated with  
mathematical  
performance  
level. However, in

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elementary  
classroom  
settings, teachers  
noticed that  
students with  
high  
mathematical self-  
efficacy had low  
mathematical  
performance  
level. On the  
other end of the

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spectrum, there are students who have low mathematical self-efficacy yet excel in mathematics. Discovering what factors are common among these two types of students can aid teachers in

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helping these students improve their self-efficacy and mathematics performance. This explanatory mixed-methods design was conducted in a K-6 elementary school with the research participants

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consisting of  
fourth-, fifth-, and  
sixth-grade

students. The first  
of two research  
phases included  
assessing  
students'09  
mathematical  
performance level  
and mathematical  
self-efficacy.

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Utilizing the criteria of high or low performance in correlation to high or low self-efficacy, the students were placed into one of four categories; high performance/high self-efficacy (High



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P/High SE), low performance/low self-efficacy (Low P/Low SE), high performance/low self-efficacy (High P/Low SE), and low performance/high self-efficacy (Low P/High SE). Phase II of the research

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included  
interviewing the  
top two students  
from the High  
P/High SE group  
and the bottom  
two from the Low  
P/Low SE group  
as well as all of  
the students in  
the High P/Low  
SE and the Low

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P/High SE groups.  
After the  
interviews were  
analyzed, the  
researcher  
identified the  
factors that are  
common to the  
High P/Low SE  
and Low P/High  
SE groups that  
were not found in

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the High P/High SE or Low P/Low SE groups. Some examples of these factors for students with High P/Low SE included feelings of jealousy, not feeling smart even when the math is easy, and not

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feeling  
Mathematical  
encouraged by  
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teachers and

parents. Examples  
of these factors  
for students with  
Low P/High SE  
included  
preferring  
completing  
assignments in a  
group and giving

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up when the mathematics gets difficult. The potential implications of this research may be used in elementary classrooms to help teachers identify outlier students as well

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as help students better align their self-efficacy with their achievement level. The intended audience of this research was elementary mathematics teachers.

Beliefs: A Hidden Variable in

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Mathematics  
Education?  
Teacher Self-  
efficacy,  
Instructional  
Practices, and  
Student  
Achievement in  
Mathematics  
Gender, Self-  
efficacy, and  
Mathematical



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Self Efficacy And  
Achievement : an  
Mathematical  
Problem Solving  
Analysis of Fourth  
Grade and Eighth  
Grade TIMSS  
Data from the  
United States  
Raising Self-  
Efficacy in  
Students,  
Teachers and  
Parents  
A Naturalistic

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Self Efficacy And

Inquiry Into the

Attitudes Toward

Mathematics and

Mathematics Self-

efficacy Beliefs of

Middle School

Students

The Impact of a

Math Foundations

Course on

Teachers'

Mathematical Self-

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Self Efficacy And  
efficacy

***This study investigated the relationship between the actual mathematical ability and the perceived mathematical ability among preservice elementary***

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***teachers with  
low levels of  
mathematics  
self-efficacy. In  
addition, this  
study  
investigated  
how preservice  
elementary  
teachers with  
low levels of  
mathematics  
self-efficacy***

***describe their mathematical ability and how it could affect their teaching effectiveness when they enter the classroom. Participants included 42 elementary preservice elementary***

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Mathematical  
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***teachers in a  
Great Lakes  
state during  
their  
mathematics  
methods  
course. Of the  
42 elementary  
preservice  
teachers who  
participated in  
the study, 14  
were self-***

***identified as  
having low  
levels of self-  
efficacy with  
varying levels of  
mathematical  
ability. Six of  
the 14 agreed  
to be  
interviewed to  
gain a deeper  
understanding  
of their***

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Self Efficacy And  
**mathematical  
ability and their  
beliefs on being  
an effective  
mathematics  
teacher. Data  
sources  
included the  
self-revised  
Mathematics  
Confidence  
Scale and  
clinical**



Self Efficacy And  
**interviews. The**

**results**

**concerning**

**actual**

**mathematical**

**ability versus**

**perceived**

**ability were**

**mixed. Also, the**

**understanding**

**of fractions,**

**proportions,**

**and ratios**

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Self Efficacy And  
***continue to be  
viewed as  
difficult topics.***

***Findings  
revealed that  
the preservice  
elementary  
teachers with  
low-levels of  
mathematics  
self-efficacy  
believe they will  
be effective***

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Self Efficacy And  
**mathematics  
teachers when  
they enter the  
classroom, but  
only after time  
and much  
effort. In  
addition, these  
same preservice  
elementary  
teachers stated  
that they had  
negative**

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Self Efficacy And  
**experience**  
**during their**  
**elementary**  
**school years.**  
**Therefore, it**  
**can be**  
**generalized**  
**that there are,**  
**and potentially**  
**will be, novice**  
**elementary**  
**teachers that**  
**will enter the**

*Self Efficacy And  
Mathematical  
Problem Solving*

***classroom with  
(a) low levels of  
self-efficacy, (b)  
a lack of  
mathematical  
content  
knowledge, and  
(c) a lack of  
awareness of  
what their  
negative  
experiences  
during their***

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Self Efficacy And  
**elementary  
years could  
potentially do  
to their future  
students.**

**This mixed-  
methods  
research  
examined  
teacher self-  
efficacy in  
mathematics  
and the use of**

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Self Efficacy And  
**specific  
mathematical  
instructional  
practices in  
Grades 3-5  
classrooms. The  
purpose was to  
examine the  
relationships  
among teacher  
self-efficacy of  
teaching  
mathematics,**

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***the use of  
specific  
mathematical  
instructional  
practices, and  
student  
achievement as  
measured by  
the North  
Carolina end-of-  
grade test.  
According to  
the National***



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Self Efficacy And  
**Mathematics  
Advisory Panel  
(2008),**

***differences in  
students'  
mathematical  
achievement  
are credited to  
differences in  
teacher  
characteristics  
including their  
self-efficacy in***

***teaching and use of specific instructional practices. The study sought to add to the research behind that finding. -- Correlational relationships among the variables were studied. The***

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Self Efficacy And  
**outcome**  
**variable was**  
**student**  
**achievement as**  
**measured by**  
**the end-of-**  
**grade**  
**mathematics**  
**test. The two**  
**outcomes**  
**variables were**  
**teacher self-**  
**efficacy of**

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Self Efficacy And  
***teaching  
mathematics as  
measured by  
the Self-  
Efficacy for  
Teaching  
Mathematics  
Instrument and  
the use of  
mathematical  
instructional  
practices as  
measured by***

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Self Efficacy And  
*the Teachers'*  
*Instructional*  
*Practices*

*Survey.*

*Descriptive*  
*analysis,*

*Pearson*

*correlations,*

*and multiple*

*regression*

*analysis were*

*used to analyze*

*the quantitative*

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Self Efficacy And  
**data.**

**Qualitative data  
were gathered  
through teacher  
interviews. The  
notes from  
these interviews  
were reviewed  
for themes and  
then compared  
to the  
quantitative  
data. -- This**

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Mathematical  
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***study yielded strong to moderate correlations between teacher self-efficacy and the six measured mathematical instructional practices. Upon further analysis, the***

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Self Efficacy And  
**study found  
strong  
correlations  
between  
teacher self-  
efficacy for  
pedagogy in  
mathematics  
and each of the  
following  
mathematical  
instructional  
practices:**



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Mathematical  
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***cooperative learning; communication and study skills; problem-based learning; and manipulatives, models, and multiple representations . However, correlations between the***

***frequency of  
the measured  
mathematical  
instructional  
practices and  
study  
achievement  
were not  
established.  
Weak  
correlations  
were found  
between***

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Mathematical  
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***student  
achievement  
and teacher self-  
efficacy in  
mathematics.  
Additionally,  
the study found  
that teacher  
self-efficacy  
was statistically  
significant to  
the prediction  
of student***

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Mathematical  
Problem Solving

***achievement as  
defined by  
student scale  
scores on the  
end-of-grade  
mathematics  
assessment.***

***Learning  
Mathematics Su  
ccessfully Raisin  
g Self-Efficacy  
in Students,  
Teachers and P***

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Self Efficacy And  
**Parents Information  
on Age  
Publishing  
The PISA 2003  
Assessment  
Framework  
presents the  
conceptual  
underpinning of  
the PISA 2003  
assessments.  
Within each  
assessment**

***area, the volume defines the content that students need to acquire, the processes that need to be performed and the contexts in which knowledge and skills are applied.***

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Self-Efficacy And  
***Believe and  
Achieve  
Mathematics  
Enrolment  
Intention,  
STEM and  
Career Choice  
Mathematical  
Self-Efficacy in  
High School  
Tracked  
Classrooms  
The***

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Self Efficacy And  
***Relationship  
Among  
Mathematical  
Problem Solving  
Anxiety,  
Mathematical  
Self-efficacy,  
Mathematical  
Teaching Self-  
efficacy, and  
the  
Instructional  
Practices of  
Elementary***



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**School  
Teachers  
A Case Study  
Exploring the  
Ways Preservice  
Elementary  
Teachers with  
Low Levels of  
Mathematics  
Self-efficacy  
Believe Their  
Mathematical  
Ability Will**

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***Affect Their  
Teaching  
Effectiveness  
PISA 2012  
Results: What  
Makes Schools  
Successful  
(Volume IV)  
Resources,  
Policies and  
Practices  
Abstract: The***

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purpose of this mixed method study was to explore the relationships among the variables of mathematics self-efficacy, mathematics teaching self-efficacy, and

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procedurally or conceptually-oriented teaching methods. The study included 75 practicing elementary teachers who teach mathematics as well as other subjects. These

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teachers  
completed the  
Mathematics  
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Teaching and  
Mathematics Self-  
Efficacy survey,  
designed as part  
of the study and  
based on the  
Mathematics Self-  
Efficacy Scale -  
Revised (MSES-R)

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and the  
Mathematical  
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Teaching Efficacy  
Beliefs Instrument  
(MTEBI). Sixteen  
of the teachers  
also participated  
in an interview  
probing teaching  
methods for two  
mathematics  
topics the

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teachers believed they are most confident or least confident teaching.

Interviews were assessed using the Conceptually and Procedurally Oriented Teaching Method Frequency Chart, designed as

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part of the study. Quantitative data analysis methods include descriptive statistics, Pearsons Product Moment correlation, and chi-square tests. Qualitative data analysis includes



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case study  
anecdotes for two  
of the interviewed  
teachers. Results  
indicate a strong  
relationship  
between  
mathematics self-  
efficacy and  
mathematics  
teaching self-  
efficacy and

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suggest that mathematics self-efficacy may be a precursor to mathematics teaching self-efficacy.

Additionally, results indicate that when teaching their most confident

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mathematics topic

teachers are more

likely to use

conceptually

oriented teaching

methods and

when teaching

their least

confident

mathematics topic

teachers are more

likely to use

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Self Efficacy And  
procedurally  
oriented teaching  
methods. This

study offers  
findings to  
mathematics  
teacher educators  
and elementary  
mathematics  
teachers about  
the importance of  
developing

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mathematics self-  
efficacy and  
mathematics  
teaching self-  
efficacy because  
of their  
relationship to  
teachers choices  
of instructional  
methods.

Additionally the  
two instruments

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developed in the study will help future researchers assess these variables.

This mixed methods action research dissertation examines the effects of implementing

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growth mindset  
Mathematical  
teaching practices  
Problem Solving  
in third grade  
math as a means  
to improve  
student math self-  
efficacy, math  
mindset and  
student  
achievement.  
Since the  
transition to the

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Pennsylvania Core  
Mathematical  
Standards,  
Problem Solving  
students across  
the state including  
those in this  
district have been  
experiencing a  
decrease in math  
achievement in  
grades three  
through eight  
according to the



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Pennsylvania  
Mathematical  
System of School  
Problem Solving  
Assessment

(PSSA) the  
standardized  
achievement test  
all public school  
students take.

Locally, traditional  
interventions such  
as worksheets,  
boxed programs,

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computer-based programs and extra practice have not yielded gains so this intervention focused on developing growth mindset teaching practices in math to answer four research

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Self Efficacy And

questions. Framed  
in Dweck's Implicit

Theories of

Personal

Attributes (1995),

Bandura's

description of self-  
efficacy (1997)

and Hall and

Hords' work with

teachers in

bridging research

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Self Efficacy And  
into practice  
Mathematical  
(2011), this study  
Problem Solving  
used Jo Boaler's,  
Mathematical  
Mindset (2015) in  
a book study with  
the third-grade  
teachers. The  
dissertation study  
analyzed pre and  
post survey data  
from the third-

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grade class  
( $n=57$ ) on both  
mindset and self-  
efficacy. The  
study also  
analyzed pre and  
post survey data  
from the teachers  
( $n=2$ ) on mindset  
along with pre and  
post intervention  
interviews with

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the teachers.  
Qualitative and  
quantitative data  
analysis revealed  
the intervention  
had a positive  
effect on teacher  
mindsets and  
practices, a  
positive effect on  
student mindsets  
and a positive

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effect on student  
math self-efficacy.  
While the study  
did not reveal the  
intervention to  
have a positive  
impact on student  
achievement at  
this time, previous  
research included  
in the literature  
review cites

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improvement in  
student  
achievement  
through  
developing growth  
mindset thinking.  
This gives reason  
to predict that  
with more time,  
these students will  
experience  
improved



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achievement in math. Implications from this study include that we should train all math teachers in incorporating growth mindset practices, and that administrators should build the bridge between

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research and practice for teachers as they implement new teaching practices in effort to positively affect student performance.

The twenty chapters in this book all focus on

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aspects of mathematical beliefs, from a variety of different perspectives.

Current knowledge of the field is synthesized and existing boundaries are extended. The

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book is divided into three, partly overlapping, sections. The first concentrates on conceptualizations and measurement of beliefs, the second on research about teachers' beliefs, and the third on

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facets of students' beliefs about mathematics. A diversity of instruments is used for data collection, including surveys, interviews, observations, and essay writing, as well as more

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innovative  
Mathematical  
approaches. The  
Problem Solving  
volume is

intended for  
researchers in the  
field, as well as for  
mathematics  
educators  
teaching the next  
generation of  
students. The  
book is also useful

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for those working in other subject disciplines, since many of the themes explored have relevance well beyond mathematics education.

Females consistently score lower than males

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on standardized tests of mathematics - yet no such differences exist in the classroom. These differences are not trivial, nor are they insignificant. Test scores help determine



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entrance to college and graduate school and therefore, by extension, a person's job and future success. If females receive lower test scores then they also receive fewer opportunities.

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Why does this discrepancy exist?  
This book presents a series of papers that address these issues by integrating the latest research findings and theories. Authors such as Diane

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Halpern,  
Jacquelynn  
Eccles, Beth  
Casey, Ronald  
Nuttal, James  
Byrnes, and Frank  
Pajares tackle  
these questions  
from a variety of  
perspectives.  
Many different  
branches of

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psychology are represented, including cognitive, social, personality/self-oriented, and psychobiological. The editors then present an integrative chapter that discusses the

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ideas presented  
and other areas  
that the field  
should explore.  
An Integrative  
Psychological  
Approach  
Mathematical and  
Statistics Anxiety:  
Educational,  
Social,  
Developmental

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Self Efficacy And  
and Cognitive  
Mathematical  
Perspectives  
Problem Solving  
Resources,  
Policies and  
Practices