LIFE OF A MET GRANT: SPACE FOR PROGRESSIVE MATH PEDAGOGY

DR. JOHNNY W. LOTT
MATHEMATICS EDUCATION TRUST (MET) BOARD OF TRUSTEES

DR. JOEL AMIDON
UNIVERSITY OF MISSISSIPPI

VIRGE CORNELIUS
MORGAN TREVATHAN
LAFAYETTE HIGH SCHOOL, OXFORD, MS
MET’S MISSION STATEMENT

The Mathematics Education Trust channels the generosity of contributors through the creation and funding of grants, awards, honors, and other projects that support the improvement of mathematics teaching and learning.
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HOW MET WORKS TO ACHIEVE ITS MISSION

SUPPORTING MATHEMATICS EDUCATORS
HOW MET WORKS TO ACHIEVE ITS MISSION

REACHING STUDENTS
HOW MET WORKS TO ACHIEVE ITS MISSION

BUILDING THE FUTURE
How do we do it?
A MET GRANT EXAMPLE
7-12 CLASSROOM RESEARCH GRANT

Awardees

Joel Amidon,
University of Mississippi

Virge Cornelius
Morgan Trevathan
Lafayette High School, Oxford, MS
7-12 CLASSROOM RESEARCH GRANT

Purpose of this grant is to support and encourage classroom-based research in precollege mathematics education

Research must be a collaborative effort
Possible Research

- Curriculum development/implementation
- Involvement of at-risk or minority students
- Students' thinking about a particular math concept or set of concepts
- Connection of mathematics to other disciplines
- Focused learning and teaching of math with embedded use of technology
- Innovative assessment or evaluation strategies
MET GRANT APPLICATIONS

• Due twice per year
  • First week of May
  • First week of November

• Typically for one year of work
• Applications are brief
• Funding within two months

• Go to http://www.nctm.org/Grants/
A MET GRANT EXAMPLE
7-12 CLASSROOM RESEARCH GRANT
A MET Grant Example

7-12 Classroom Research Grant

Creating Space for Advancing the Progressive Teaching of Mathematics
SPACE
the freedom and scope to live, think, and develop...
MOTIVATION
the long haul
an autobiography

myles horton
with judith kohl & herbert kohl
the long haul
an autobiography

radical equations

Civil Rights from Mississippi
to the Algebra Project

Robert P. Moses

Robert Moses is the towering activist/intellectual of his generation—a grassroots freedom fighter of quiet dignity and incredible determination.” — Cornel West
RESEARCH QUESTIONS
RESEARCH QUESTIONS

What does it look like to create space for teachers to advance their teaching practice given the pressures of high-stakes testing?
RESEARCH QUESTIONS

What does it look like to create space for teachers to advance their teaching practice given the pressures of high-stakes testing?
How do teachers choose to improve their practice?
RESEARCH QUESTIONS

What does it look like to create space for teachers to advance their teaching practice given the pressures of high-stakes testing?
How do teachers choose to improve their practice?
How do you sustain professional learning?
FRAMEWORK
Teacher

Mathematics

Students

Teacher
“Teaching actions proceed simultaneously in relations with students, with content, and with the connection between students and content...” (Lampert, 2001 p.33)
“Teaching actions proceed simultaneously in relations with students, with content, and with the connection between students and content...” (Lampert, 2001 p.33)
“Teaching actions proceed simultaneously in relations with students, with content, and with the connection between students and content...” (Lampert, 2001, p.33)
“Teaching actions proceed simultaneously in relations with students, with content, and with the connection between students and content...” (Lampert, 2001 p.33)
Mathematics

Teacher

Process & Product

A+ Facebook

Students
Teaching Mathematics as Agape: Responding to Oppression with Unconditional Love

Joel Amidon
University of Mississippi

In this essay, encouraged by the critical examination of mathematics education and mathematics teacher education at the Privilege and Oppression in the Mathematics Preparation of Teacher Educators Conference, the author asks the question: What do I do from a position of power and privilege to interrupt oppression and enable everyone the opportunity and expectation of success in mathematics and life? The author proposes a response with agape (pronounced ägäpä), or unconditional love. Starting with the question What would it mean to teach mathematics as an act of unconditional love? the author theorizes an ideal relationship between students and mathematics that is functional, communal, critical, and inspirational, generated from wanting to teach mathematics as agape.

KEYWORDS: equity pedagogy, mathematics education

My decision to pursue a career in mathematics education was immediately affirmed by the images of all my white, middle-class, male, mathematics teachers who looked just like me, even down to the thick-rimmed glasses, and the occasional use of a pocket protector. Given that inequity exists in the world, there is no denying that I am sitting on the side of privilege. In response to this realization and encouraged by the critical examination of mathematics education and mathematics teacher education at the Privilege and Oppression in the Mathematics Preparation of Teacher Educators (PrOMPTE) conference, I ask the question: What do I do from this position of power and privilege as a mathematics teacher, researcher, and teacher educator to interrupt oppression and enable everyone the opportunity and expectation of success in mathematics and in life? In this essay, I propose to respond with agape (pronounced ägäpä), or unconditional love. I theorize an ideal relationship between students and mathematics that is functional, communal, critical, and inspirational, starting with the question: What would it mean to teach mathematics as an act of unconditional love?

1 Privilege and Oppression in the Mathematics Preparation of Teacher Educators (PrOMPTE) conference (funded by CREATE for STEM Institute through the Lappan-Phillips-Fitzgerald CMP 2 Innovation Grant program), Michigan State University, Battle Creek, MI, October 2012. Any opinions, findings, and conclusions or recommendations expressed herein are those of the authors and do not necessarily reflect the views of the funding agency.

Joel Amidon is an assistant professor in the Department of Teacher Education at the University of Mississippi, P.O. Box 1848, University, MS 38677; email: jcamidon@olemiss.edu. His research interests include advancing theories of teaching and learning and the improvement of mathematics pedagogy to address issues of equity and diversity.
Mathematics --> Process & Product --> Teacher

Teacher --> Process & Product --> Students

Mathematics --> Students
METHODS
Setting

METHODS
METHODS

Setting Rural High School
METHODS

Setting

Participants
METHODS

Setting

Participants

Virge
METHODS

Setting
Participants

Virge
Jennifer
METHODS

Setting

Participants

Virge
Morgan
METHODS

Setting

Participants

Virge Morgan Myself
METHODS

Setting

Participants

Virge
Morgan
Myself
Graduate Assistant
METHODS

Setting
Participants
Data Generation
METHODS

Setting

Participants

Data Generation
METHODS

Setting

Participants

Data Generation

Observations
METHODS

Setting
Participants
Data Generation

Observations
Coaching Journal
METHODS

Setting

Participants

Data Generation

Observations

Coaching Journal

Student Work
METHODS

Setting
Participants
Data Generation
Data Analysis
METHODS

Setting
Participants
Data Generation
Data Analysis

Dedoose
METHODS

Setting
Participants
Data Generation
Data Analysis

Dedoose
Cycles of Coding
WHAT HAPPENED
RESEARCH QUESTIONS

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How do you sustain professional learning?
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Mathematics

Process & Product

Virge

Students
Beginning in cell #1, solve the quadratic equation by the indicated method. In each case, to advance in the circuit, you will need to do something with your solutions and then hunt for that answer. Mark the next cell #2 and proceed in this manner until you complete the circuit.

<table>
<thead>
<tr>
<th>Answer: -1.2</th>
<th>Answer: ( \frac{5}{2} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Solve by factoring: ( x^2 - 9 = 0 ).</td>
<td># _____ Solve ( x(x - 1) = 30 ) by factoring.</td>
</tr>
</tbody>
</table>

Now, find the product of your solutions.

<table>
<thead>
<tr>
<th>Answer: 16.75</th>
<th>Answer: 0.7</th>
</tr>
</thead>
<tbody>
<tr>
<td># _____ Solve by the quadratic formula. ( x^2 - 2x = 8 )</td>
<td># _____ Solve by completing the square. To advance in the circuit, hunt for twice the larger root. ( x^2 - 9x + 3 = 0 )</td>
</tr>
</tbody>
</table>

Now, find the smaller answer.

<table>
<thead>
<tr>
<th>Answer: (-\frac{7}{3})</th>
<th>Answer: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td># _____ Solve by factoring ( x^2 - 2x - 8 = 0 ).</td>
<td># _____ Solve by graphing. Sketch the picture! ( 9 - x^2 = -7 )</td>
</tr>
</tbody>
</table>

Now, find the larger of your two solutions.

Now, find the smaller of your answers.
Mathematics

Students

Process & Product

Teacher
RESEARCH QUESTIONS

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Students

Mathematics

Math Circuits

Virge

Students

Mathematics
Students → Mathematics → Groups → Morgan → Students
She said she was puzzled by her 6th period class, and she even said “embarrassed”. She said she didn’t know how to handle the class because they are constantly talking and cannot efficiently deliver material. She was embarrassed by their behavior and didn’t know what to do.
Cooperative Learning
Dr. Spencer Kagan

TEACHING PROBLEMS AND THE PROBLEMS OF TEACHING
MAGDALENE LAMPERT
Mathematics

Groups

Morgan

Students
Math

Student
Student
Student
Student
Teacher
RESEARCH QUESTIONS

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Circuit Task Card

Roles
Team Captain
Ensures that all group members are fulfilling their roles. Ensures that tasks are completed within the given time constraints.
Recorder/Reporter
Ensures that all group members are recording. Ensures that all group members can report out.
Strategy Generator
Ensures that at least two strategies are developed for finding each common solution. Facilitates the finding of additional strategies.
Questioner/Comprehension Manager
Asks questions to ensure all solutions make sense and all group members understand group-generated strategies.

TASK
Complete the circuit by generating multiple strategies for finding the group's solution.

Materials
Envelope with Circuit Tasks Writing Utensil Notebook Paper
Device (as needed)

Directions
1. Pass out all of the cards
2. Write your name on the cards in your possession. The owner of each card is the only one that can touch the card.
3. Have the owner of card #1 share their card with group.
4. Owner of the card is to facilitate the group coming to a common solution using at least 2 different strategies.
5. Record the problem and generated strategies. Make sure everyone understands each strategy.
6. Using the solution, identify the next card and have the owner of the next card share their card with the group.
7. Repeat 4 through 6 until all cards are used up.

End Product
A list of all the problems in the circuit completed using at least two strategies. Everyone in the group should be able to present any of the group-generated solutions.

Extension
Identify the most common strategies used to generate a solution. Identify the least common strategies used to generate a solution. Generate a list of when you would use one strategy over other strategies.

NORMS
Everyone contributes and no one takes over
Everyone records
PRODUCTS

This research should lead to a draft article suitable for submission in the Mathematics Teacher Educator, Journal for Research in Mathematics Education, or in one of the NCTM school journals.
PRODUCTS

Manuscript
PRODUCTS

2 Manuscripts
PRODUCTS

2 Manuscripts
3 Presentations
PRODUCTS

2 Manuscripts
3 Presentations
Technology
PRODUCTS

2 Manuscripts
3 Presentations
Technology
Teaching Resources
Stipends
PRODUCTS

2 Manuscripts
3 Presentations
Technology
Teaching Resources
Stipends
Pilot Study
PRODUCTS

2 Manuscripts
3 Presentations
Technology
Teaching Resources
Stipends
Pilot Study
Relationships
PRODUCTS

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Stipends
Pilot Study
Relationships
Clinical Instructors
APPLY!
APPLY!

http://www.nctm.org/grants/

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