Lesson Study: Lessons Learned

Daniel Willis
Loras College
Dubuque, Iowa
Our first 10,000 mistakes ...
Overview of Talk

- Project Background
- Lessons Learned: Lesson Study
- Lessons Learned: Problem-Based Instruction
- Lessons Learned: Curricula & Textbooks
- Issues / Questions
Project Background
Loras College

- Catholic Liberal Arts College
- 1700 students
- Eastern Iowa
- Mississippi River
Iowa’s “Every Student Counts”

- NCTM Standards-Based Curricula
- Teaching for Understanding
- Problem-Based Instructional Tasks
- Distributed Practice
Loras College Lesson Study Project

- **Focus:** K-6 Mathematics (since 2002)
- **49 teachers in 12 school districts**
- **Current funding:** Title II (MSP) grant (3 years) at $150,000 / year
- **Matching funding:** Loras College, Area Education Agencies, school districts
Current Project: Typical Year

- **Summer workshops:**
  - *Content & Lesson Study*
    - Week 1 (June)
    - Week 2 (August)
Current Project: Typical Year

- **School Year Activities**
  - Lesson Study process in school
  - Full group meetings
  - ICNs / speakers
  - Optional Math content class
  - Public research lessons
  - Dissemination
  - Area Leaders
Lesson Study Fairs
May 2003 & May 2004

• Introductory talks
• Poster sessions
• Public research lessons & discussions
Lessons Learned:
Lesson Study
Isolation is the enemy of improvement ...
...while other countries are continually improving their teaching approaches, the United States has no system for improving. The United States is always reforming but not always improving ...

Stigler & Hiebert, *The Teaching Gap*
NSDC Professional Development Standards

- Collaborative
- Sustained over Time
- Data Driven
- Carefully Designed
- Quality Teaching
Japanese-Style Lesson Study

- School based
- Collaborative
- Sustained over time
- Focus on learning
- Data driven
- Action research
Things We Have Learned About Organization

- Shared Leadership
- Start Small
- Recruiting
- Math vs. Reading
- Effort vs. Ability
- Math Initiatives
- Logo; T-shirts
Things We Have Learned About Research Lessons

- Process goals
- Blackboard
- Note-taking
- Interruptions
- Lesson Plans
- Teachable moments
Assessment / Accountability

• Assessing Teachers:
  – Michigan (LMT) test
  – Teacher Implementation Survey
  – Meeting Minutes
  – Lesson Plans
  – Reports
Assessment / Accountability

• Assessing Student Achievement:
  – ITBS
  – Problem Solving Probes
  – Behavior Rating Scales
Promising ITBS Data

From a Title I school in downtown Dubuque with 82% free and reduced lunch. Almost all teachers in the building have worked with us at one time or another.
Michigan (LMT) Test

- Liping Ma:
  - Elementary School Math
  - Compares US and China
  - Teacher Knowledge
  - Professional Development
# Michigan Test Results

## Year 1: Number & Operations

<table>
<thead>
<tr>
<th></th>
<th>Full Group</th>
<th>Content Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>$z = -.4$</td>
<td>$z = -.1$</td>
</tr>
<tr>
<td>Post-test</td>
<td>$z = -.4$</td>
<td>$z = +.5$</td>
</tr>
</tbody>
</table>
# Michigan Test Results

## Year 2: Geometry & Measurement

<table>
<thead>
<tr>
<th></th>
<th>Full Group</th>
<th>Content Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>$z = -.1$</td>
<td>$z = +.6$</td>
</tr>
<tr>
<td>Post-test</td>
<td>$z = +.3$</td>
<td>$z = +1.8$</td>
</tr>
</tbody>
</table>
Assessing Teachers: Meeting Minutes

Amount of time spent:
• Planning a lesson
• Looking at curriculum
• Reflecting on the lesson
• Organizational details
Anonymous Feedback from Teachers

- *This was so eye-opening*
- *It has been a great experience*
- *It has been wonderful*
- *Well worth the effort it took*
Lessons Learned:  
Problem-Based Instruction
Problem-Based Instructional Task

- Introduction
- Launch
- Explore
- Discuss (Lifting)
- Extensions
Learning Through Problem Solving: Issues (Takahashi et al)

- Problem vs. Exercise
- Problem vs. Task
- New tool vs. New concept
- Neriage/Lifting vs. Show & Tell
- One solution vs. Multiple solutions
- One representation vs. Multiple representations
### Learning Through Problem Solving: Issues (Takahashi et al)

<table>
<thead>
<tr>
<th>Comparison</th>
<th>vs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Focus on Math</td>
</tr>
<tr>
<td>Worthwhile problems</td>
<td>Engaging problems</td>
</tr>
<tr>
<td>Wordy</td>
<td>Simple</td>
</tr>
<tr>
<td>Doing problems</td>
<td>Learning from problems</td>
</tr>
<tr>
<td>Helping a little</td>
<td>Helping a lot</td>
</tr>
<tr>
<td>End of chapter</td>
<td>Throughout chapter</td>
</tr>
<tr>
<td>Help individuals</td>
<td>Neriage/Lifting</td>
</tr>
</tbody>
</table>
Math Wars: Recent Developments

- Liping Ma
- CBMS MET
- PMET
- Adding It Up
- Common Ground
- Focal Points
- Lesson Study
Lessons Learned: Curricula & Textbooks
Things We Have Learned About Textbooks & Curricula

- Curriculum Standards
- Focused & Coherent Curriculum
- Teaching to Mastery
- Standard Algorithms
- Technology
- Representations (e.g., Drawings)
Issues / Questions
Issues/ Questions

- Fidelity of Implementation
- Knowledgeable Other
- Geographical Issues
- Math Content
- Sustainability
Lesson Study: New Frontiers

- Other Subject Areas
- Other Grade Levels
- Higher Education
Project Web Site

http://myweb.loras.edu/lessonstudy

• More Information
• Resources
• Links
• Talks