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Identifying Best Practices in Mathematics and Science: Teacher Preparation in APEC Economies

Purpose: Information
Submitted by: United States

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Improving the Preparation of Secondary Mathematics and Science Teachers

Identifying Best Practices in Mathematics and Science: Teacher Preparation in APEC Economies

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Project Goals

- Compare teacher preparation programs in APEC Economies in order to identify, describe, and share promising practices for teacher preservice preparation
  - Identify and promote best practices and policies
  - Help to develop new models for the improvement of teacher quality
  - Provide a knowledge base from which Economies can adapt interventions and assess their effectiveness
  - Bridge the experiences of the East and West
  - Facilitate mutual learning from diverse approaches

Project Activities

Economy Context		Teacher Preparation (Sample of Institutions)		Prospective Teacher ASSESSMENT of Math/Science
Economy PROFILES	**Economy Secondary Math/Science STANDARDS**	**Secondary Math/Science Teacher Preparation CURRICULUM**	**Exemplary Practice CASE STUDIES**	
Key Questions • What are key characteristics of the economy's education systems? • What are key characteristics of teacher education schools?	**Key Questions** • What are the math/science standards? • How do standards address 21st century challenges (math/science for all, use of technology, real-world issues)?	**Key Questions** • What are the institution's secondary math/science educational objectives? • What is the students' course preparation plan to meet these objectives?	**Key Questions** • What are promising practices in improving the content or pedagogical preparation of secondary math/science teachers?	**Key Questions** • What is the prospective teachers' level of: - high school student math content knowledge; - advanced math content knowledge; and - pedagogical content knowledge?

1. Develop Education Profiles

Lead: United States (University of Pennsylvania)

Outcome: To provide necessary background information about the APEC member education systems and operations of teacher education schools to better understand the preparation of secondary math and science teachers.

Progress on Profile Analyses

- Writing profiles that focused on:
  - General economic, educational, and demographic context of each economy.
  - Teaching force and working conditions.
  - Major characteristics of teacher preparation programs.
  - Characteristics preparation programs-within institutions.
  - After preparation programs.
- *Timeline*: to be completed in early 2012

2. Compare Mathematics and Science Standards for Secondary Education

Lead: United States (University of Pennsylvania)

Outcome: Compare mathematics and science standards for secondary/upper secondary grades

Progress on Standards

- Currently collecting and studying standards with attention to qualitative analyses of similarities and differences between standards of different economies, such as
  - proportion of time spent on particular topics
  - focus of standards
  - format of standards
- *Timeline*: to be completed in early 2012

4. Conduct Case Studies

- **Lead:** Singapore
- **Outcome:** Conduct case studies of teacher preparation systems in each Economy.

Progress on Case Studies

- Template for case studies developed and distributed
- Economies preparing one draft case study in February 2012
- Additional case studies to be written and shared

- *Timeline*: Case studies completed by early 2013

4. Conduct Mathematics and Science Assessments

- **Lead**: United States
  - United States (mathematics lead)
  - Australia and New Zealand (science leads)

- **Outcome**: Develop and administer assessment for graduating prospective secondary mathematics and science teachers

Progress on Assessments

- Each Economy selects teacher preparation institutions
- Assessment development is underway
- Assessment administration during the last semester of teacher training
  - Southern Hemisphere: Fall 2012
  - Northern Hemisphere: Spring 2013.

- *Timeline*: Assessment completed by May 2012; administration/scoring completed by June 2013.

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