

EBP and Mathematics Education

- Limited evidence of EBP in mathematics education literature
- Alternative terminology for educational use of clinical research
 - “research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs.” - NCLB

Reframing EBP for Math Education

- Step 1: Ask a well-formulated question specific to a mathematics education situation
- Step 2: Identify articles and other evidence-based resources that offer viable responses to the question
- Step 3: Critically appraise the evidence to assess its validity
- Step 4: Apply the evidence as a response to the mathematics education situation
- Step 5: Re-evaluate the evidence based response and identify areas for improvement.

Conceptualizing EBP - Curriculum

- Step 1: What middle school mathematics curriculum will best meet the needs of the district's student population and teachers?
 - Identify important contextual factors relevant to the populations affected

Conceptualizing EBP - Curriculum

- Step 2: Identify and collect research evidence that speaks to the middle school math curriculum under investigation
 - Curriculum publishers
 - Other school districts
 - Mathematics educators
 - What Works Clearinghouse

Conceptualizing EBP - Curriculum

- Step 3: Critically appraising the evidence to assess its validity
 - Often beyond what most educators consider themselves trained to do
 - Sources and methodology of study
 - Correspondence of study sample to school district
 - Includes student population, professional development support

Conceptualizing EBP - Curriculum

- Step 4: Applying the evidence
 - Based on the evidence, what curriculum will best meet the needs of the district?

Conceptualizing EBP - Curriculum

- Step 5: Re-evaluating the application of the evidence and identifying areas of improvement
 - Should occur before the possible two-year lag in evaluating curriculum effectiveness
 - Includes continuing to consult literature
 - Facilitating implementation as needed
 - Time required may be more than districts are willing to commit

Conceptualizing EBP – Teacher Practice

- Step 1: What are some common misconceptions students have about experimental probability, and what activities help expose and address them?
 - Question is based on prior, anecdotal experience

Conceptualizing EBP – Teacher Practice

- Step 2: Identifying articles and other resources to address the question
 - Districts have limited access to journal databases
 - Regional journals are most accessible, limited in research
 - NCTM practitioner journals are often tied to research
 - Few teachers have access to research journals

Conceptualizing EBP – Teacher Practice

- Step 3: Critically appraise the evidence
 - Consider the source
 - Consider in the context of personal experience and colleagues' experience
 - Use training in research analysis to evaluate

Conceptualizing EBP – Teacher Practice

- Step 4: Applying the evidence
 - Implementing classroom-tested activities designed to address the common misconceptions about experimental probability
 - Implementing assessments found in research-based literature

Conceptualizing EBP – Teacher Practice

- Step 5: Re-evaluate the evidence based intervention and identify areas of improvement
 - Observing student work and analyzing assessment results

Summary

- Little evidence of EBP in mathematics education
- Impediments to practice include
 - Access to resources
 - Experience analyzing resources
 - Ability to translate resources to practice
 - Time and financial constraints
- Similar practices mandated by state and federal governments