



Examining The Relationship Between Teachers' Mathematics Content And Pedagogy Perspectives And Equity Pedagogy

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Study Sample



- Analysis of forced response LAMP items
 - Out of 143 consenting teachers with completed LAMPS, randomly chose 100 teachers with **both** preand post- responses for the statistical analysis of change; 2008-2009
- Analysis of open response LAMP items
 - Out of the 100 consenting, matched pre-post teachers in the forced response sample, we chose a purposeful, random sample (purposeful in that we randomly chose from those people who actually wrote written responses)







- CHIO SIAIE UNIVERSITY NEWARK

- Mathematics Content Perspectives
 - Responses identified on a continuum
 - Procedural, Conceptual, Integrated Procedural/Conceptual (Baroody et al., 2007)

Theoretical Frame for Analysis

- Mathematics Pedagogy Perspectives
 - Responses identified on a continuum
 - Teacher Directed, Problem-Based/Student Centered, Learner Responsive Pedagogy (MCP, 2009)
- Equity Pedagogy Perspectives
 - Codes based on equity literature theory and research
 - Ten codes, each as an example or non-example









Findings on Teacher Change

- Mathematics Content Perspective
 - Statistically significant change, pre to post
 - Effect size: .338
 - Improvement of about 13 percentile points
- Mathematics Pedagogy Perspective
 - Statistically significant change, pre to post
 - Effect size: .385
 - Improvement of about 15 percentile points







Equity Pedagogy



- RWP Real-world problems or examples
- EST Explicit student tasks and work
- ETL Explicit talk about the meaning and use of mathematical language
- ETR Explicitly talks about, or addresses ways of reasoning
- ETMP Explicitly points out strategies, talks about mathematical practices
- IT Quality of Instructional time spent on mathematics
- EDC Encouragement of a diverse array of mathematical competencies
- ESE Emphasis of student effort and message that effort will pay off.
- AU Autonomous student work opportunities
- EE Expressed expectation that everyone will be able to do the work.

In use, equity codes include an ending of E (Example) or N (Nonexample)









Relationship to Equity Pedagogy

- Mathematics content and equity pedagogy
 - Statistically significant differences between P and IPC
 - Teachers with IPC content perspectives have more favorable equity codes than teachers with P content perspectives (effect size 0.65)
- Mathematics pedagogy and equity pedagogy
 - Results suggest strong associations between mathematics pedagogy perspectives and equity pedagogy
 - Significant differences between TD and PSC (Effect size: 1.54)
 - Significant differences between PSC and LRP (Effect size: 0.39)
 - Significant differences between LRP and TD (effect size: 0.93)







Overall Relationship



Teacher Directed Pedagogy and (superficial) Procedural Perspectives on mathematics content do not support equity pedagogy well.

Problem-Based/Student-Centered and Learner Responsive Pedagogy, and Integrated Procedural/Conceptual perspectives on mathematics content do support equity pedagogy.









Pre: Jose is thinking that rectangles have 90° angles. (Coded C, ETRE)

Post: Jose knows a square can be a rectangle, but a rectangle cannot be a square. (Coded C. ETRE, ETLE)









Change in Content Perspective and Change in Equity

Pre: When finding answers to problems mentally it is easier to break it down into easier chunks. (Coded P, ETRE)

Post: Jenny broke apart the problem into easier chunks. She understands the relationships between percents and fractions and understands that you can double 60 by 5 to show 1/5. (Coded C, ETRE, ETMPE)







What this all means



Teachers **can** support equity pedagogy, by seeing mathematics as an integrated procedural/conceptual content, and

effective mathematics pedagogy as one that is learner responsive.









Thank You!!



