an

AMIDON PLANET

production

Creating Space to Support the Progressive Teaching of Mathematics

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Mathematics Education Trust Grants

Mission: The Mathematics Education Trust (MET) 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.

MET Awards, Grants, and Scholarships

The Mathematics Education Trust (MET) was established by the National Council of Teachers of Mathematics (NCTM) to fund special projects that enhance the teaching and learning of mathematics.

LEGEND: Grades PreK–5 ● Grades 6–8 ● Grades 9–12 ● Prospective Teachers ● Affiliates ● ►◄ Partial Grade Band

WINTER CYCLE (postmarked by November 8, 2013)

Connecting Mathematics to Other Subject Areas Grants (Supported by the Theoni Pappas Fund) ● Grants of up to $4,000 are provided to classroom grades 9–12 teachers to develop classroom materials or lessons connecting mathematics to other disciplines or careers.

Classroom Research Grants (Supported by the Edward Begle Fund and NCTM) **(PreK-6 ● ◄)** Grants of up to $6,000 are provided to support collaborative classroom-based action research in precollege mathematics education involving college or university mathematics educators.

Classroom Research Grants (Supported by the E. Glenadine Gibb Fund and NCTM) **(7-12 ► ●)** Grants of up to $6,000 are provided to support collaborative classroom-based action research in precollege mathematics education involving college or university mathematics educators.

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Engaging Students in Learning Mathematics Grants (Supported by the Veryl Schult–Ellen Hocking Fund) ● Grants of up to $3,000 are provided to classroom teachers currently working at the grades 6–8 level to incorporate creative use of materials to actively engage students in tasks and experiences designed to deepen and connect their mathematics content knowledge.

Equity in Mathematics Grants (Supported by the Iris Carl Fund and NCTM) ● Grants of up to $8,000 are provided to classroom teachers to incorporate middle school classroom materials or lessons that will improve the achievement of groups of students who have previous records of underachievement.

Future Leaders Initial NCTM Annual Meeting Attendance Awards (Supported by the Edwin I. Stein Fund and NCTM) ●●● Grants of up to $1,200 + meeting registration are provided for travel, subsistence expenses, and substitute teacher costs of NCTM members who are classroom mathematics teachers in grades PreK–12 and have never attended an NCTM annual meeting.

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NCTM LIFETIME ACHIEVEMENT AWARDS FOR DISTINGUISHED SERVICE TO MATHEMATICS EDUCATION
The NCTM Lifetime Achievement Awards are designed to honor members of NCTM who have exhibited a lifetime of achievement in mathematics education at the national level. The NCTM Lifetime Achievement Awards are presented annually following a nomination and selection process.

SUMMER CYCLE (postmarked by May 2, 2014)

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Professional Development Scholarship Emphasizing the History of Mathematics (Supported by the Father Stanley J. Bezuszka Fund and NCTM) ●● A scholarship with a maximum of $3,000 will be awarded to an individual currently teaching mathematics at the grades 6–12 level to complete credited course work in the history of mathematics, to create and field-test appropriate classroom activities incorporating the history of mathematics, and to prepare and deliver a professional development presentation.

Program of Mathematics Study & Active Professionalism Grants (Supported Lola May/Shirley Frye Fund and NCTM) (PreK-6 ● ◄)
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Abstract

Mathematics teachers are under pressure. Students need mathematics to have access to academic and economic opportunities beyond high school (or even to graduate from high school). Districts need test scores that demonstrate "adequate yearly progress" to avoid being taken over. The cumulative effect of this pressure can be that teachers refrain from making changes to improve their teaching practice at the risk of lowering their test scores or putting their students at a disadvantage. The primary purpose of this project is alleviate some of the risk associated with changing practice and, through the grant and the university researcher, provide the space, resources, and expertise for classroom teachers to study and advance their practice. The secondary purpose is to create a high-functioning professional learning community that will continue beyond this project.

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What does it look like to differentiate professional development?

Coaching

Vision for teaching

Coaching

Vision for teaching

Specific goals for improvement

Coaching

Vision for teaching

Specific goals for improvement

Identifying resources

Coaching

Vision for teaching

Specific goals for improvement

Identifying resources

Selecting artifacts

Mathematics

Students

TEACHING PROBLEMS AND THE

PROBLEMS OF TEACHING

MAGDALENE LAMPERT

Mathematics

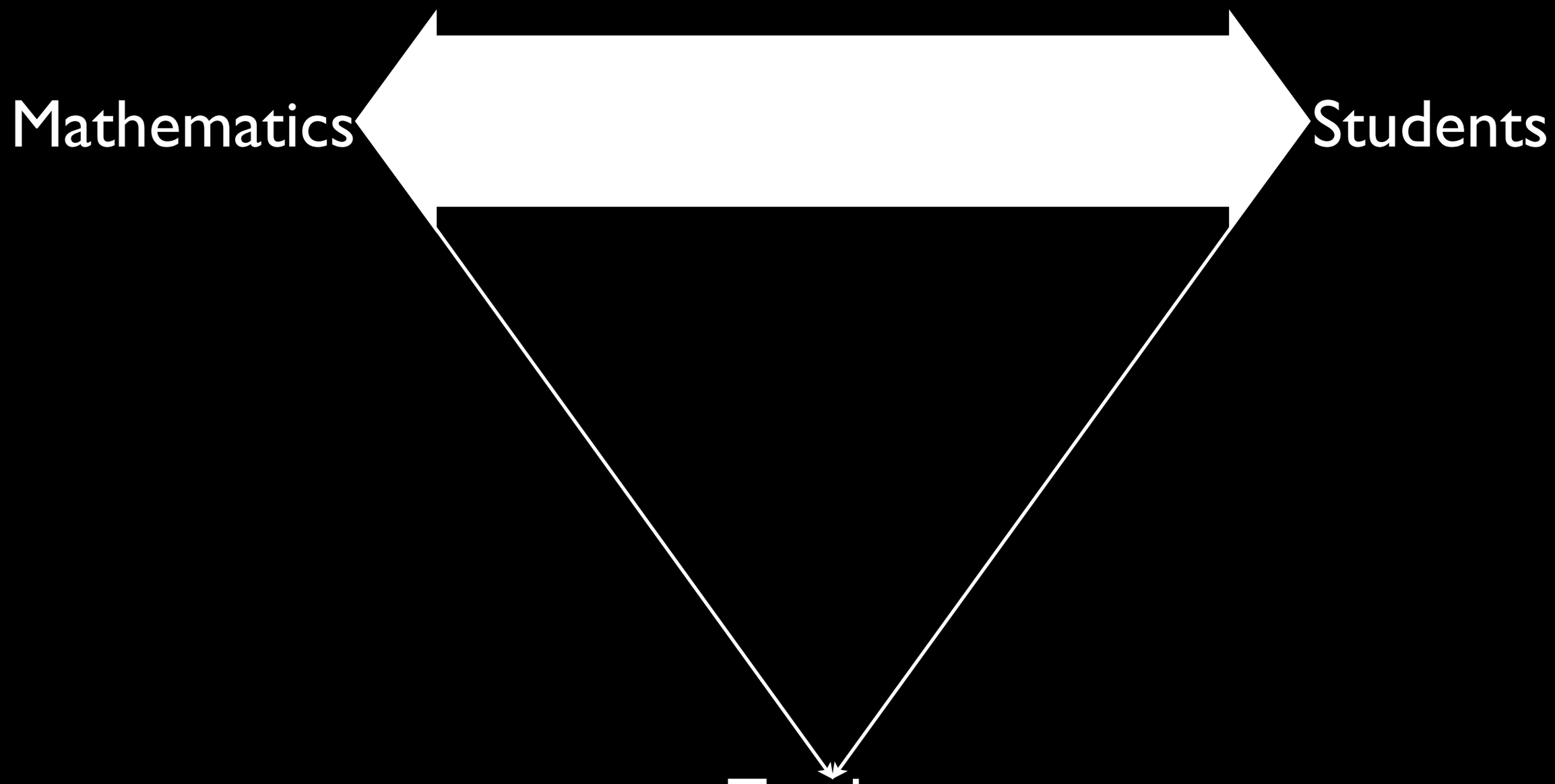
Students

Teacher

Mathematics

Students

Teacher


Mathematics
Students
Teacher

Mathematics

Students

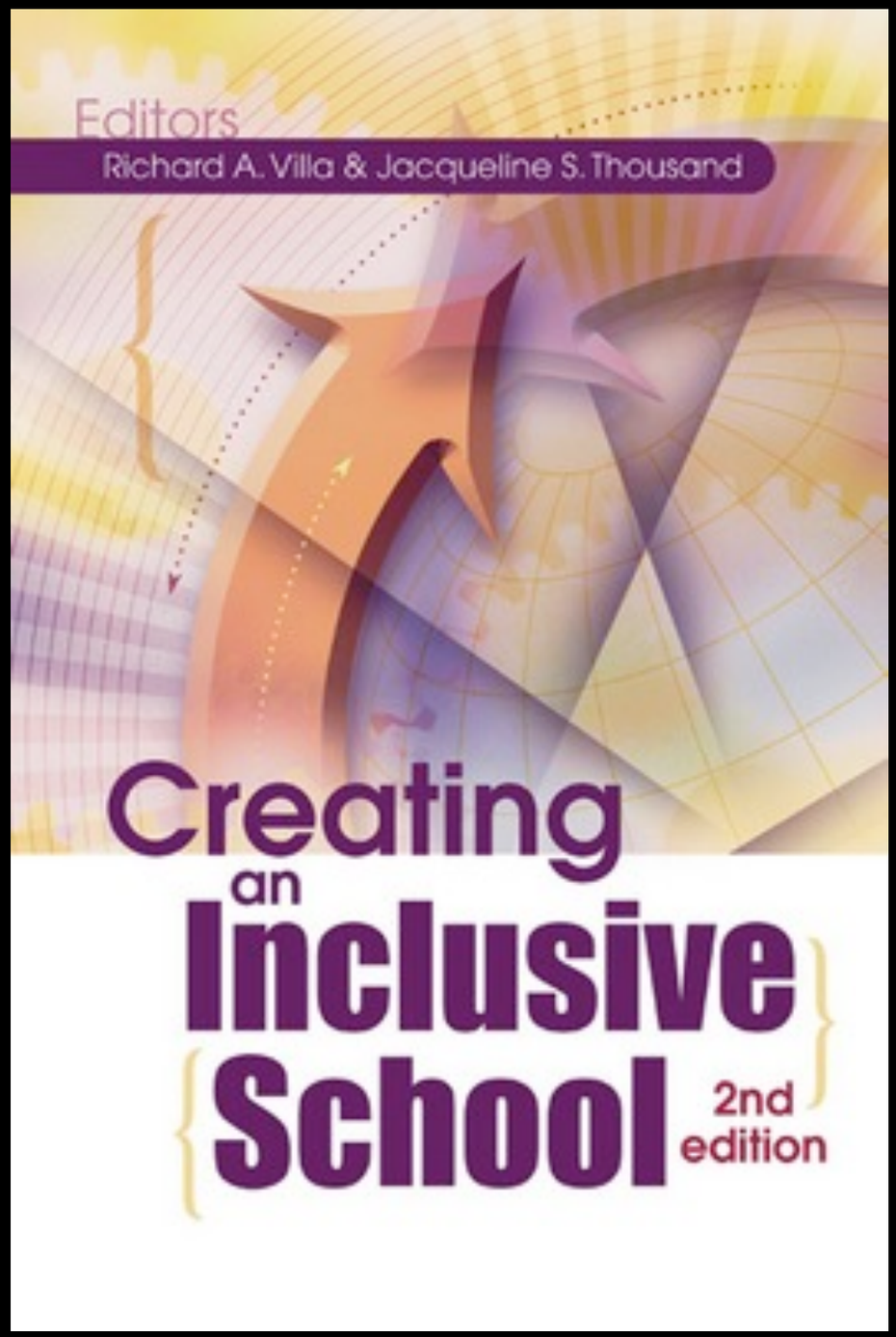
Teacher

Mathematics

Students

Practice

Teacher



Universal Design Process

(Udvari-Solner, A., Villa, R. A., & Thousand, J. S., 2005)

Universal Design Process

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Learners

Who will engage in the lesson?

Universal Design Process

(Udvari-Solner, A., Villa, R. A., & Thousand, J. S., 2005)

Content

Learners

What content will the students engage with?

Universal Design Process

(Udvari-Solner, A., Villa, R. A., & Thousand, J. S., 2005)

How will the students engage with the content?

Universal Design Process

(Udvari-Solner, A., Villa, R. A., & Thousand, J. S., 2005)

What will be accepted as evidence of the students learning?

Universal Design Process

(Udvari-Solner, A., Villa, R. A., & Thousand, J. S., 2005)

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Mathematics

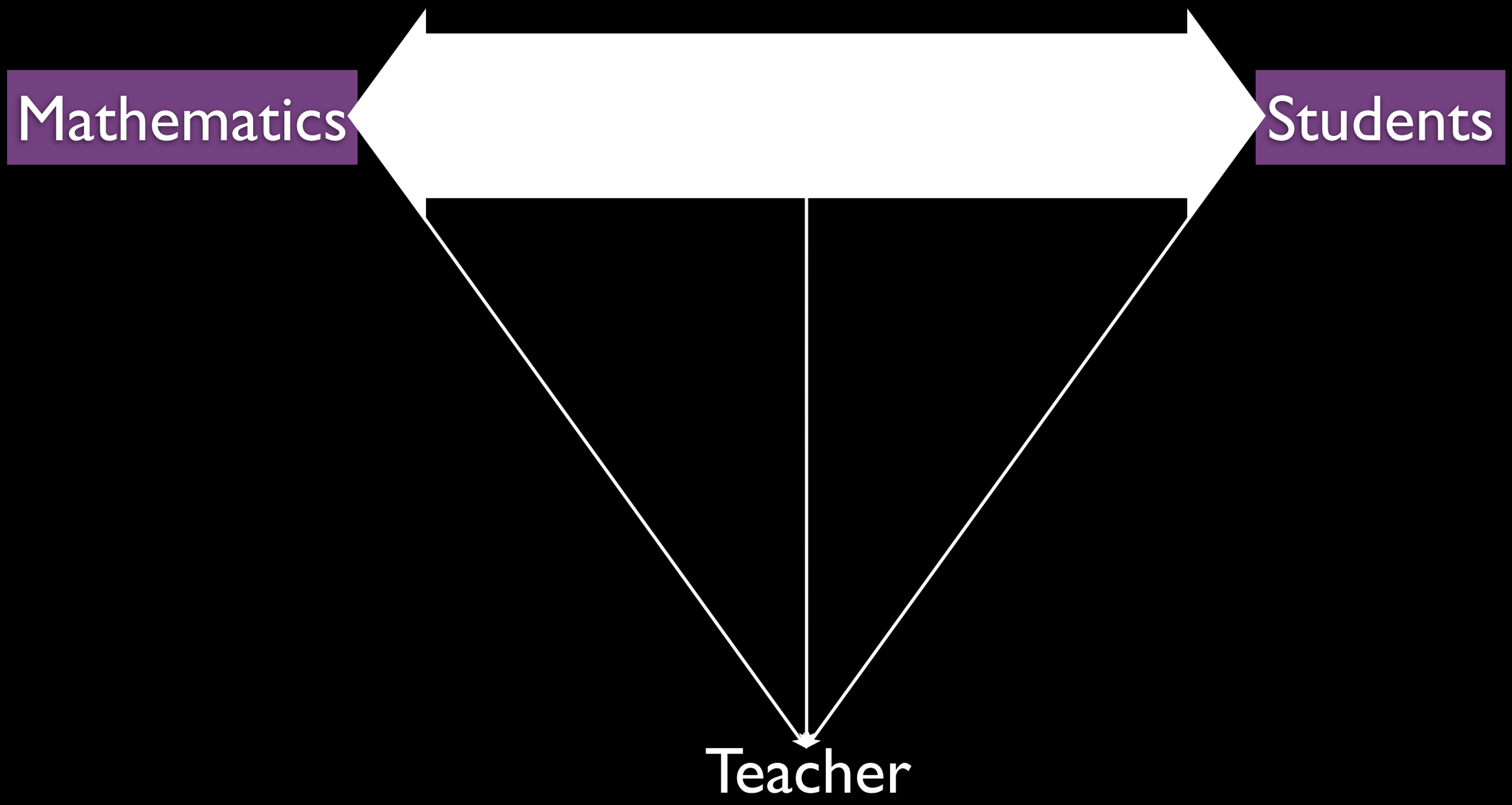
Students

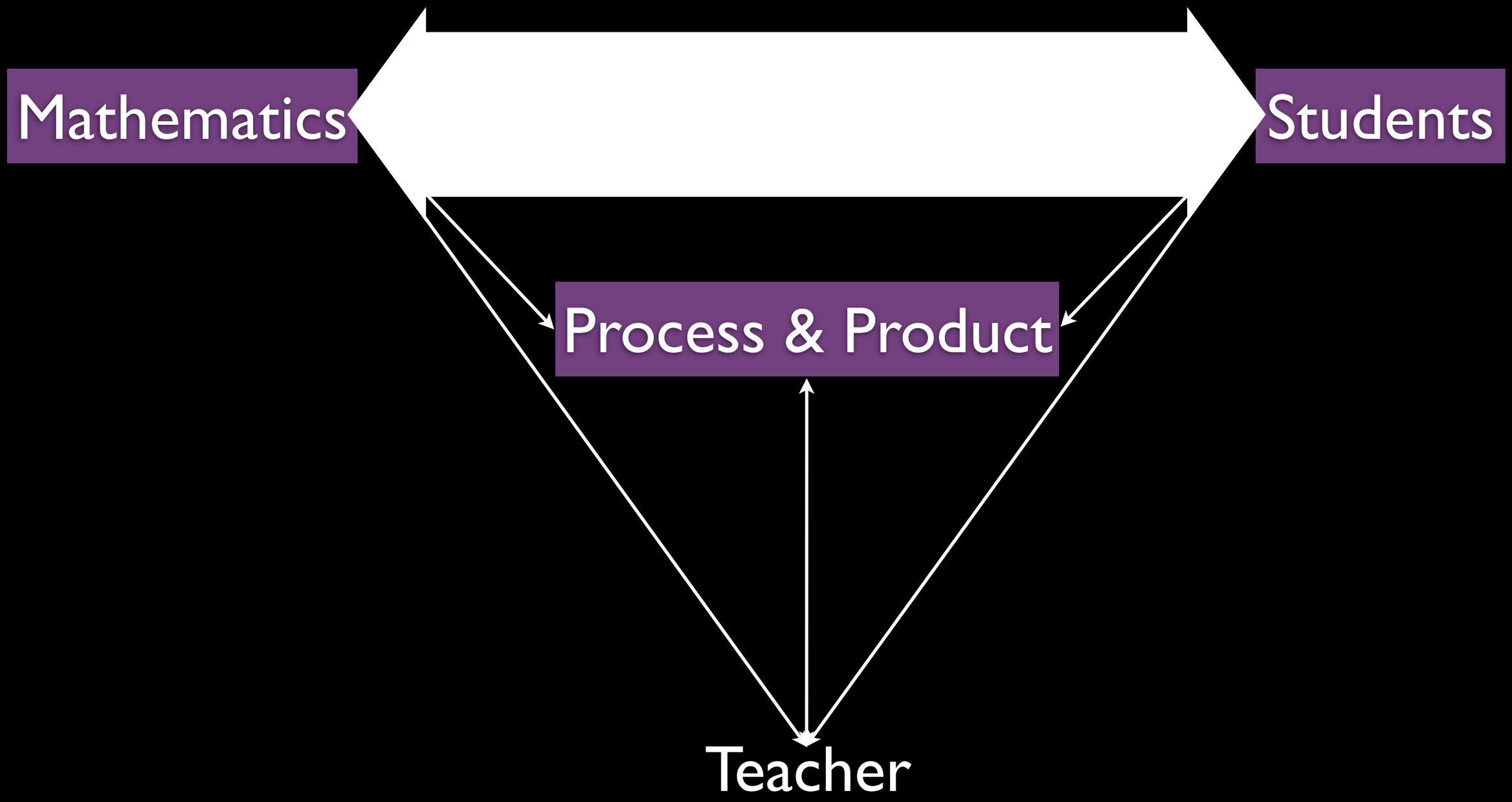
Teacher

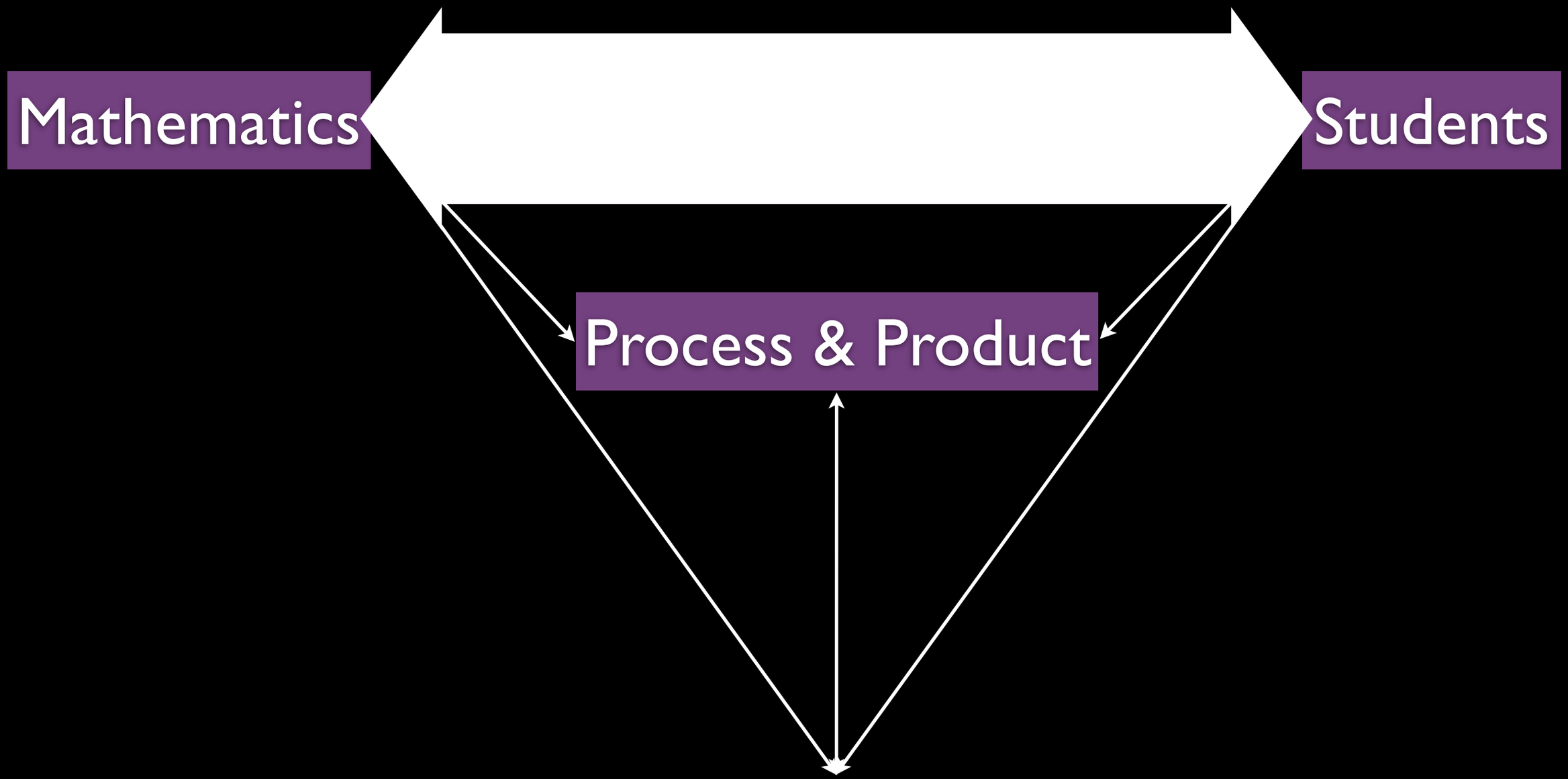
Mathematics

Students

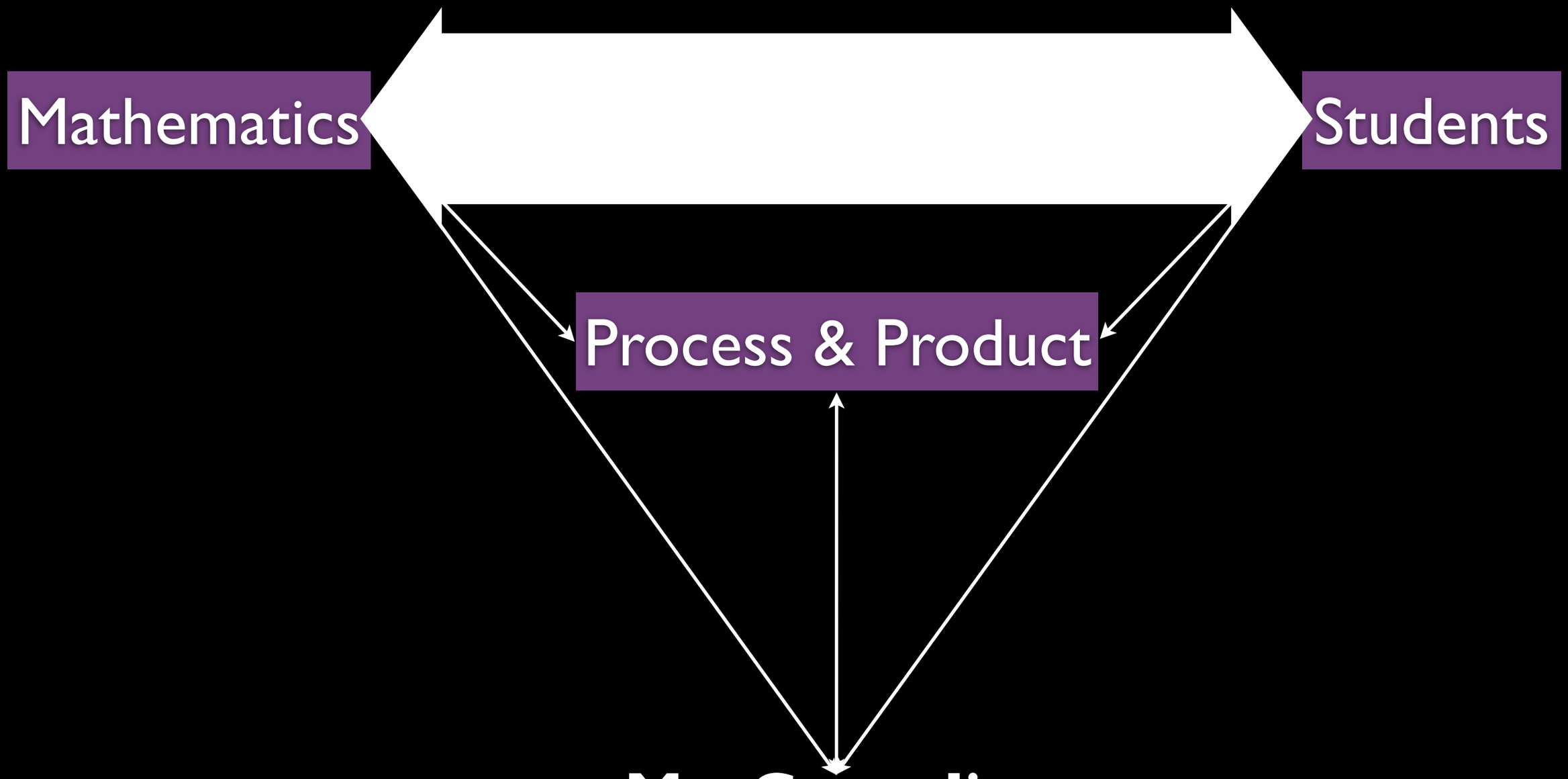
Teacher


Mathematics
Students
Teacher


Mathematics
Students
Process & Product
Teacher


Mathematics
Students
Process & Product
Teacher &
Professor

Ms. Cornelius



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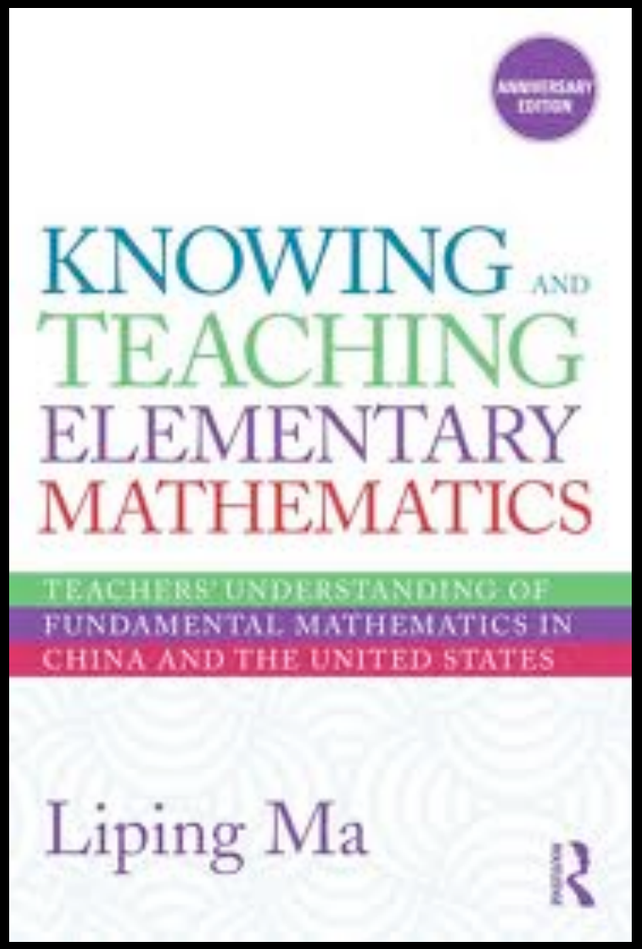
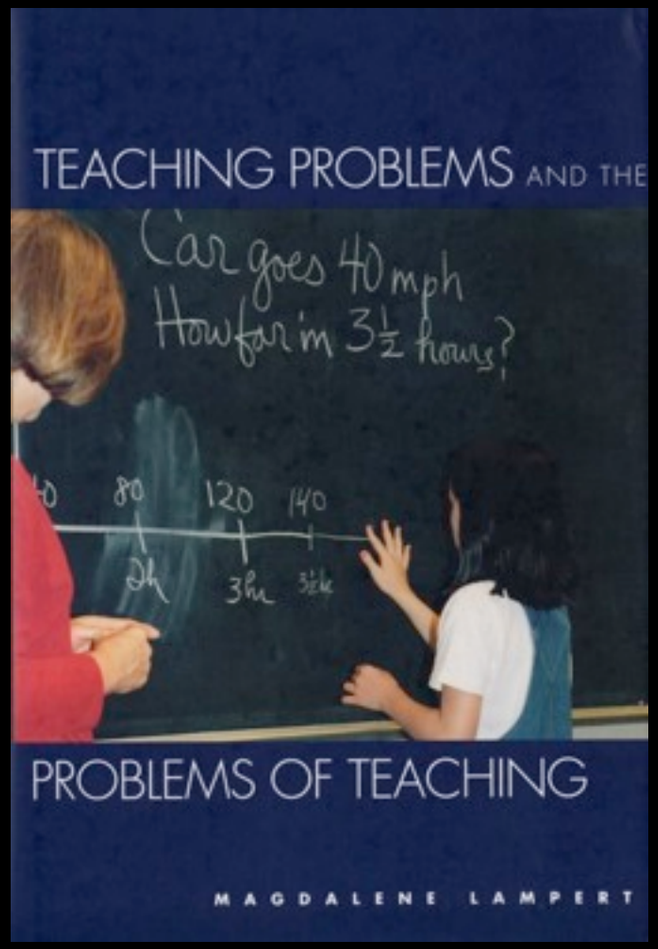

ANNIVERSARY EDITION
KNOWING AND TEACHING ELEMENTARY MATHEMATICS
TEACHERS' UNDERSTANDING OF FUNDAMENTAL MATHEMATICS IN CHINA AND THE UNITED STATES
Liping Ma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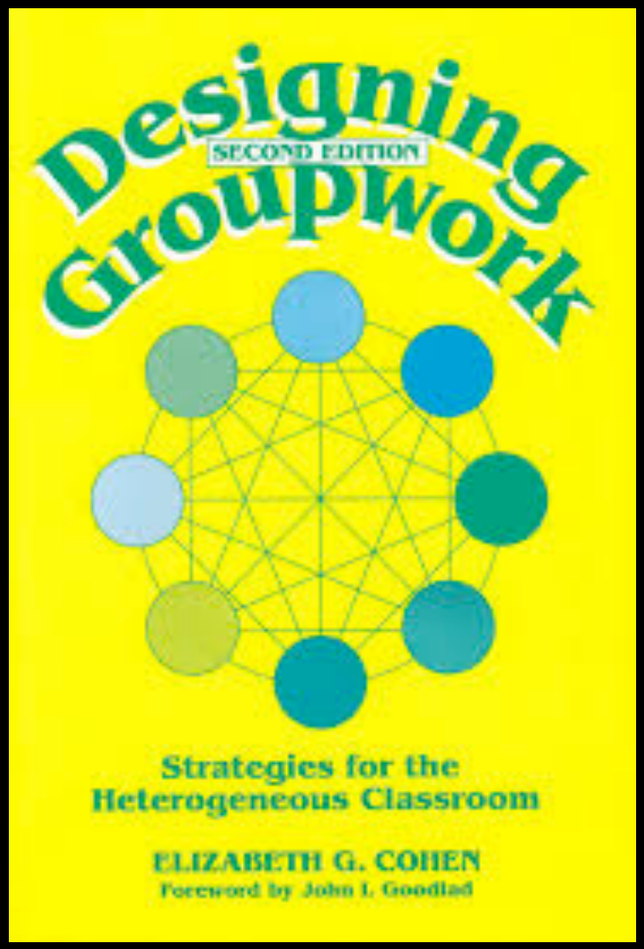

Designing Groupwork
SECOND EDITION
Strategies for the Heterogeneous Classroom
ELIZABETH G. COHEN
Foreword by John I. Goodlad

Algebra I

Team Name:

The Fickle Farmer Problem

Members:

A farmer has <u>36 meters of fencing</u>. (Farmers would really have a lot more fencing than that but since we are not using calculators I am trying to keep our numbers small.) This farmer wishes to fence a pasture for horses. The farmer asks you for some help in the design. Each time the farmer wants to use all 36 meters of fencing.

1. At first the farmer wants to construct a rectangular pasture. Draw 5 possible rectangular pastures (with sides labeled) and determine the area and perimeter of each. For example, the farmer's pasture could look like this:

2 m

16 m

Area = 32 m^2

Perimeter = 36 m

2. Draw THE rectangle which gives the maximum (largest) area. (It might not be the one of the ones your team drew above.)

Circuit Training **– <u>Solving Linear Inequalities</u> Name _____ # _____**

Solve the first inequality in the space provided and then graph the solution on a number line. Circle your solution. Find your solution among the choices. Put #2 in the problem blank. Work that question and proceed in this manner until finished.

Answer: $x \leq 7$ # _____ $3x-4 \geq 20$	Answer: $x \leq 30$ # _____ $2 > x-3x+4$
Answer: $x < \frac{3}{2}$ # _____ $-9(x+2)+3(x-1) \leq 15x$	Answer: $x \leq -6$ # _____ $3(x+1) < 2x+2+x+1$
Answer: $y \leq \frac{3}{4}x-3$ # _____ $3\pi + 4\pi \geq \pi x$ (solve for x)	Answer: $y \geq -\frac{4}{3}x+4$ # _____ $3x-4y \geq 12$ (solve for y)
Answer: $x \geq 8$ # _____ $-2x+3 < 17$	Answer: $x > -7$ # _____ $\frac{x}{2}-4 \leq -10$
Answer: $x =$ no solution $\emptyset$ # _____ Three increased by twice a number is at least -7. Write the inequality and then solve it!	Answer: $x < 20$ # _____ Seventeen is less than twice the sum of a number and three. Write the inequality and then solve it!

Research Clips and Briefs

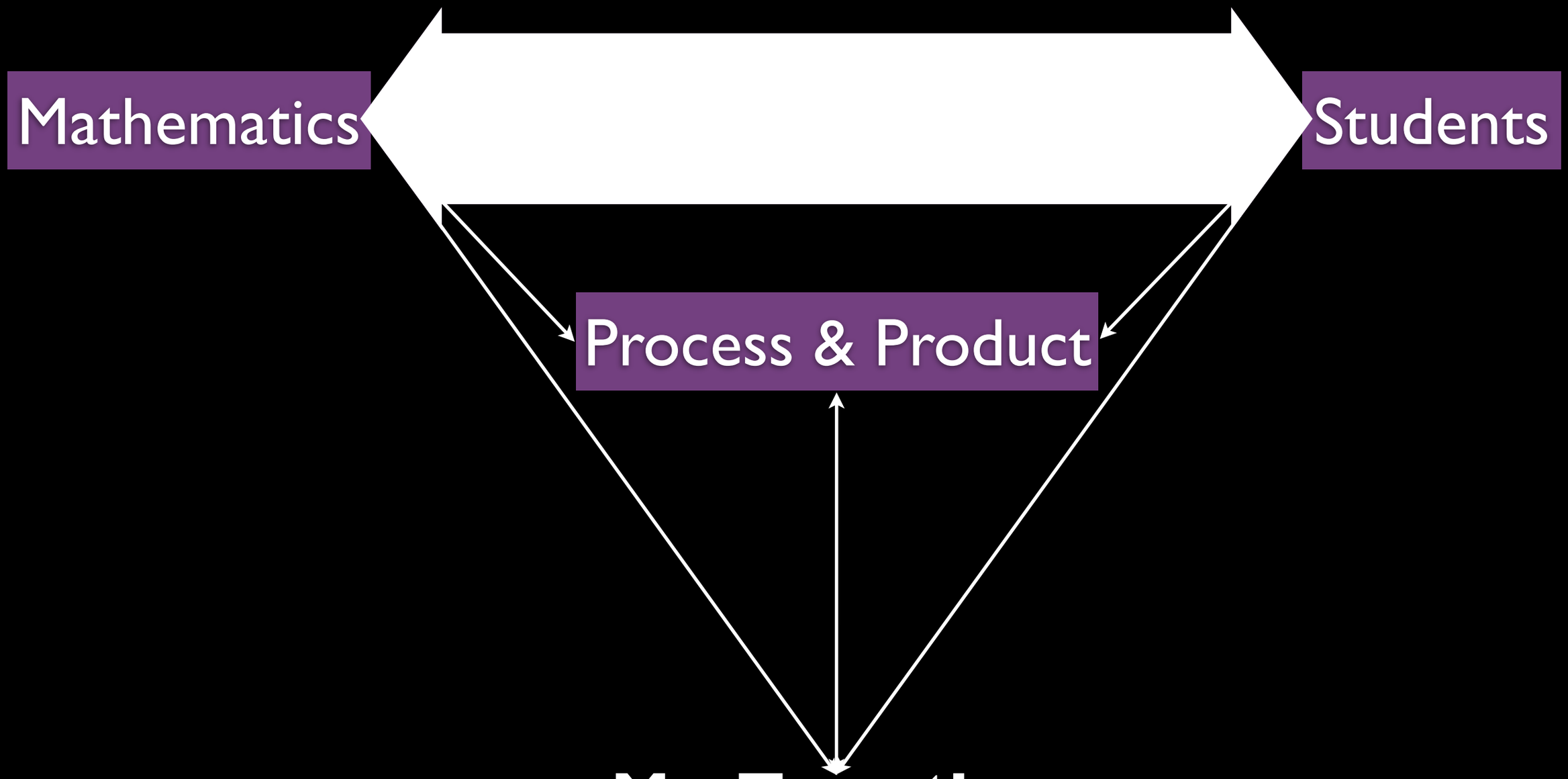
NCTM's Research Clips and Briefs are research-based responses to questions of practice.

- **Clips** are short and provide only the findings.
- **Briefs** include more information and list related research.

Send questions or topics related to classroom practice that you would like to see addressed. Research Clips and Briefs are designed to closely connect to practitioner needs.

Algebra (March 2007)		
Algebra in the Elementary Grades	Clip	Brief
Introduction to Algebra Symbols	Clip	Brief
Curriculum (September 2007)		
Selecting the Right Curriculum		Brief
Producing Gains	Clip	
Discussion (January 2013)		
Benefits of Discussion	Clip	Brief
Strategies for Discussion	Clip	Brief
Effective Instruction (March 2007)	Clip	Brief
Formative Assessment (June 2007)		
What Is It?	Clip	
Key Strategies	Clip	Brief
Brief		Brief

Ms. Trevathan



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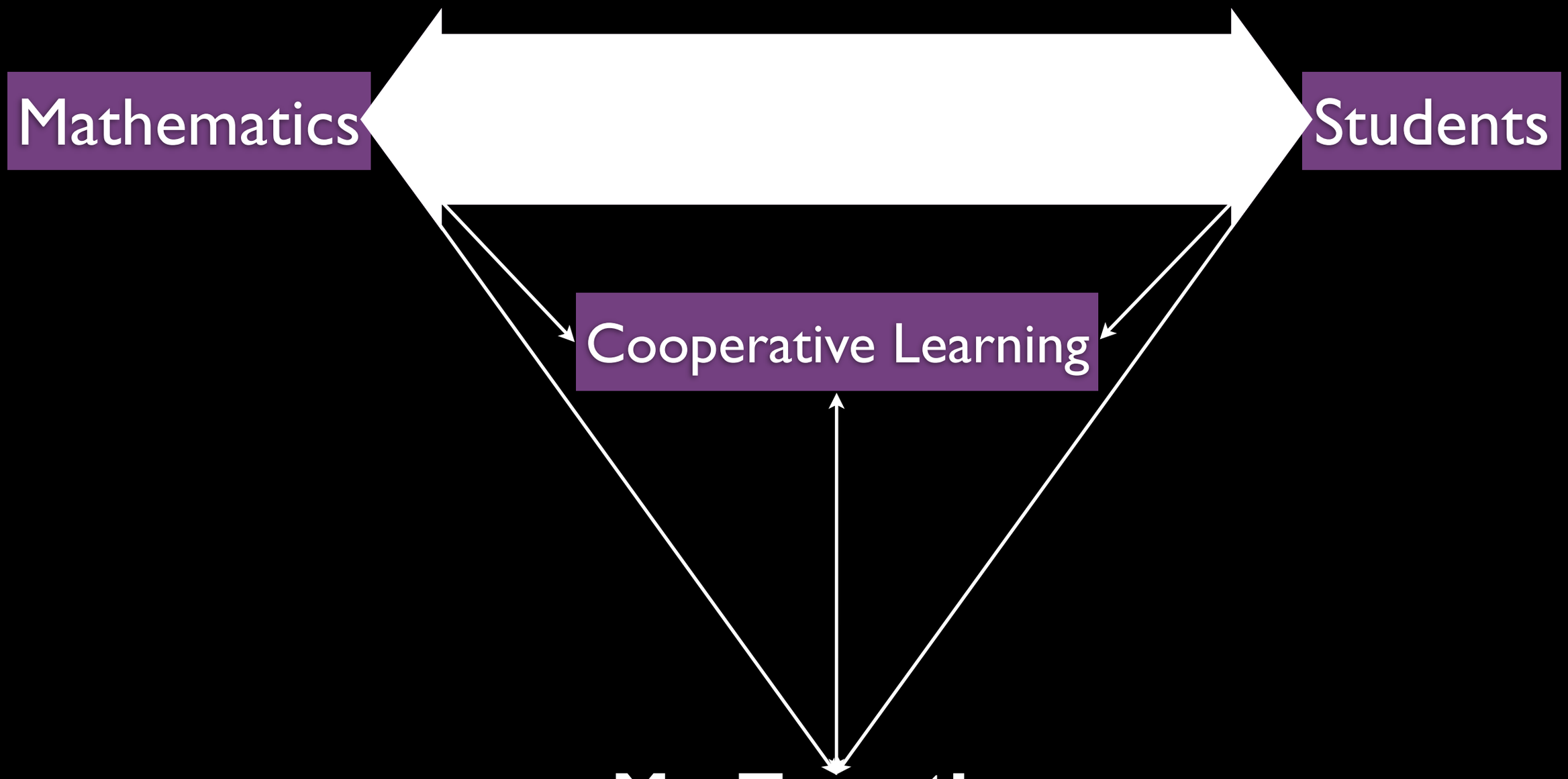

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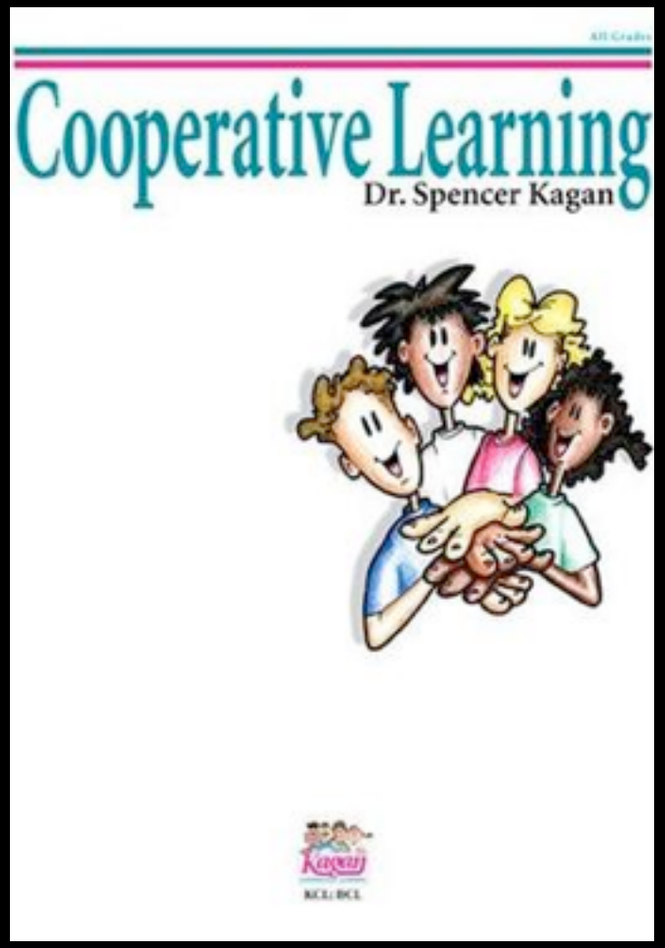
Dr. Amidon

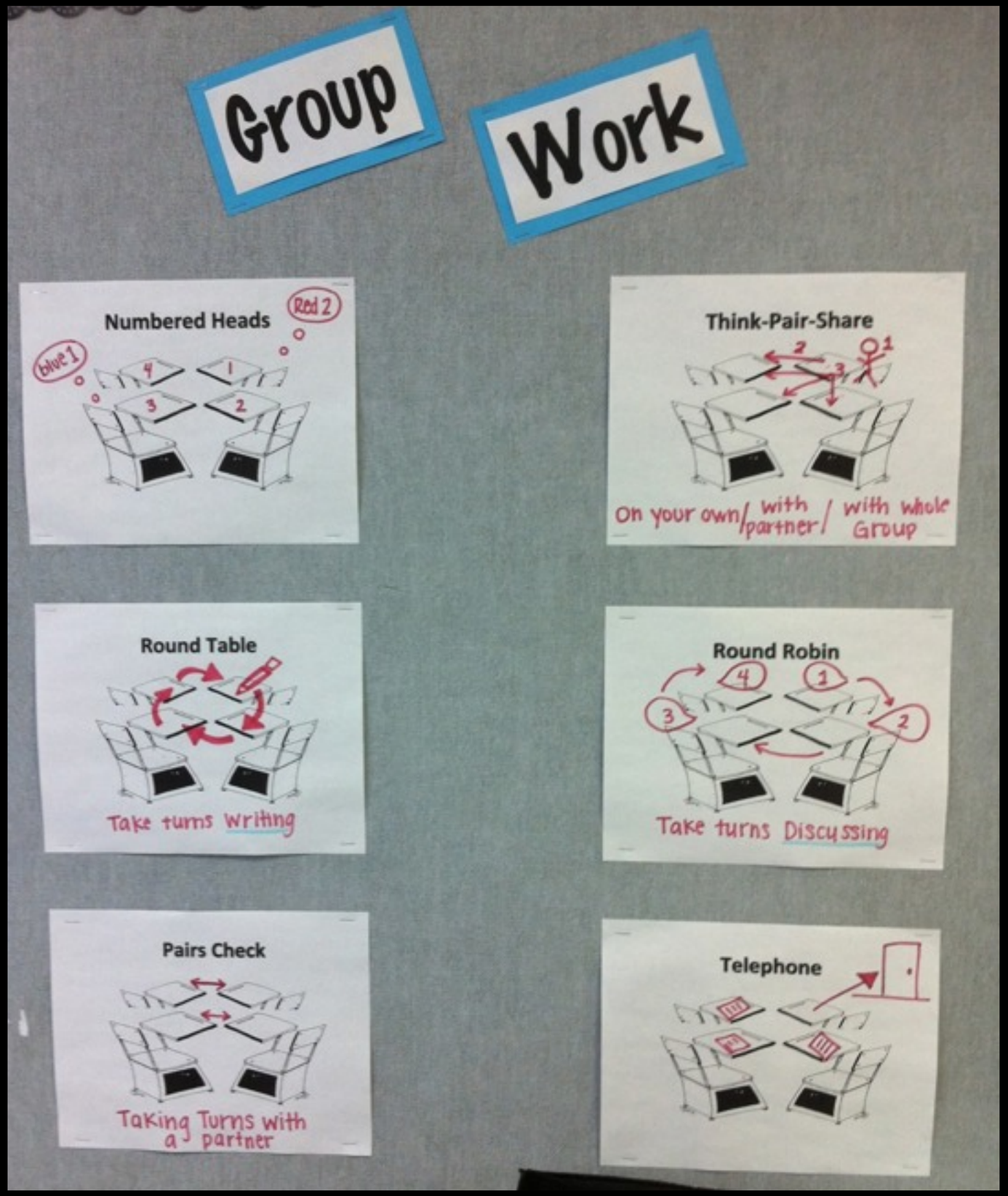
Cooperative Learning

Dr. Spencer Kagan

Kagan

KCL | BCL


Cooperative Learning
Dr. Spencer Kagan


Group Work
Numbered Heads
blue 1
Red 2
Think-Pair-Share
On your own / with partner / with whole Group
Round Table
Take turns writing
Round Robin
Take turns Discussing
Pairs Check
Taking Turns with a partner
Telephone

I HAVE USED

Cooperative Learning Methods

Flash Card Games

Pairs Check

Send-A-Problem

Round Table

Write-What-I-Say

Workstation Review

Speed Dating

Cooperative Management

Team Test Taking

I do, You do, We do

Grouping

Numbers

Draw Sticks

Cards

Hand Chosen

I WOULD LIKE TO USE

Cooperative Learning Methods

Numbered Heads

Share and Compare

Pair Learning

Telephone

Jigsaw

Inside-Outside Circle

Cooperative Management

Team Notebook

Quiet Signal

Class Meetings

Grouping

Ranking

Mix - Freeze – Group

9-Week groups**

Method Definition	What this could look like in the Math Class
Pairs Check: Students pair up to work on a worksheet. One student works while the other "coaches" and checks their work. Then they switch roles.	-Solving Systems: One student solves a system using elimination or substitution, while the coach observes. The "coach" then checks the Solution by graphing.
Send-A-Problem: Each student makes up a problem and writes it on a flashcard. They work it with their group and write the answer on the back. Teams pass cards to the next team to work.	-Solving for Y: Each student in a group writes a two-variable equation (using the variable y with a coefficient greater than one) and pass to next group to solve for y*
Roundtable: Group members take turns working a problem as they move a piece of paper around the circle	-Solving for Y (each member completes one step before passing) -Graphing a system of inequalities
Round Robin: Group members take turns talking or discussing a problem around the circle	-Word Problems
Share & Compare: Groups compare their work with other groups by sending a student from their group around the room	-Solving Systems of Equations -Compound Inequalities
Workstation Review: Review problems are set up around the room. Groups rotate to each station to work the problem or set of problems.	All Chapter reviews*
Inside / Outside Circle: Students sit in two concentric circles, with the inside facing out and the outside facing in	Math Worksheets (speed dating) completed by working each problem with a different partner*
Numbered Heads: Students in groups number off, teacher poses a question, group members put their heads together, and Teacher calls on group and number	Questioning Method: I will have my students in colored groups with each member numbered off 1-4 (Example Student: Red 3)

Fruits of the Partnership

Fruits of the Partnership

The Phone Call

Fruits of the Partnership

The Phone Call

	Tier 1	Tier 2	Tier 3
1	Activate	Activate	Activate
2	Scaffold & Develop		Target Problem
3		Development	Practice
4			New Context
5			
6		Target Problem	Challenge
7		Practice	
8		New Context	
9			
10	Target Problem	Challenge	

Professional Learning Community

Abstract

Mathematics teachers are under pressure. Students need mathematics to have access to academic and economic opportunities beyond high school (or even to graduate from high school). Districts need test scores that demonstrate "adequate yearly progress" to avoid being taken over. The cumulative effect of this pressure can be that teachers refrain from making changes to improve their teaching practice at the risk of lowering their test scores or putting their students at a disadvantage. The primary purpose of this project is alleviate some of the risk associated with changing practice and, through the grant and the university researcher, provide the space, resources, and expertise for classroom teachers to study and advance their practice. The secondary purpose is to create a high-functioning professional learning community that will continue beyond this project.

Abstract

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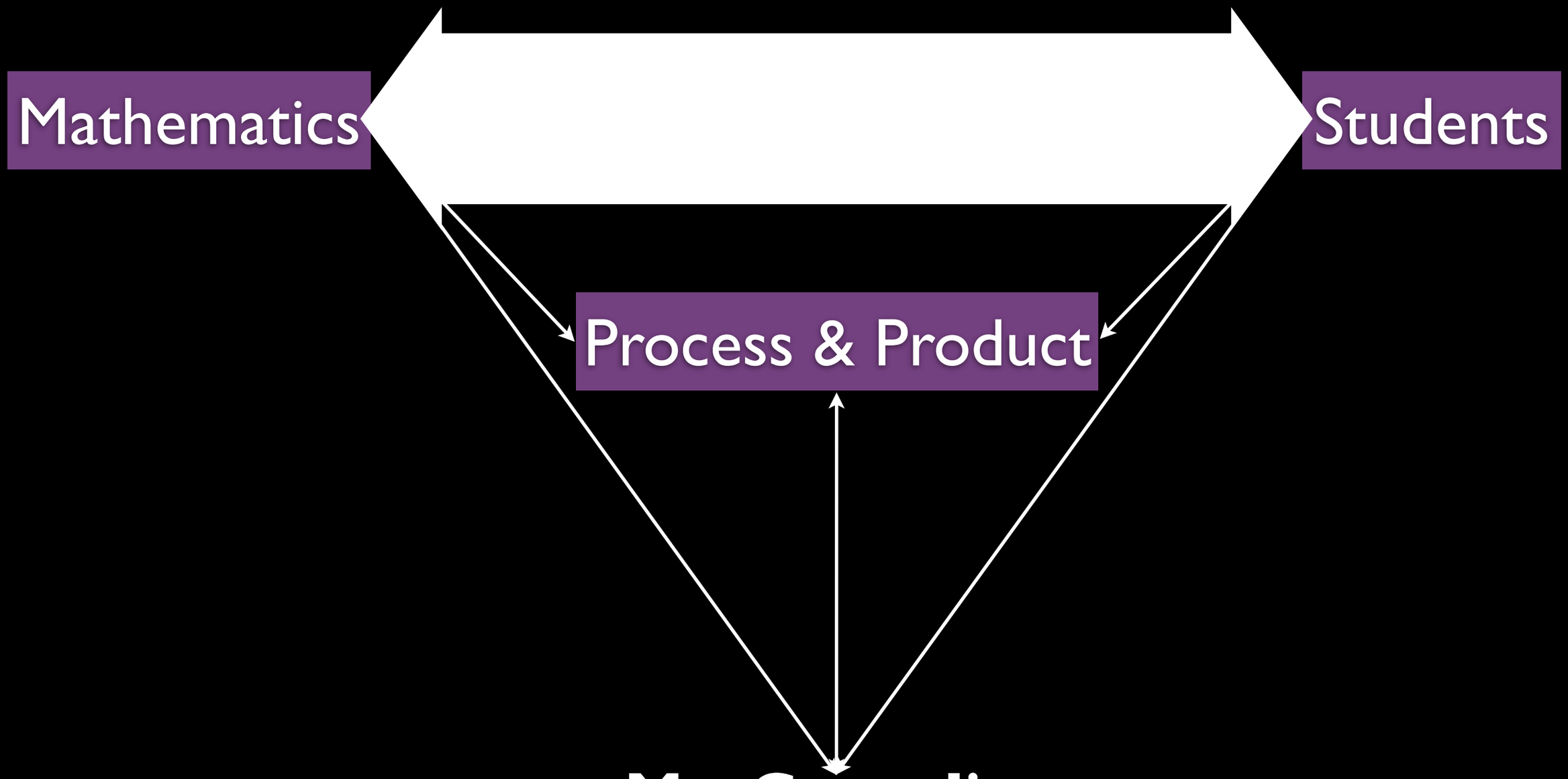
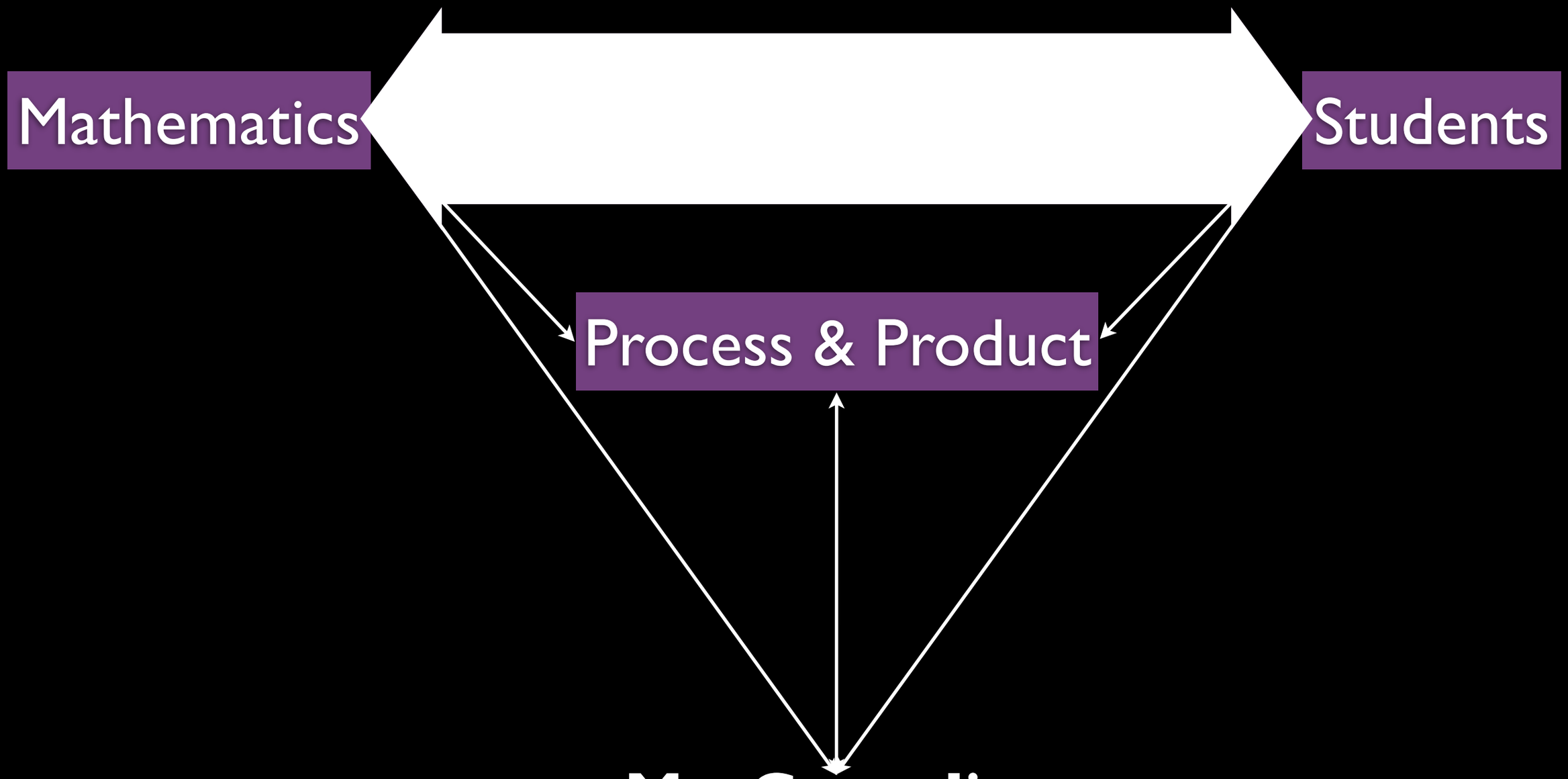


Ms. Cornelius

Ms. Trevathan

Dr. Amidon



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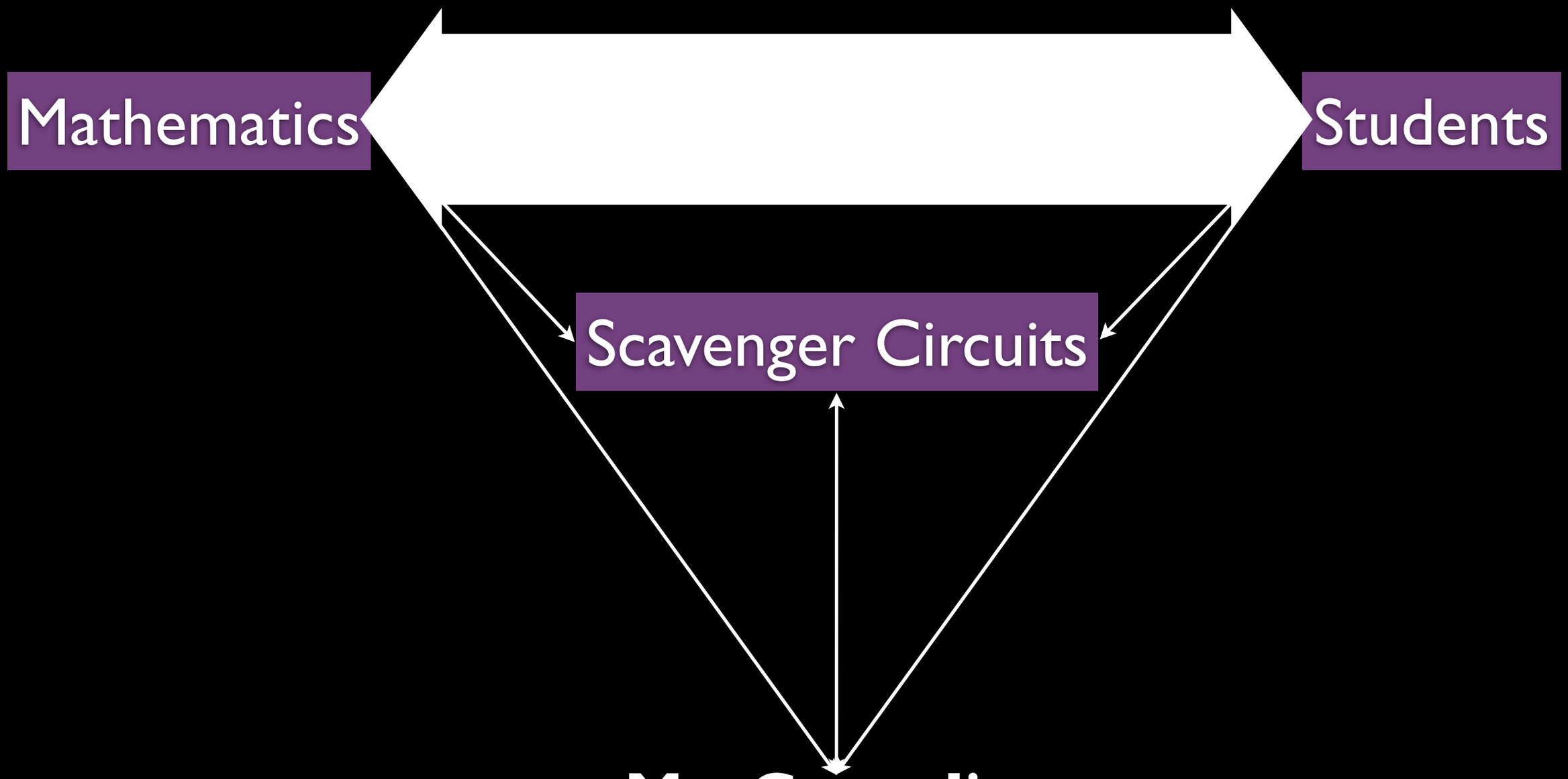

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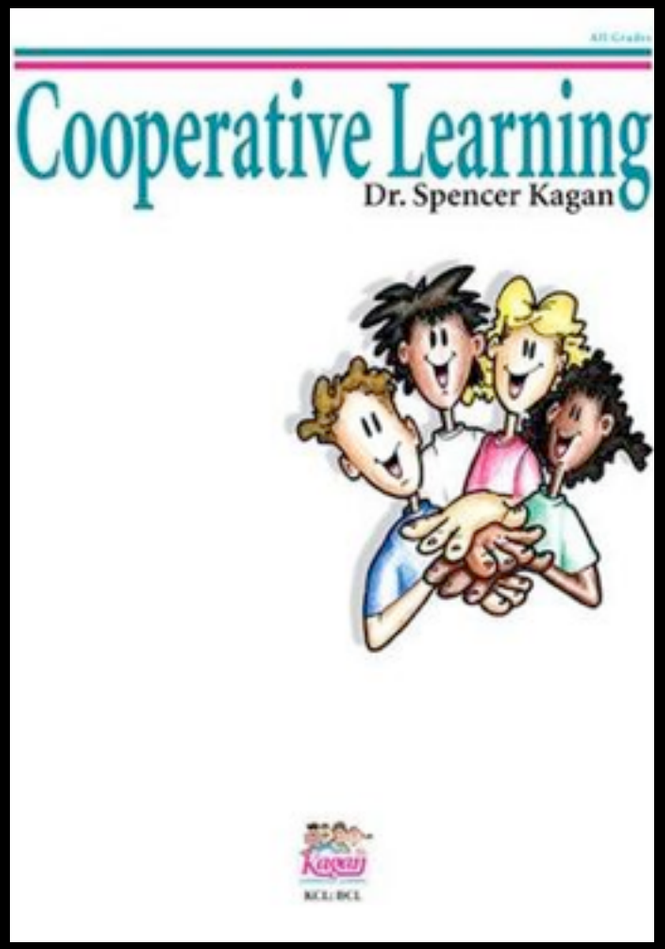
Ms. Trevathan

Circuit Training **– <u>Solving Linear Inequalities</u> Name _____ # _____**

Solve the first inequality in the space provided and then graph the solution on a number line. Circle your solution. Find your solution among the choices. Put #2 in the problem blank. Work that question and proceed in this manner until finished.

Answer: $x \leq 7$ # _____ $3x-4 \geq 20$	Answer: $x \leq 30$ # _____ $2 > x-3x+4$
Answer: $x < \frac{3}{2}$ # _____ $-9(x+2)+3(x-1) \leq 15x$	Answer: $x \leq -6$ # _____ $3(x+1) < 2x+2+x+1$
Answer: $y \leq \frac{3}{4}x-3$ # _____ $3\pi + 4\pi \geq \pi x$ (solve for x)	Answer: $y \geq -\frac{4}{3}x+4$ # _____ $3x-4y \geq 12$ (solve for y)
Answer: $x \geq 8$ # _____ $-2x+3 < 17$	Answer: $x > -7$ # _____ $\frac{x}{2}-4 \leq -10$
Answer: $x =$ no solution $\emptyset$ # _____ Three increased by twice a number is at least -7. Write the inequality and then solve it!	Answer: $x < 20$ # _____ Seventeen is less than twice the sum of a number and three. Write the inequality and then solve it!



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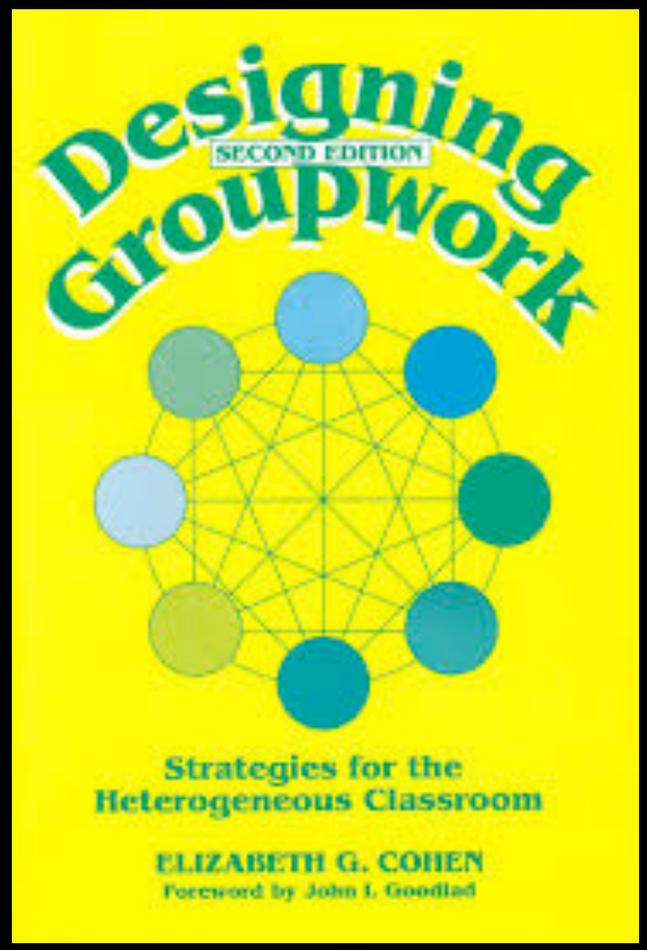

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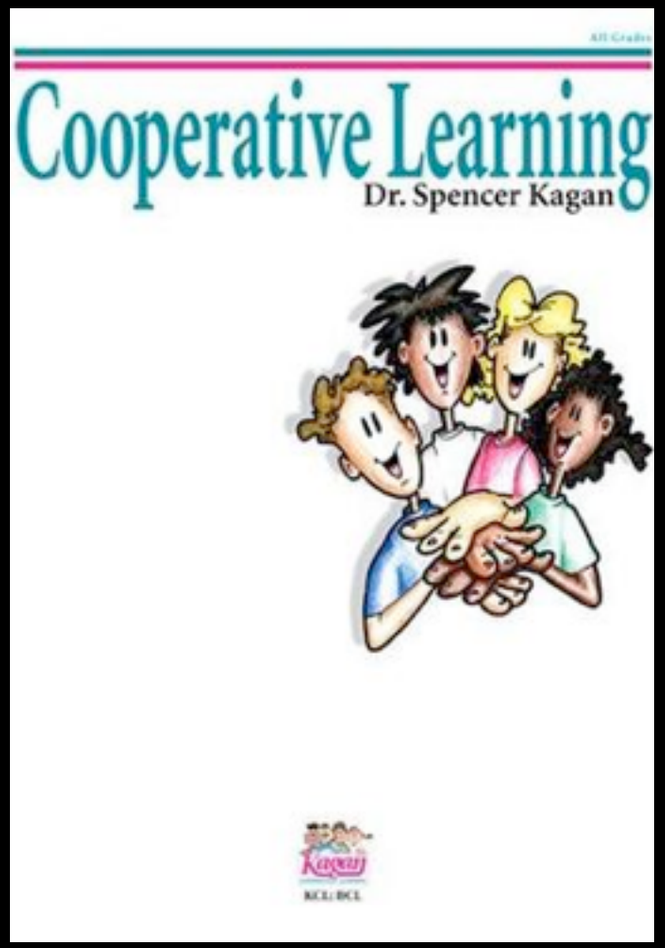
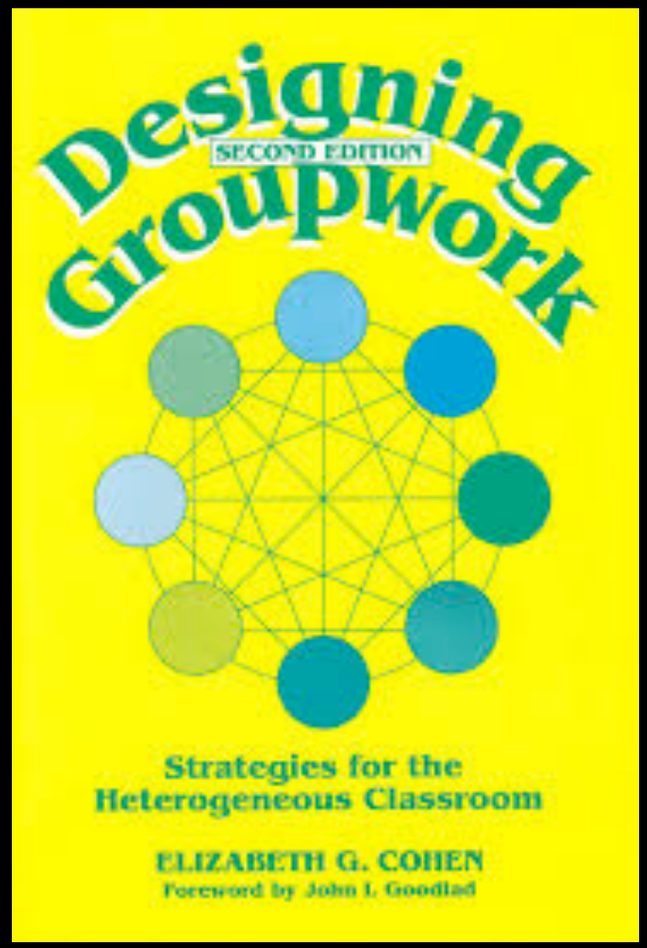

Cooperative Learning
Dr. Spencer Kagan


Designing Groupwork
SECOND EDITION
Strategies for the Heterogeneous Classroom
ELIZABETH G. COHEN
Foreword by John I. Goodlad

Creating Space to Support the Progressive Teaching of Mathematics

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