

Examining the Nuances of Equity Pedagogy: Working Toward Development

PMENA October 29, 2010
Columbus, Ohio

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Purpose of the Study

- Equity pedagogy: set of practices that reflect cultural practices and perspectives to impact student learning. (Banks, 1996)
- “Investigations into equitable teaching must pay attention to the *particular* practices of teaching and learning that are enacted in classrooms (italics in original)” (Boaler, 2002, p. 239).
- Literature supporting elements of equity pedagogy consolidated into a tool to identify particular practices and the nuances of how they are apparent in one’s pedagogy.

Context of the Study

- Certified or licensed teachers credentialed to teach in grades kindergarten through middle school.
- Schools are enrolled in the Mathematics Coaching Program (MCP)
- Teachers respond to questions for MCP program work, but only those consenting to the research have their data included in our study

Theoretical Framework

A sampling of the theory and application:

- **Explicitly Talks about Reasoning** – (Ladson-Billings, 1997) describes a pedagogy in contrast to a pedagogy of poverty that pushes students' reasoning.
- **Suggests Real World Problems** – (Boaler, 2002; Delpit, 1998; Erchick, 2002; Ladson-Billings, 1995, 1997)
- **Expressed Expectation** that everyone can do the work, and arranges for **Autonomous** student work – (Boaler, 2002, 2009; Delpit, 1988; Dornoo, 2010; Erchick, 2002; Ladson-Billings, 1995, 1997).

These elements of equity pedagogy ground analysis codes.

Equity Pedagogy Abbreviated Codebook

Code	Concept
RWP	Real-world problems or examples
EST	Explicit student tasks and work
ETL	Explicit talk about the meaning and use of mathematical language
ETR	Explicit talk about ways of reasoning
ETMP	Explicit talk about mathematical practices
IT	Quality of I nstructional t ime spent on mathematics
EDC	E ncouragement of a d iverse array of mathematical c ompetencies
ESE	E mphasis of student e ffort and message that effort will eventually pay off
AU	A utonomous student work o pportunities
EE	E xpressed e xpectation that everyone will be able to do the work

Methodology

- 20 Teachers
- 800 written responses coded and analyzed
- Nature of the data
 - Responses to questions based on student work
 - Forced response data and open explanation qualitative data
- Emergent themes
- Inter-rater reliability checks (80% agreement)

Sample Question

Bobby was given the problem $17 - 9 = \underline{\hspace{2cm}}$ and solved it as follows: $17 - 9 = 17 - 10 - 1$

A. From the options below, circle one rationale for Bobby's thinking that most closely matches what you would expect Bobby is thinking:

- a) Bobby might be trying to keep both sides of the equation equal.
- b) Subtracting 9 is the same as subtracting 10 and then adding one more.
- c) Bobby does not understand how to borrow from the tens place.
- d) This is a good way for Bobby to solve the problem.

B. Elaborate on your selection in part A.

Sample Question

Bobby was given the problem $17 - 9 = \underline{\hspace{2cm}}$ and solved it as follows: $17 - 9 = 17 - 10 - 1$

C. From the choices below, circle the option that most closely represents what you could say or do to help Bobby further his understanding:

- a) Practice addition and subtraction facts.
- b) I would ask Bobby to explain and justify his strategy.
- c) I would have him solve both sides using pictures or models and compare his answers.
- d) Explain to him he needs to add the 1 to get back to 9.

D. Elaborate on your selection in part C.

Coding

- Using the code book
- Sample Coding Experience
- Code your own responses and additional samples
- Debrief analysis

Sample Coding Experience

1. Bobby is trying to use an "easier" number like 10; he just didn't handle the 1 correctly, he should have added 1 not subtracted to make up for 10 being one more than 9.
2. Bobby understands equivalent forms of numbers: $17 - 9 = 8$ and $17 - (10-1) = 8$ but forgot the parentheses.
3. The rationale for Bobby's thinking may be because he has trouble borrowing.
4. Bobby subtracted one instead of adding it back into the equation
5. It might have been easier for Bobby. He is understanding that equivalent quantities can be substituted. He may know how to borrow but chooses to use a method that is easier for him.
6. Bobby is rounding the 9 to 10 and then subtracts 1 from the 10 and 1 from the 9 but will get the wrong answer because he needs to subtract 1 more to account for the 9.

Coding

- Using the code book
- Sample Coding Experience
- Code your own responses and additional samples
- Debrief analysis

Sample responses

1. *Jose correctly identified rectangles from an array of quadrilaterals*

T: Jose knows a square can be a rectangle, but a rectangle cannot be a square.

2. *Student incorrectly measured the length of a toothpick by reading the end-point as opposed to the difference in end-points.*

T: Asking her to move the toothpick would hopefully help her see that her way of measuring doesn't work since the object is the same size no matter where she places it on the ruler.

T: By moving the toothpick, Carrie should see that by her method the measurement always changes even though the object remains the same size.

3. *The student reported on a correct mental calculation of finding the percentage of a large number.*

T: Jenny broke apart the problem into easier chunks. She understands the relationships between percents and fractions.

T: This multi step method would be difficult for most students.

Overall Results

Low Representation (<10) codes			High Representation (>30) codes		
Code	Pretest Count	Posttest Count	Code	Pretest Count	Posttest Count
RWPE	2	0	ESTE	30	30
ESEE	3	3	ETRE	154	174
EEE	8	9	ETMPE	67	77
RWPN	0	0	EDCE	47	35
ESTN	9	8	AUE	40	47
ETLN	4	1	ETRN	61	40
ESEN	0	1			
EEN	3	0			

Additional Findings

In our paper we also discussed:

- Analysis of data by “case,” particularly for 2 cases, Alex and Chris
- Emergent themes that were not anticipated but that became apparent in the analysis:
 - changes in language
 - changes in equity perspectives
 - relationships with content

Suggestions, Questions, and Discussion

Thank you!