IEA Teacher Education Study in Mathematics

TEDS-M PRESENTATION

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TEDS-M Website (http://teds.educ.msu.edu/)

Funding for TEDS-M is provided by a grant from the National Science Foundation to MSU
Award No. REC-0514431; the IEA, and the participating countries.
The TEDS-M study gathered data at the following three levels of teacher education systems across participating countries:

1. *National policy*: What is the national policy context for mathematics teacher education, and how do these policies vary across countries?

2. *Institutions and programs*: What are the main characteristics of teacher education programs that provide mathematics preparation to future primary and secondary teachers? In what ways do these vary across countries?

3. *Outcomes*: What is the level and depth of the mathematics and related teaching knowledge attained by prospective primary and secondary teachers? How does this knowledge vary across countries?
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## 17 Countries Participated

<table>
<thead>
<tr>
<th>Botswana</th>
<th>Norway</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Oman</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Chile</td>
<td>Philippines</td>
<td>Chinese</td>
</tr>
<tr>
<td>Georgia</td>
<td>Poland</td>
<td>Taipei</td>
</tr>
<tr>
<td>Germany</td>
<td>Russia</td>
<td>Thailand</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Singapore</td>
<td>USA</td>
</tr>
</tbody>
</table>
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Triple Survey

- Main Study data collection ended in late 2008.
  - Institution and Program Questionnaire
  - Teacher Educator Questionnaire
  - Future Teacher Questionnaire (90 minutes):
    - Background
    - Opportunities to learn
    - Beliefs
Future Teacher Questionnaire (90 minutes):

- **Mathematics & Mathematics Pedagogy Knowledge:**
  - primary level instruments: a total of 70 items
  - secondary level instruments: total of 49 items
  - close to 2/3 items measured mathematics knowledge (algebra, geometry, number and data) and
  - close to 1/3 items measured mathematics pedagogy knowledge (curriculum, planning and enacting)
  - two-block test that used a rotated 5-block design for primary and 3-block design for secondary to cover all these items in 60 minutes.
  - this design permits estimation and analysis of the full covariance matrix, and includes enough items and score points to generate IRT (item response theory) scales.
Surveyed:

- 15,163 Primary Future Teachers
- 9,389 Secondary Future Teachers
- 500 institutions which included
  - 451 units preparing future primary teachers, and
  - 339 units preparing future secondary teachers
- 4837 teacher educators

Currently in the data analysis and report writing phase
November 28, 2008: DPC sent cleaned MS data to International Centers and to NRCs

December 2008: Begin analysis of Main Study data

The TEDS-M Sample Characteristics Summary was finalized by the Sampling team at DPC (1/2009).

Sample adjudication for most countries was finalized at the ISC at MSU and submitted to IEA-TEG (2/2009).
March 9 – 12, 2009: 5th NRC Meeting (Chicago, USA): Discuss tables and structure of the International Reports

Two scale anchoring workshops in East Lansing, MI:
- Secondary (June 4 & 5)
- Primary (July 1 & 2)

July 2009 DPC sent first international data version to NRCs

July 20 -24, 2009: 6th NRC Meeting (Santiago, Chile):
- Initial training on the use of TEDS-M International /national database (DPC)

September, 2009: Data analysis workshop at MSU.
During this period, we finalized the scales for the main outcome measures and for opportunities to learn:

- Mathematics Content Knowledge (primary and secondary)
- Mathematics Pedagogy Knowledge (primary and secondary)
- Beliefs
- Opportunity to Learn
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PROGRAM TYPES PRESENTATION
The Data Base & Guide draft outline has been developed including deadlines for the delivery and training on the use of the database.

The Technical Report is under development by the TEDS-M team.

The TEDS-M Final Report outline has been developed and is currently under discussion. The lead for this report falls under the MSU ISC.

1st version of international database was finalized by DPC after all countries responded to queries (May/June 2009). 2nd version will be finalized this month.
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Three-Stage Release all to occur in 2010

- Release of “First International Findings” in Washington, D.C.

- Release of two full international reports:
  - Volume 1: National polices and regulatory arrangements for the mathematics preparation of future teachers in 17 countries
  - Volume 2: Institutions, programs, opportunities to learn and outcomes for the mathematics preparation of future teachers in 17 countries
  - Technical reports

- Release international data base (IDB).
Each country’s teacher education system is subdivided into one or more program-types representing those programs that share important organizational features.

Program-types prepare teachers for different levels of schooling and different combinations of subject-matter.
For purposes of analysis, the future teachers in these program types have been grouped by:

- Their inclusion in the TEDS-M primary sample, secondary sample or both
- The highest grade level which they will be qualified to teach
- Their preparation as specialists (teaching math only or math plus one other subject) vs generalists (teaching three or more subjects)

Resulting in 4 primary & 3 secondary groups
### Primary Program Type Groupings

<table>
<thead>
<tr>
<th>Lower primary generalist (no higher than grade 4)</th>
<th>Germany, Poland, Switzerland, Russian Federation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower and upper primary generalist (no higher than grade 6)</td>
<td>C. Taipei, Georgia, Malaysia, Philippines, Singapore, Spain, Switzerland, USA</td>
</tr>
<tr>
<td>PRIMARY PROGRAM TYPE GROUPINGS (CONT)</td>
<td>Botswana, Chile*, Germany, Norway</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Primary and lower secondary generalists (no higher than grade 10)</td>
<td></td>
</tr>
<tr>
<td>Primary and lower secondary specialists (no higher than grade 10)</td>
<td>Germany, <em>Poland</em>, Thailand* USA*</td>
</tr>
</tbody>
</table>
## Secondary Program Type Groupings

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary and lower secondary OR lower secondary only specialists (no higher than grade 10)</td>
<td>Botswana, C. Taipei, Germany*, Philippines, Poland*, Switzerland, USA*</td>
</tr>
<tr>
<td>Lower and upper secondary specialists (no higher than grade 12/13)</td>
<td>Botswana, Georgia, Germany, Malaysia, Oman, Norway, Poland, Russian Federation, Singapore, Thailand*, USA</td>
</tr>
<tr>
<td>Lower secondary <strong>generalist</strong></td>
<td>Chile*</td>
</tr>
</tbody>
</table>
### Program-types for generalists no higher than grade 4

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>PROGRAM-TYPE NAME</th>
<th>TEDS-M LEVEL</th>
<th>GRADE SPAN</th>
<th>SPECIALIZATION</th>
<th>CONSEC VS CONCURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>Teachers of Grades 1-4 with math</td>
<td>Primary</td>
<td>1-4</td>
<td>Generalist</td>
<td>Consecutive</td>
</tr>
<tr>
<td>Germany</td>
<td>Teachers of Grades 1-4 without math</td>
<td>Primary</td>
<td>1-4</td>
<td>Generalist</td>
<td>Consecutive</td>
</tr>
<tr>
<td>Poland</td>
<td>B. Ped, integrated teaching, 1(^{st}) cycle</td>
<td>Primary</td>
<td>1-3</td>
<td>Generalist</td>
<td>Concurrent</td>
</tr>
<tr>
<td>Poland</td>
<td>B. Ped, integrated teaching, long cycle</td>
<td>Primary</td>
<td>1-3</td>
<td>Generalist</td>
<td>Concurrent</td>
</tr>
<tr>
<td>Russia</td>
<td>Primary teacher education</td>
<td>Primary</td>
<td>1-4</td>
<td>Generalist</td>
<td>Concurrent</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Teachers for Grades 1-2</td>
<td>Primary</td>
<td>1-2</td>
<td>Generalist</td>
<td>Concurrent</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Teachers for Grades 1-3</td>
<td>Primary</td>
<td>1-3</td>
<td>Generalist</td>
<td>Concurrent</td>
</tr>
</tbody>
</table>
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### Specialists for combined primary-lower secondary OR lower secondary only

<table>
<thead>
<tr>
<th>Country</th>
<th>Program-tpType Name</th>
<th>TEDS-M Level</th>
<th>Grade Span</th>
<th>Specialization</th>
<th>Consecutive vs Concurrent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>Diploma in Sec Education</td>
<td>Lower secondary</td>
<td>8-10</td>
<td>Specialist</td>
<td>Concurrent</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>Sec MathTeacher Preparation</td>
<td>Lower secondary</td>
<td>7-9</td>
<td>Specialist</td>
<td>Concurrent</td>
</tr>
<tr>
<td>Germany</td>
<td>Teacher for Grades 1-10 with math</td>
<td>Primary &amp; lower secondary</td>
<td>1-10</td>
<td>Specialist</td>
<td>Consec</td>
</tr>
<tr>
<td>Germany</td>
<td>Teacher for Grades 5-10</td>
<td>Lower secondary</td>
<td>5-10</td>
<td>Specialist</td>
<td>Consec</td>
</tr>
<tr>
<td>Poland</td>
<td>Mathematics BA, 1st cycle</td>
<td>Primary &amp; lower secondary</td>
<td>4-9</td>
<td>Specialist</td>
<td>Concurrent</td>
</tr>
</tbody>
</table>
Thank You!
We will be happy to take questions.