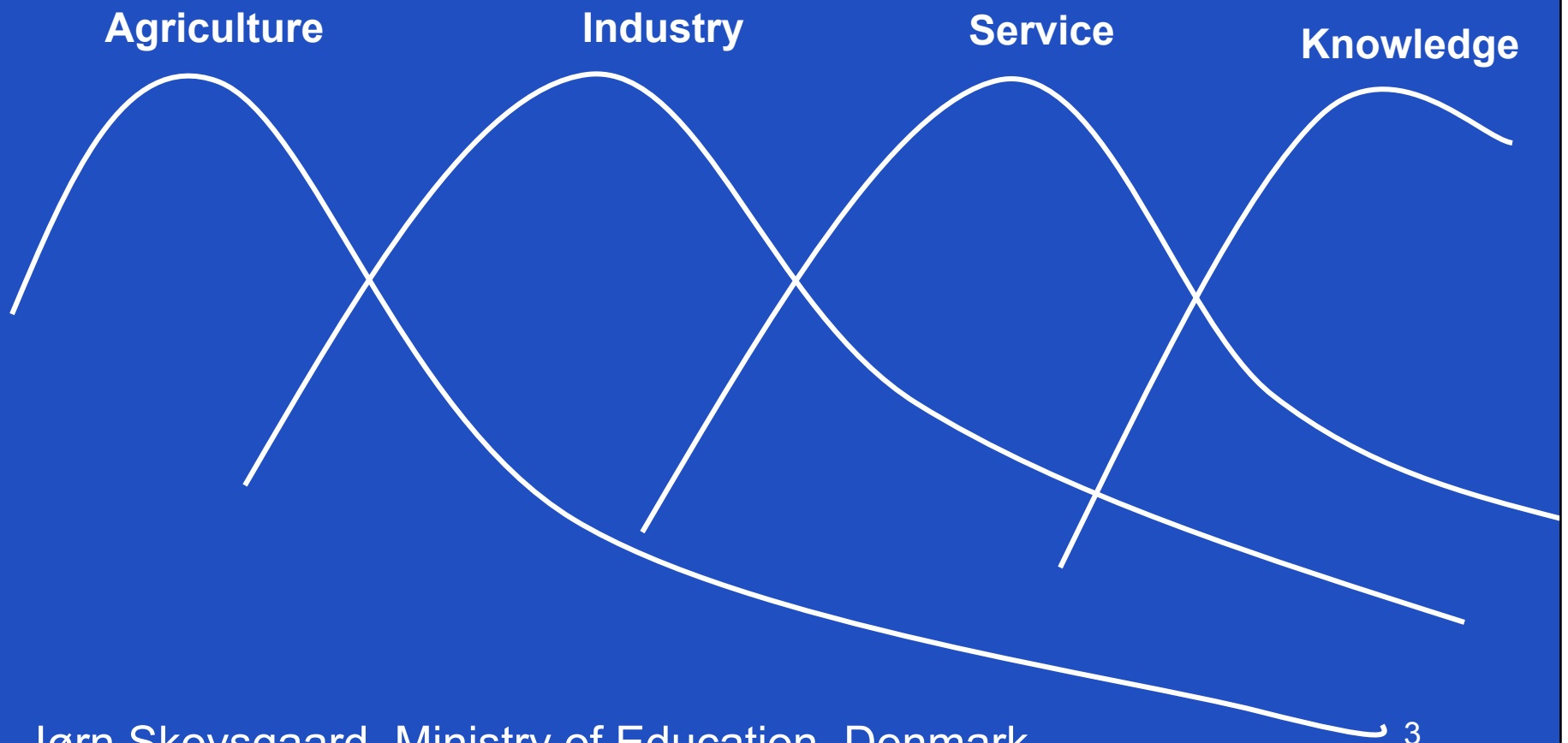


# Recreating Education for Our Students

Susan Sclafani  
The Pearson Foundation

Why?  
What has changed ?

# The Journey to A Knowledge-based Society



Jørn Skovsgaard, Ministry of Education, Denmark

# Knowledge-based Society

## *The Perspective*

***The Local*** Agriculture

Industry

***The National***

Service

Knowledge

***The Global***

# 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:**

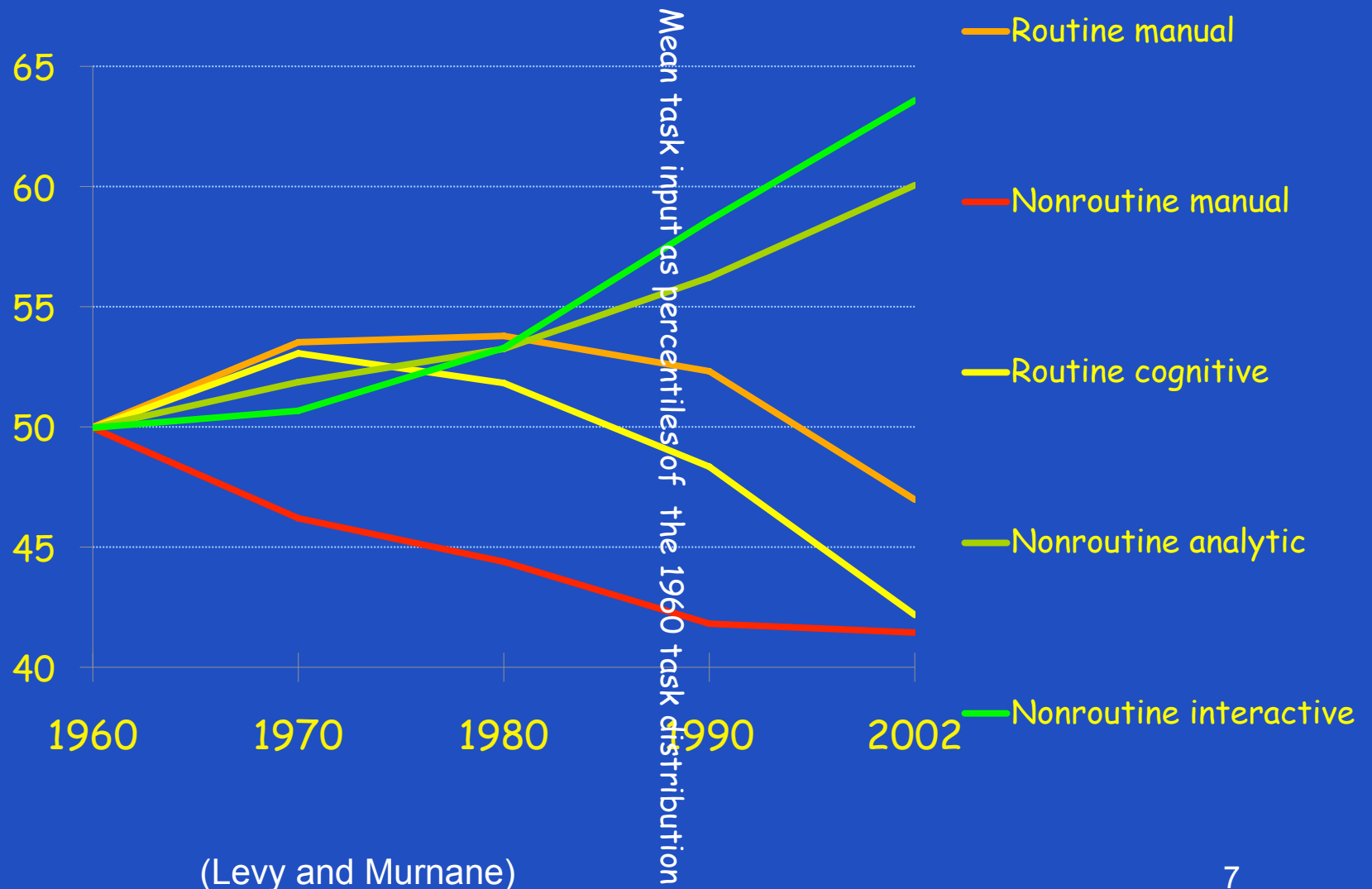
*Motivated and self-reliant citizens*

## **Knowledge:**

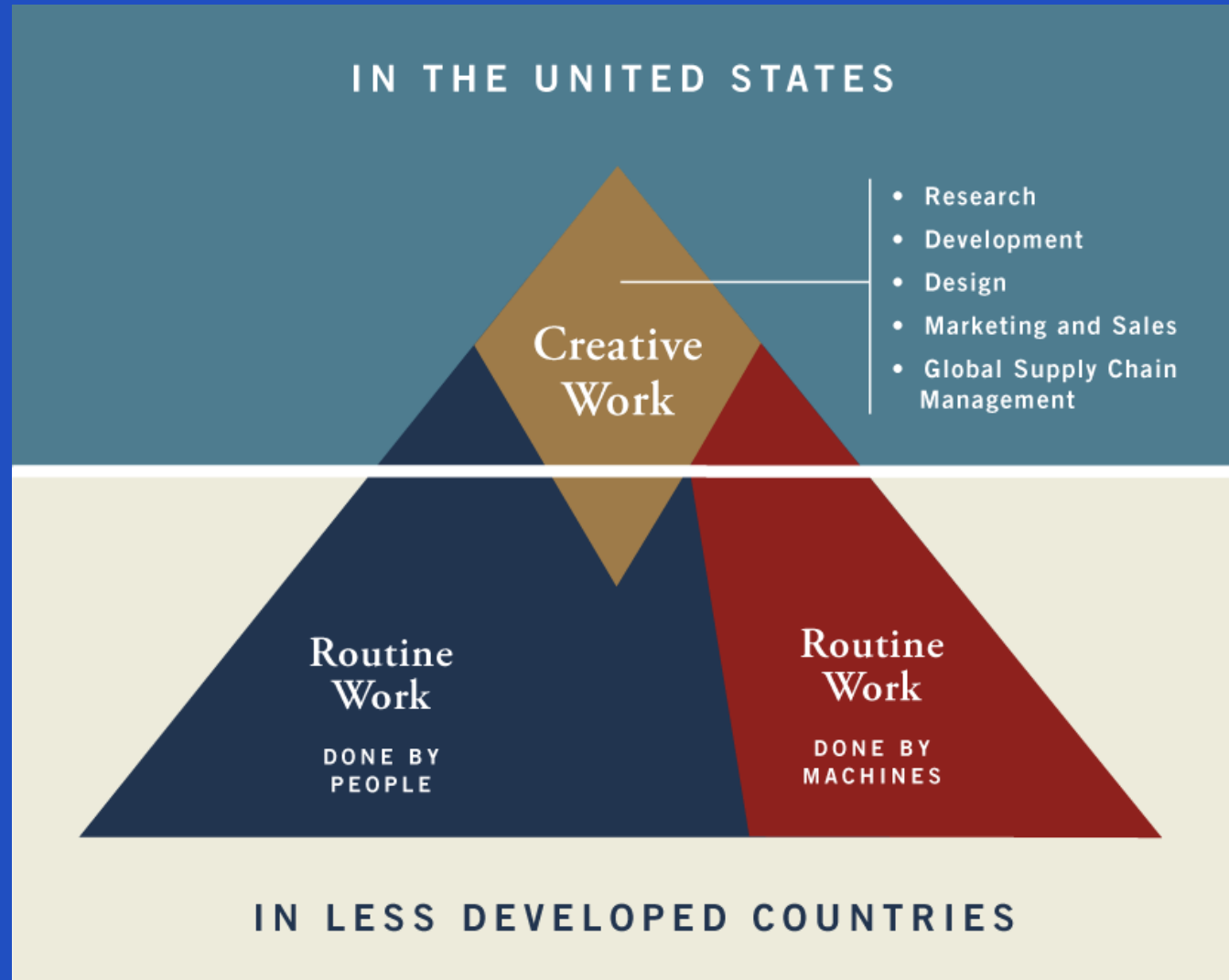
*Risk-taking entrepreneurs, focused on the global context and technological advance.*

# The Demand for Skills Has Changed

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



# Profile of Successful U.S. Firms in the Future





# Profile of Successful Workers

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- Top academic performance in all **five core areas**: English, social studies, mathematics, science and the arts
- Creative and innovative
- Able to learn very quickly

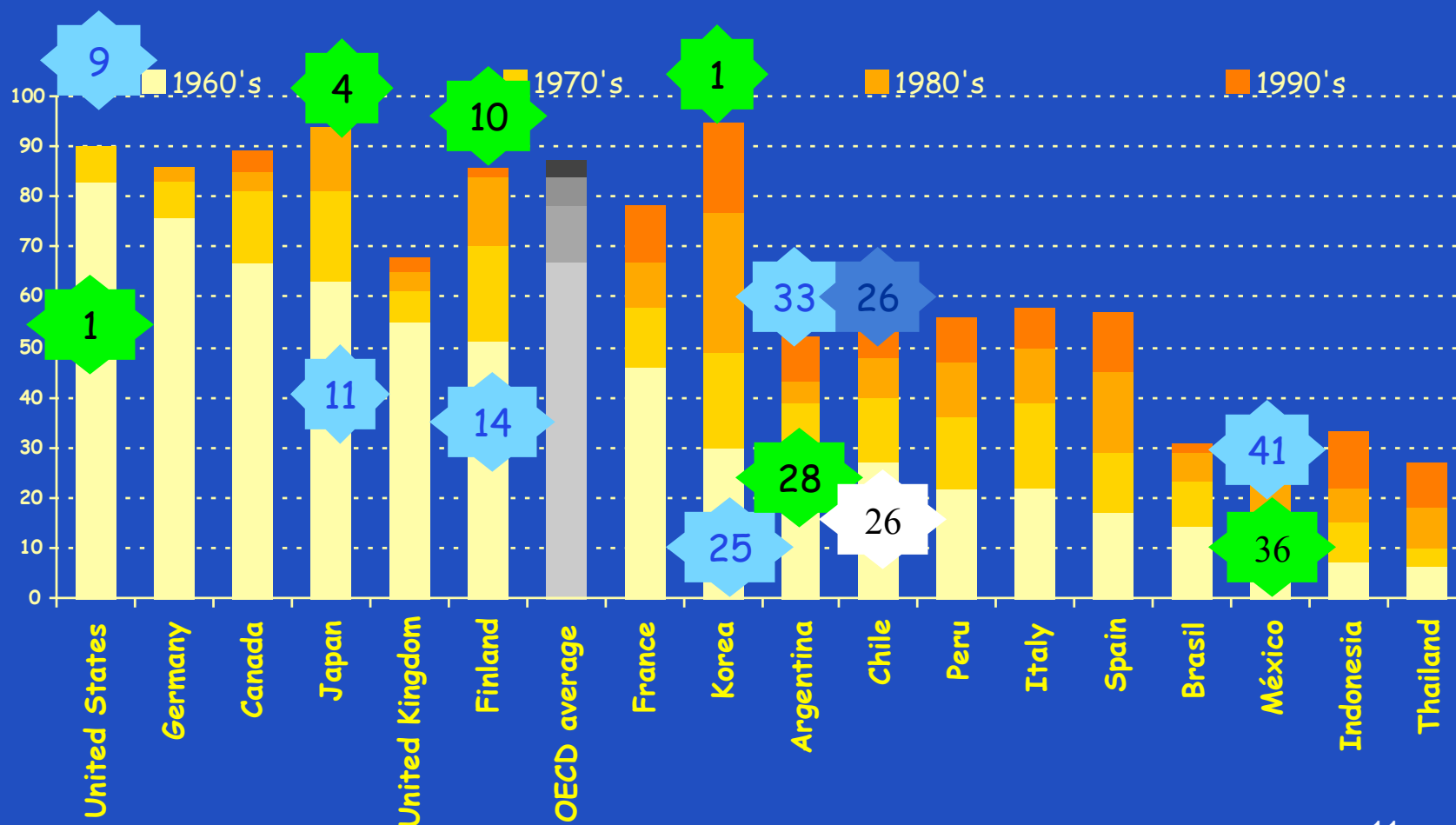
The *New* Commission on the Skills of the American Workforce  
Report: *Tough Choices or Tough Times*

Where are we now?

# Growth in baseline qualifications

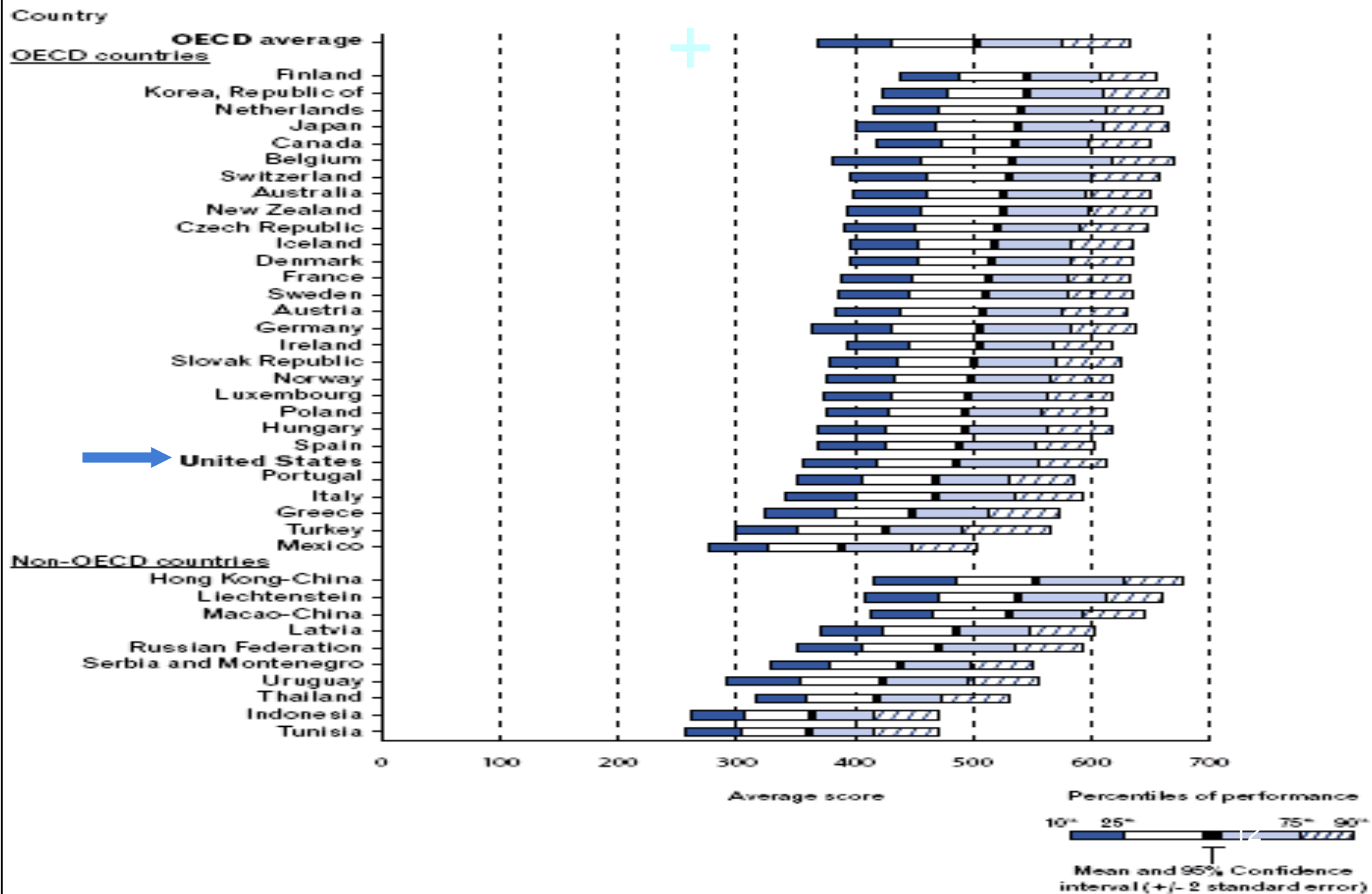
## A world of change

Approximated by percentage of persons with ISCED3 qualifications in age groups 55-64, 45-55, 45-44 und 25-34 years

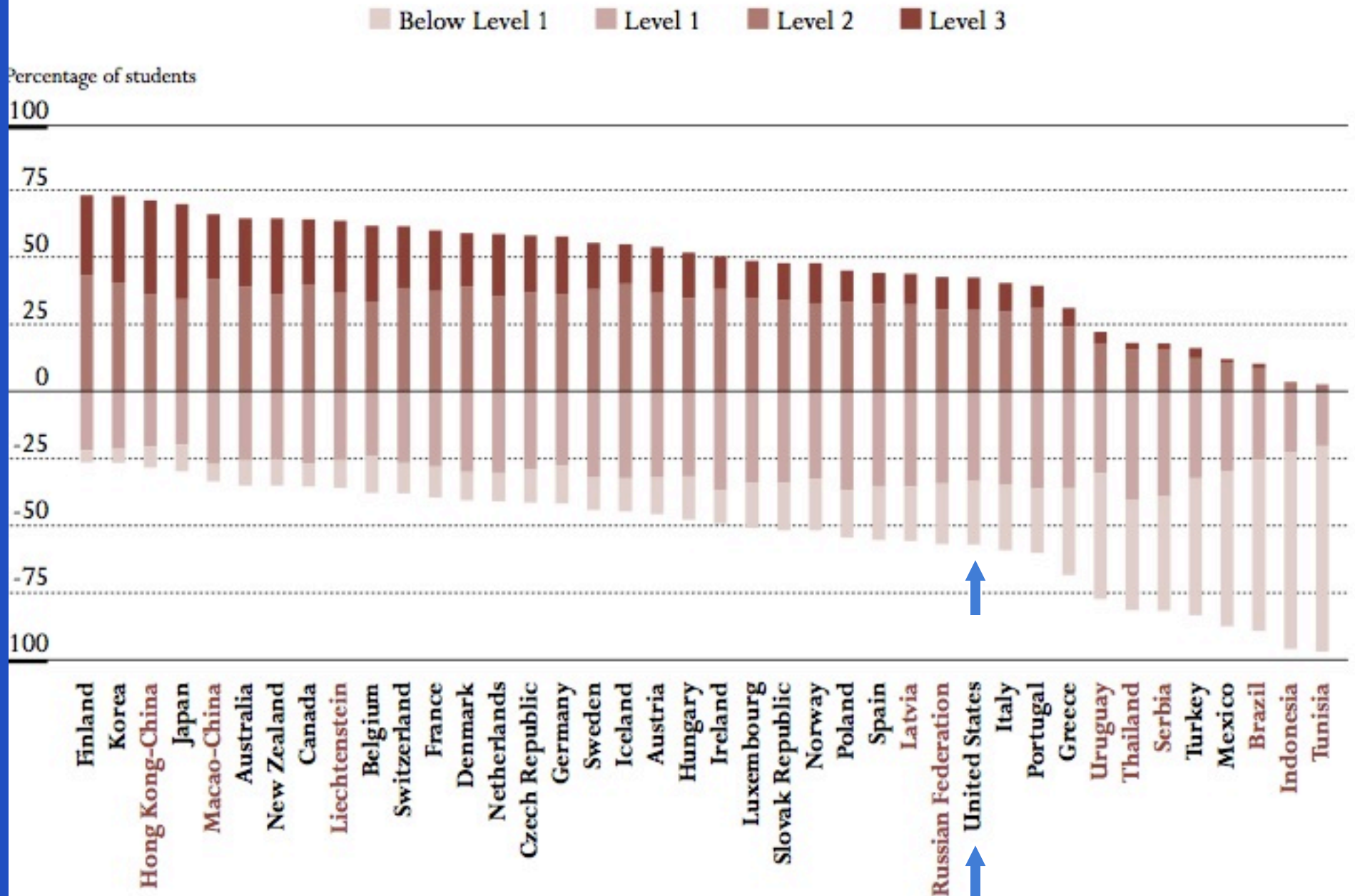


# PISA 2003: Mathematics Literacy

**Figure 4. Distribution of combined mathematics literacy scores of 15-year-old students, by country: 2003**



# PISA Problem Solving 2003

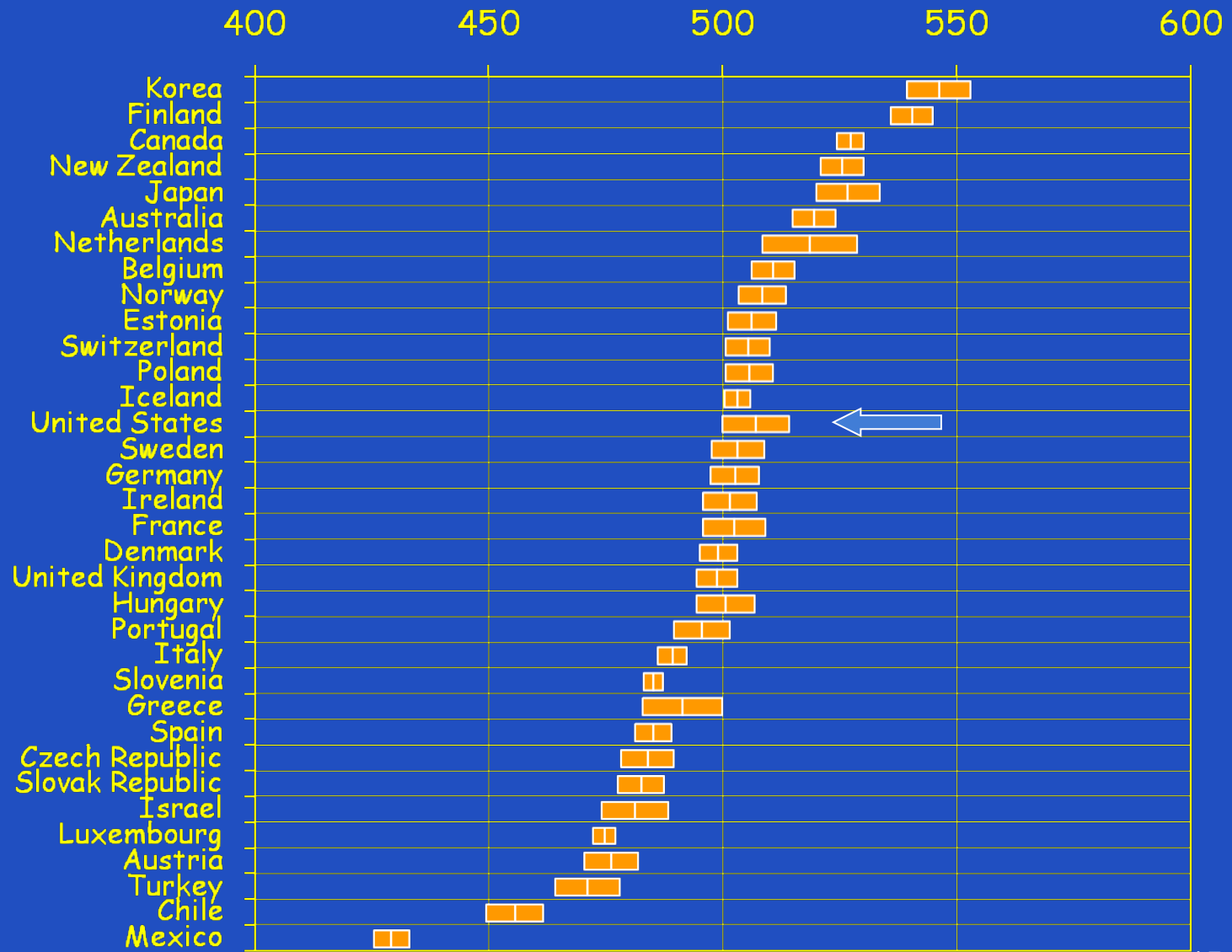


# PISA Science 2006

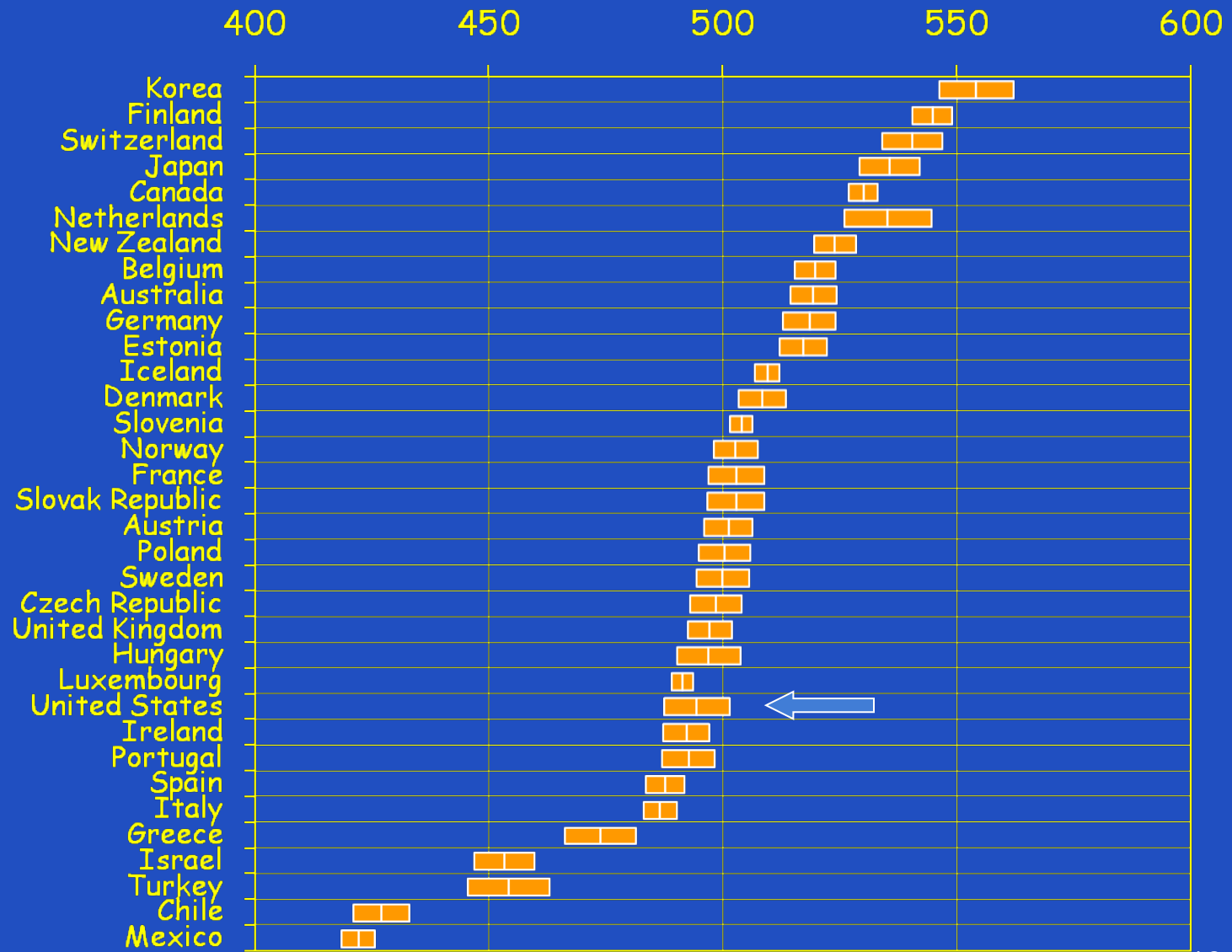
Country	Mean	5%ile	25%ile	75%ile	95%ile
Finland	<b>563</b>	<b>419</b>	<b>506</b>	<b>622</b>	<b>700</b>
Canada	534	372	472	601	681
Japan	531	356	465	603	685
New Zealand	530	347	455	608	699
Australia	527	358	459	598	685
Netherlands	525	362	456	596	675
Korea	522	367	462	586	662
Germany	516	345	447	587	672
United Kingdom	515	337	441	590	685
Czech Republic	513	350	443	583	672
Switzerland	512	340	445	584	665
<b>OECD Average</b>	<b>500</b>	<b>340</b>	<b>434</b>	<b>568</b>	<b>652</b>
Poland	498	352	434	562	645
Denmark	496	341	432	562	646
France	495	320	424	570	653
Iceland	491	328	424	560	644
<b>USA</b>	<b>489</b>	<b>318</b>	<b>412</b>	<b>567</b>	<b>662</b>
Slovak Republic	488	344	426	555	638
Spain	488	338	427	552	633
Norway	487	328	422	553	641
Mexico	410	281	354	465	544



# 2009 Performance in Reading

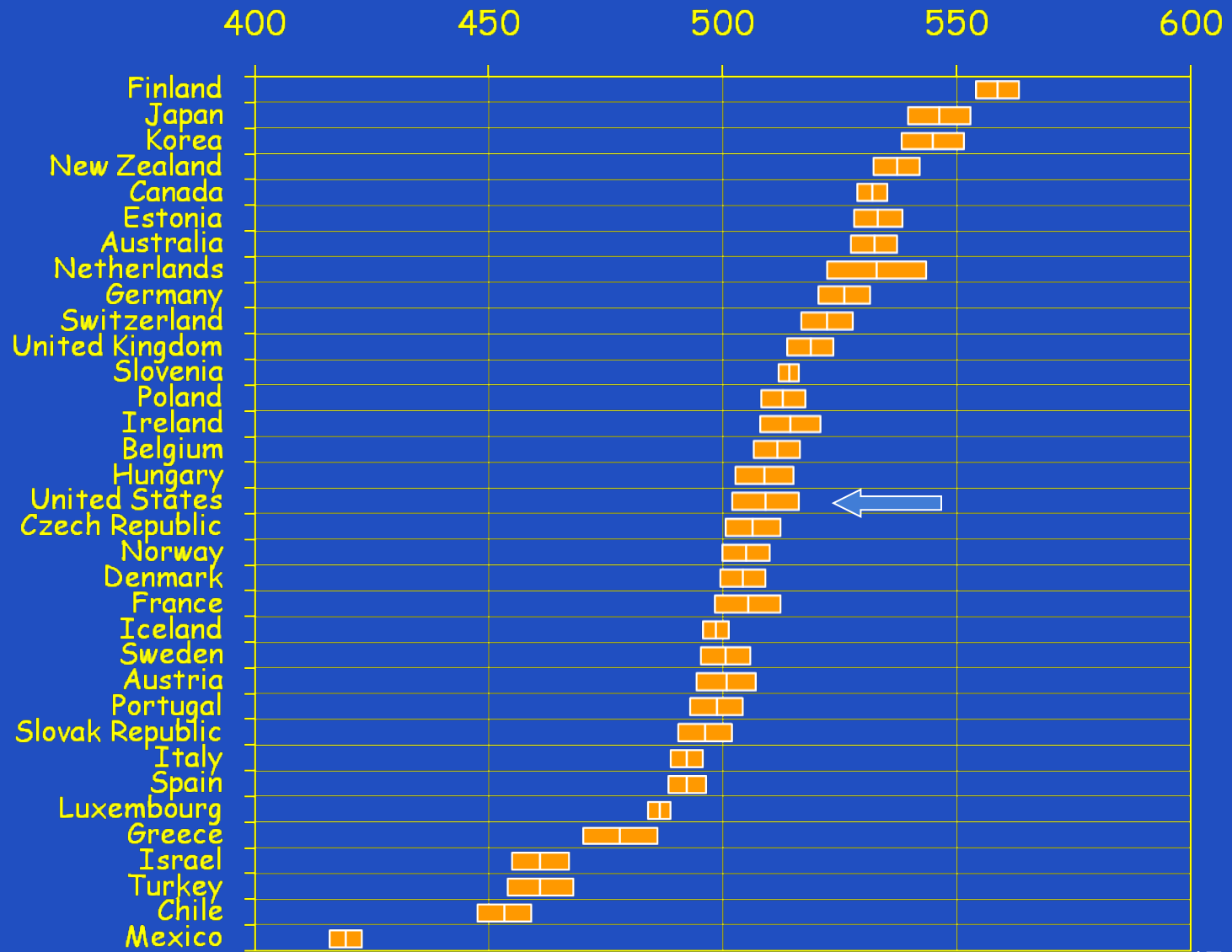


# 2009 Performance in Mathematics





# 2009 Performance in Science



# What Do Employers Say Are Important Skills?

# High School Applied Skills: Employers

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Rank	Basic Knowledge/Skills	% Responded
1	Professionalism/Work Ethic	80.3
2	Teamwork/Collaboration	74.7
3	Oral Communications	70.3
4	Ethics/Social Responsibility	63.4
5	Critical Thinking/Problem Solving	57.5
6	Information Technology Application	53
7	Written Communications	52.7
8	Diversity	52.1
9	Lifelong Learning/Self Direction	42.5
10	Creativity/Innovation	36.3
11	Leadership	29.2

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” . 19

# Rating Percentages for HS Graduates: Applied Skills

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Skill	% Deficient	% Adequate	% Excellent
Professionalism/Work Ethic	70.3	28.3	1.4
Teamwork/Collaboration	34.6	60.9	4.5
Oral Communications	52.7	45.9	1.4
Ethics/Social Responsibility	44.1	53.0	2.9
Critical Thinking/Problem Solving	69.6	30.1	0.3
Information Technology Application	21.5	62.8	15.8
Written Communications	80.9	18.9	0.3
Diversity	27.9	61.8	10.3
Lifelong Learning/Self Direction	58.2	40.1	1.8
Creativity/Innovation	54.2	43.8	2.0
Leadership	72.5	26.3	20 1.2

# SCANS Report: Skills for the 21st Century

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- 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

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- 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

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- 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.

# *Daniel Pink – A Whole New Mind*

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## **Conceptual Worker:**

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



# *Speak-Up 2010: Students' Visions for 21<sup>st</sup> Century Learning: New 3 E's of Education*

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- *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 life long learners

# *Speak-Up 2010 Student Findings Enabled, Engaged, Empowered*

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## 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*

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- The arts involve fundamental cognitive capacities.
  - Spatial Reasoning
  - Conditional Reasoning
  - Imagination and Inventiveness
  - Creative Thinking
  - Symbolic Interpretation and Expression

# *Critical Links* – Findings

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- 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