Summary of Jackson Room Research Subgroup Discussion

DOMAINS

Curriculum and Instruction

Critical Questions

1. It is important to identify what works for whom in what context?
   -Questions about what students should learn (knowledge gap) is answered through assessment
2. How can we increase teacher knowledge and skills to support high quality teaching and curriculum?
3. What cause degradation in student performance in middle school and high school –why does the gap increase (minority) and what can curriculum and instruction do to address this problem

Ideal

1. Develop a coherent set of research questions
2. Identify variables and measures on C & I that would allow us to aggregate outcomes from different interventions
3. Identify gaps in our knowledge
4. Strategy: Develop and explore the value of a matrix that integrates three elements
   a. Instructional methods
   b. Instructional tools/Curriculum materials
   c. Important demographic information

Barriers

- Research activities in the field and sponsored by the governmental are currently disjointed and not well integrated
- There is a lack of alignment between instruction, curriculum, and assessment
- Cost of research makes comprehensive, well-integrated, long-term programs of research difficult if not impossible to achieve

Opportunities for Coordination

- No Child Left Behind provide ---along with its associated programs across the government provides the most obvious point of coordination
- The federal government should try to coordinate its efforts around NCLB

Strategies

- WHAT – identify limited set of well-define prioritized variables
- WHO- Organization working at national level
- LEVEL – all levels must be involved with feds taking the overall coordinating role

Cognitive Foundations of Mathematical Competency

Issues

1. Teacher knowledge
    - Teacher cognition
    - Effects on students cognition and learning
    - Match between student and teachers development and expertise
2. Model
    - Incorporate/use models of cognition to understand representations and acquisitions of mathematics
        - Conceptual understanding
        - Procedural knowledge
        - Relationship between these two
3. Translational issues
    - Make research findings available to the general public
    - Integrate research and educational practice
    - Engage teachers as partners
    - Teachers as actual conducting research through/in their practice
        - Hypotheses
        - Collaboration

Ideal

- Understand how teachers cognitive development influences students
- Identify the most effective ways for teachers to transmit what they know
- How should teachers engage students/ask questions to facilitate cognitive development

Barriers

- Cost
- Available methodologies
- Sampling –attrition, recruitment
- Available date to support ideal and the answer questions related to the above issues

Opportunities for Coordination

- Coordinate Federal agencies
- Engage Stake holders—schools, teachers, parents

Strategies

- Identify funding and research initiatives
- Create productive networks to facilitate information flow
- Develop consensus around a research agenda
- Create incentives for professional growth and buy-in for stakeholders

Assessment

Issues

- Research on how assessment results provide information for teaches which results to improve practice, curriculum, and alignment
- We need to improve the translation process of using assessment data to improve educational practice.
- Assessment is not infused into instructional practice.
- Need new techniques to improve the validity and reliability of assessments.
- Research and assessments need a "marketing" approach to encourage the improved use of assessments

Ideal

- Teachers will utilize all data (federal, state, local, and classroom) to analyze personal performance to bring about student advancement in the learning of mathematics
- Teachers would know how to translate results to improve and individualize instruction
- Teachers are able to use assessment knowledge to improve student achievement

Barriers

- Pre-service, in-service preparation and non-traditional programs.
- Assessment is not only to measure, but also to inform practices.
- Lack of training for teachers & other educators on how to use assessments; for example, preservice education programs do not provide sufficient education on assessment techniques
- Assessment is viewed primarily as an accountability issue, both for teachers and schools; assessment is not generally viewed as a tool to improve school performance

Strategies - What

- Technologies coupled with cooperative

Strategies - Who

- Funding agencies through cooperation with research institutions and schools

Opportunities for Coordination

- States and their contractors
- Make better use of the regional organizations

Existing Resources

- University preservice and inservice education programs
- State testing contractors