Recreating Education for Our Students

Susan Sclafani
The Pearson Foundation
Why?
What has changed?
The Journey to A Knowledge-based Society

Agriculture  Industry  Service  Knowledge

Jørn Skovsgaard, Ministry of Education, Denmark
Knowledge-based Society

What are key drivers to growth?

Agriculture:
Mechanization, use of fertilizers, new crops

Industry:
Development of the assembly-line/ “Taylorisation”

Service:
Deprivatizing of family-functions

Knowledge:
Access to innovation and knowledge systems
Knowledge-based Society

What are implicit ideological goals for education?

Agriculture:
*Subservient and useful subjects*

Industry:
*Disciplined workers/ assertion of rights and duties*

Service:
*Motivated and self-reliant citizens*

Knowledge:
*Risk-taking entrepreneurs, focused on the global context and technological advance.*
The Demand for Skills Has Changed

Economy-wide measures of routine and non-routine task input (US)

Mean task input as percentiles of the 1960 task distribution

(Levy and Murnane)
Profile of Successful U.S. Firms in the Future

IN THE UNITED STATES

- Research
- Development
- Design
- Marketing and Sales
- Global Supply Chain Management

Creative Work

IN LESS DEVELOPED COUNTRIES

Routine Work
DONE BY PEOPLE

Routine Work
DONE BY MACHINES
Profile of Successful Workers

• Top academic performance in all five core areas: English, social studies, mathematics, science and the arts

• Creative and innovative

• Able to learn very quickly

The New Commission on the Skills of the American Workforce Report: Tough Choices or Tough Times
Where are we now?
Growth in baseline qualifications
A world of change

Approximated by percentage of persons with ISCED3 qualifications in age groups 55-64, 45-55, 45-44, and 25-34 years.
<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>5%ile</th>
<th>25%ile</th>
<th>75%ile</th>
<th>95%ile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>563</td>
<td>419</td>
<td>506</td>
<td>622</td>
<td>700</td>
</tr>
<tr>
<td>Canada</td>
<td>534</td>
<td>372</td>
<td>472</td>
<td>601</td>
<td>681</td>
</tr>
<tr>
<td>Japan</td>
<td>531</td>
<td>356</td>
<td>465</td>
<td>603</td>
<td>685</td>
</tr>
<tr>
<td>New Zealand</td>
<td>530</td>
<td>347</td>
<td>455</td>
<td>608</td>
<td>699</td>
</tr>
<tr>
<td>Australia</td>
<td>527</td>
<td>358</td>
<td>459</td>
<td>598</td>
<td>685</td>
</tr>
<tr>
<td>Netherlands</td>
<td>525</td>
<td>362</td>
<td>456</td>
<td>596</td>
<td>675</td>
</tr>
<tr>
<td>Korea</td>
<td>522</td>
<td>367</td>
<td>462</td>
<td>586</td>
<td>662</td>
</tr>
<tr>
<td>Germany</td>
<td>516</td>
<td>345</td>
<td>447</td>
<td>587</td>
<td>672</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>515</td>
<td>337</td>
<td>441</td>
<td>590</td>
<td>685</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>513</td>
<td>350</td>
<td>443</td>
<td>583</td>
<td>672</td>
</tr>
<tr>
<td>Switzerland</td>
<td>512</td>
<td>340</td>
<td>445</td>
<td>584</td>
<td>665</td>
</tr>
<tr>
<td><strong>OECD Average</strong></td>
<td><strong>500</strong></td>
<td><strong>340</strong></td>
<td><strong>434</strong></td>
<td><strong>568</strong></td>
<td><strong>652</strong></td>
</tr>
<tr>
<td>Poland</td>
<td>498</td>
<td>352</td>
<td>434</td>
<td>562</td>
<td>645</td>
</tr>
<tr>
<td>Denmark</td>
<td>496</td>
<td>341</td>
<td>432</td>
<td>562</td>
<td>646</td>
</tr>
<tr>
<td>France</td>
<td>495</td>
<td>320</td>
<td>424</td>
<td>570</td>
<td>653</td>
</tr>
<tr>
<td>Iceland</td>
<td>491</td>
<td>328</td>
<td>424</td>
<td>560</td>
<td>644</td>
</tr>
<tr>
<td><strong>USA</strong></td>
<td><strong>489</strong></td>
<td><strong>318</strong></td>
<td><strong>412</strong></td>
<td><strong>567</strong></td>
<td><strong>662</strong></td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>488</td>
<td>344</td>
<td>426</td>
<td>555</td>
<td>638</td>
</tr>
<tr>
<td>Spain</td>
<td>488</td>
<td>338</td>
<td>427</td>
<td>552</td>
<td>633</td>
</tr>
<tr>
<td>Norway</td>
<td>487</td>
<td>328</td>
<td>422</td>
<td>553</td>
<td>641</td>
</tr>
<tr>
<td>Mexico</td>
<td>410</td>
<td>281</td>
<td>354</td>
<td>465</td>
<td>544</td>
</tr>
</tbody>
</table>
2009 Performance in Reading
2009 Performance in Mathematics

OECD (2007), PISA 2006 - Science Competencies for Tomorrow's World, Table 6.1c
2009 Performance in Science
What Do Employers Say Are Important Skills?
<table>
<thead>
<tr>
<th>Rank</th>
<th>Basic Knowledge/Skills</th>
<th>% Responded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Professionalism/Work Ethic</td>
<td>80.3</td>
</tr>
<tr>
<td>2</td>
<td>Teamwork/Collaboration</td>
<td>74.7</td>
</tr>
<tr>
<td>3</td>
<td>Oral Communications</td>
<td>70.3</td>
</tr>
<tr>
<td>4</td>
<td>Ethics/Social Responsibility</td>
<td>63.4</td>
</tr>
<tr>
<td>5</td>
<td>Critical Thinking/Problem Solving</td>
<td>57.5</td>
</tr>
<tr>
<td>6</td>
<td>Information Technology Application</td>
<td>53</td>
</tr>
<tr>
<td>7</td>
<td>Written Communications</td>
<td>52.7</td>
</tr>
<tr>
<td>8</td>
<td>Diversity</td>
<td>52.1</td>
</tr>
<tr>
<td>9</td>
<td>Lifelong Learning/Self Direction</td>
<td>42.5</td>
</tr>
<tr>
<td>10</td>
<td>Creativity/Innovation</td>
<td>36.3</td>
</tr>
<tr>
<td>11</td>
<td>Leadership</td>
<td>29.2</td>
</tr>
</tbody>
</table>

Basic skills rank ordered by percent rating as “very important.”
Number of respondents varied for each question, ranging from 352 to 356. “Are They Really Ready to Work? Employers’ Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce”.
## Rating Percentages for HS Graduates: Applied Skills

<table>
<thead>
<tr>
<th>Skill</th>
<th>% Deficient</th>
<th>% Adequate</th>
<th>% Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionalism/Work Ethic</td>
<td>70.3</td>
<td>28.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Teamwork/Collaboration</td>
<td>34.6</td>
<td>60.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Oral Communications</td>
<td>52.7</td>
<td>45.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Ethics/Social Responsibility</td>
<td>44.1</td>
<td>53.0</td>
<td>2.9</td>
</tr>
<tr>
<td>Critical Thinking/Problem Solving</td>
<td>69.6</td>
<td>30.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Information Technology Application</td>
<td>21.5</td>
<td>62.8</td>
<td>15.8</td>
</tr>
<tr>
<td>Written Communications</td>
<td>80.9</td>
<td>18.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Diversity</td>
<td>27.9</td>
<td>61.8</td>
<td>10.3</td>
</tr>
<tr>
<td>Lifelong Learning/Self Direction</td>
<td>58.2</td>
<td>40.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Creativity/Innovation</td>
<td>54.2</td>
<td>43.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Leadership</td>
<td>72.5</td>
<td>26.3</td>
<td>1.2</td>
</tr>
</tbody>
</table>
SCANS Report: Skills for the 21st Century

• Fundamental Competencies: Effective workers can productively use:
  – Resources
  – Interpersonal skills
  – Information
  – Systems
  – Technology

• Foundation Skills: Competent workers need:
  – Basic Skills
  – Thinking skills
    • Creative Thinking
    • Decision making
    • Problem solving
    • Seeing things in one’s mind’s eye
    • Knowing how to learn
    • Reasoning
  – Personal qualities
Problem Solving in PISA

- Identify problems in cross-curricular settings;
- Identify relevant information or constraints;
- Represent possible alternatives or solution paths;
- Select solution strategies;
- Solve problems;
- Check or reflect on the solutions; and
- Communicate the results.
Types of Problem Solving in PISA

- Making decisions under constraints;
- Evaluating and designing systems for a particular situation; and
- Trouble-shooting a malfunctioning device or system based on a set of symptoms.
Conceptual Worker:

- Intrinsically motivated
- Loves what s/he does
- Freedom important
- Authenticity
- Putting self on the line
- Defining one’s own success

- **Enable** students to reach their potential through increased access to educational resources and experts that extend their learning beyond the capacities or limitations of their school or community.

- **Engage** students in rich, compelling learning experiences that develop deeper knowledge and skill development, especially the problem-solving, creativity and critical thinking skills so highly desired for our world today.

- **Empower** students to take responsibility for their own educational destinies and to explore knowledge with an unfettered curiosity, thus creating a new generation of lifelong learners.
Examples of Student Ideas for Science

– Use animations to visualize difficult concepts
– Use on-line databases for research
– Practice what I have learned through interactive simulations
– Create multi-media presentations of scientific findings
How Can the Arts Help Us Create A New Education Vision?
Critical Links: Learning in the Arts and Student Academic and Social Development–2002–Findings

• The arts involve fundamental cognitive capacities.
  – Spatial Reasoning
  – Conditional Reasoning
  – Imagination and Inventiveness
  – Creative Thinking
  – Symbolic Interpretation and Expression
Critical Links – Findings

- The arts develop habits of mind:
  - Engagement: Active participation in learning
  - Achievement Motivation: Desire to master new material
  - Persistence: Disciplined and sustained attention
  - Resilience: Positive response to challenge and frustration
  - Risk-taking: Willingness to put self on the line
Critical Links – Findings

• The arts engage and promote personal and social development.
  – Self-Identity/Self-Efficacy: Realistically valuing oneself
  – Collaborative Learning and Action
  – Empathy: Seeking to understand others
  – Social Tolerance: Respecting multiple points of view