21st Century Competencies For All: Building on the Past to Move Toward the Future

Symposium Overview

To provide Ministers with comparative analyses and good examples of integrating 21st Century competencies into policy and practice by:

- **Identifying policy directions and challenges**
- **Comparing Economy standards**
- **Providing practical information to improve education through case studies and online tools**

Priority Content Areas

In addition to the overall theme of **21st Century Competencies for All**, the four priority areas of focus for the APEC Symposium are:

- **English and other languages** needed to communicate in the global economy.
- **Mathematics and sciences** for higher-order data and analytic skills resulting from a reliance on ICT.
- **Career and technical education** needed to prepare students for the world of work in the 21st Century.
- **ICT and Systemic Reform** that crosscuts the content areas of English, math and science, and CTE.

These themes and priority areas selected for the 2nd APEC Symposium on Education Reform are based on:

- **Concentrating on education content areas** in which education topics are applicable across economies with diverse populations, languages and economies
- **Building on and further focusing on the priority areas selected by the APEC Education Ministers** at the 3rd APEC Education Ministerial Meeting in Santiago in 2004, with an emphasis on 21st Century competencies.

Symposium Program

Symposium presentations are organized around the themes and priority areas in the following sessions:

- **Session 1. 21st Century Competencies:** What they are and how Economies have changed their education systems to focus on them.

- **Sessions 2-4. How APEC Economies Meet the Challenges of 21st Century Competencies in Priority Content Areas**: Foreign Language, Mathematics and Science, and Career and Technical Education.

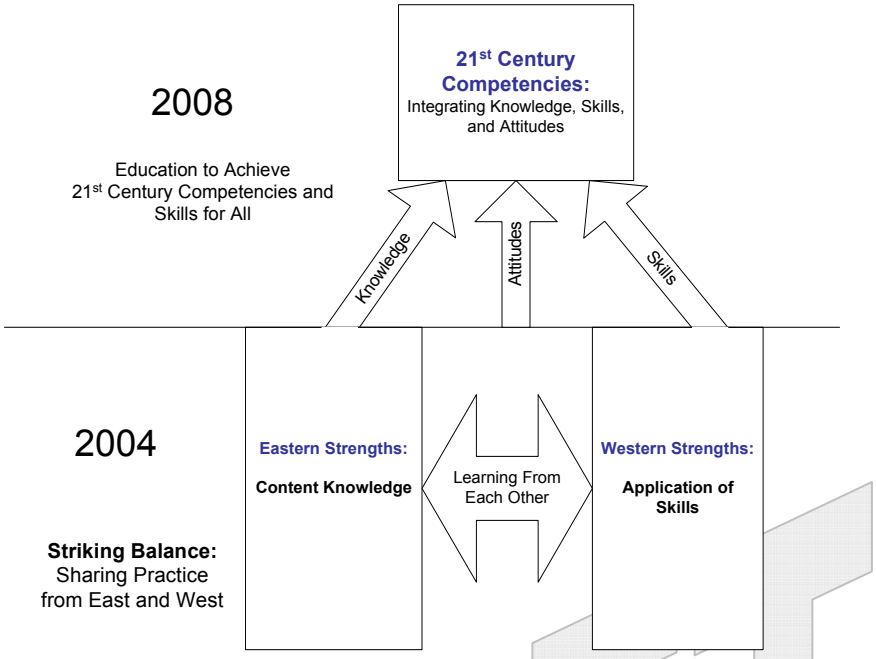
- **Session 5. How ICT and Systemic Reform support education systems in achieving 21st Century Competencies:** a look at five case studies.

- **Session 6. Summary and Implications for 2008 APEC Education Ministerial in Peru:** Recommendations for the development of future APEC projects and activities.

Building on the Past : Beyond the 2004 Priorities

In the 2004 APEC Education Reform Symposium in Beijing, EDNET examined the differing traditions and educational philosophies in Eastern and Western Economies that have lead education systems in the APEC region to develop in very different ways. The focus of the 2004 Symposium was two-fold: school systems must effectively impart *content* knowledge, at which Eastern systems have traditionally been strong, while at the same time promoting creativity and critical thinking *skills*, traditionally the strengths of the West's education systems. It was clearly acknowledged at that Symposium, and later in the 3rd APEC Education Ministerial Meeting, that all Economies have an interest in preparing students to succeed and prosper in an increasingly global economy and that we can learn from one another in these two areas. However, the emphasis for this joint learning was on conducting research that is not a strength of APEC because of its decentralized nature.

The 2008 APEC Education Reform Symposium in Xi'an will build on the content and skills themes of the Beijing Symposium but acknowledges that 21st Century workers need to go to a higher level to attain 21st Century competencies. It will also provide Ministers with some robust analyses that they can use to help their citizens attain 21st Century competencies, as opposed to only recommending research. These analyses can then be crafted to build APEC-wide tools.

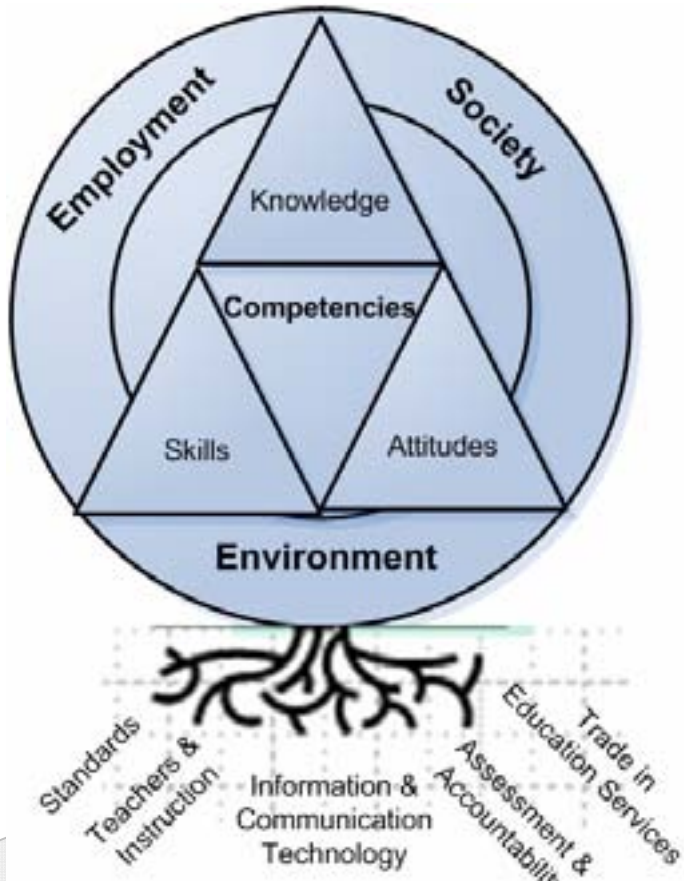


Moving Toward the Future: Competencies and Education Systems

Competencies are demonstrated accomplishments inside or outside of the formal education system. Competencies are made up of combinations of knowledge, skills, and attitudes. Under a competency approach, students demonstrate that they are able to use what they learn in different educational subjects or occupational areas to solve meaningful tasks and challenges.

Competencies respond to the "new division of labor" in the 21st Century Economy:

- ICT is replacing workers in jobs requiring routine lower-level skills.
- Technology is enhancing the value of people with higher-level competencies involving data analyses, interpretation, and problem solving.
- Trade is increasing the economic importance of being competent in communicating in a foreign language through multiple modalities.
- Multiple jobs and technological innovations are increasing the importance of broader occupational competencies.



In addition, technological changes are having fundamental impacts on society and the environment. The concern over global warming and the push toward a clean environment are two prominent examples. Moreover, technology is also exerting fundamental changes in how we live individually and in social networks. A 21st Century education needs to prepare students with the competencies to intelligently understand and manage their lives in society and the environment as well as employment.

The different elements of the education system need to be properly aligned to support students achieving the competencies and the component knowledge, skills and attitudes that support the competencies. Alignment starts with the standards that identify what students are intended to know about a content area in the context of the 21st Century competencies. Instructional topics and teacher preparation should be aligned to ground students in the education specified by standards. Assessment and accountability systems should include assessment items that are sufficiently authentic to cover appropriate learning of both information and the application of information to approximate authentic contexts. Trade in education services, real or virtual can facilitate an economy meeting highs standards through taking advantage of international expertise

ICT is increasingly an important part of a 21st Century education system. ICT is already an essential tool for students to use in problem solving in applied areas including mathematics, science and vocational education. But in the future, ICT can also be important for delivering instruction or professional development, as several symposium examples illustrate for language, mathematics, and science.

Session 1: 21st Century Competency Framework and Member Approaches

Presentations will lay out the Competency Framework applied to symposium priority content areas (See chart below), the research behind it, policy directions for integrating 21st Century competencies into education systems, and case studies of Economy activities.

Typical Competencies in Priority Academic Content Areas			
Competency Examples by Academic Content Areas (Types of Uses, Proficiency Levels)	**Knowledge Examples (Facts, Concepts, Rules)**	**Skill Examples (Procedural, Strategic Problem-Solving, Communication, Organizational)**	**Attitudinal Examples (Metacogniton, Willingness to Learn, Ethics)**
English and Other Foreign Languages			
ACTFL: Competencies defined in terms of a scale of proficiency levels in using language in different skill areas: -Novice, - Intermediate, -Advanced, -Superior	-Grammar -Vocabulary	- Reading - Listening, -Speaking -Writing	- Motivation to take a foreign language -Willingness to use language and make mistakes in real world settings.
Mathematics (up to high school diploma)			
Competencies defined in terms of using mathematics to solve problems (OECD/PISA): -- *reproduction competency* uses practiced math facts and routine procedures -- *connections competency* uses situations that are not routine, but still involve quasi-familiar settings -- *reflections competency* uses non-routine procedures (complex problem-solving reflection and insight, original mathematical approaches, multiple complex methods)	-Numbers -Measurement -Geometry -Algebra -Statistics and Probability	- Procedural skills (e.g., arithmetic) -Strategies to solve problems (including messy real-world problems) -Communicating solutions	- Metacognition Motivation to learn mathematics --Ability to understand the need for math in a 21st Century world.
Science (Up to High School Diploma)-			

Competencies defined in terms of using science to (Drawn from PISA) • Identify scientific issues • Explain phenomena scientifically • Use scientific evidence Competencies scales are defined by such characteristics as complexities of problem context, familiarity of scientific ideas, level of scientific reasoning.	Facts and concepts in: - Physical Systems -- Living Systems - Earth and Space Systems - Technology Systems - Alternative organization around big ideas - Energy -Diversity of living things - Cycles - Interactions within environment, physical things	- Using science equipment - Inquiry process -Strategic problem solving -Communicating	- Interest in science - Support for inquiry methods - Responsibility towards resources and the environment
Career and Technical Education			
All Career Clusters	-Academic foundations -Information technology applications -Systems -Safety, health, and environmental issues	-Communications -Problem-solving and critical thinking -Technical skills	-Leadership and teamwork -Ethics and legal responsibilities -Employability and career development

Sessions 2-4: Achieving 21st Century Competencies for All: Language, Mathematics and Science, and Career and Technical Education

Presentations cover the three priority content areas of language instruction, mathematics, science, and career and technical education (CTE). Three types of presentations are developed:

- **Results of member policy surveys**: Identifies key research, policy directions and challenges in meeting 21st Competencies.
- **Crosscutting syntheses**: Compares either content areas standards or assessments (i.e., language assessments, math/science standards comparisons, and CTE standards).
- **Member case studies**: Features comprehensive or reformed education delivery systems and, in some cases, online interventions that can help Economy members in particular content areas.

Session 5: ICT and Systemic Reform

Case study presentations emphasize how member education systems use ICT and Systemic Reform to move their systems toward achieving the goal of 21st Century Competencies for All:

- **ICT in Korea**: A leading Economy in applying ICT to education.
- **Accountability for Student Outcomes**: The U.S. No Child Left Behind Legislation.
- **Systemic Reform and Evaluation:** Results of the Malaysian Conference.

- **A Developing Economy's Challenges**: Peru presents on their goals of systemic reform.
- **Trade in Education Services**: Australia overview of trade in education services and how trade can be facilitated.

Session: Summary and Implications for 2008 APEC Education Ministerial in Peru

Under Construction, more details coming soon…