Learning and Assessments for the age of Artificial Intelligence
Mission Statement

Help humanity meet its potential via deep redesign of Education

Making Education More Relevant
First global organization to focus on the *What* of Education in an age of A.I

Standards/ Curriculum + Assessments*

* Scorecards drive behavior...
with key global players
A FAILURE OF EDUCATION...

Technological disruptions

Global Warming

Financial instability

Income inequities

Political partisanship

Pollution (plastic etc.)

Antibiotic Resistance

Religious intolerance

Personal privacy

Overpopulation
Question

What will we/our children need to be successful in that (A.I.) world?
Cognitive Domain and Algorithms

- Creating
- Synthesizing
- Evaluating
- Analyzing
- Applying
- Understanding
- Remembering

Source: Bloom/Anderson
Affective Domain and Algorithms

INTERNALIZING

ORGANIZING

VALUING

RESPONDING

RECEIVING

Source: Krathwohl, Bloom, Masia
# Psychomotor Domain and Algorithms

<table>
<thead>
<tr>
<th>ORIGINATION</th>
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<tbody>
<tr>
<td>ADAPTATION</td>
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<tr>
<td>COMPLEX OVERT RESPONSE</td>
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<tr>
<td>MECHANISM</td>
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<td>GUIDED RESPONSE</td>
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<tr>
<td>SET</td>
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<tr>
<td>PERCEPTION</td>
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</table>

Source: Simpson

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## PIAAC Literacy: OECD Adults vs. AI

<table>
<thead>
<tr>
<th>Proficiency Level</th>
<th>OECD Adults</th>
<th>AI</th>
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<tbody>
<tr>
<td>2 and below</td>
<td>53%</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>35%</td>
<td>Close</td>
</tr>
<tr>
<td>4-5</td>
<td>11%</td>
<td>No</td>
</tr>
</tbody>
</table>

Skills Required

1. Creativity
2. Critical Thinking
3. Communication
4. Collaboration
SUCCESS AROUND THE WORLD


Figure 3  Most Frequently Identified 21st Century Skills

- Communication: 30 countries
- Creativity: 23 countries
- Critical Thinking: 20 countries
- Problem Solving: 19 countries
SUCCESS AROUND THE WORLD

BIAC Survey 2015: Character Qualities for the Workplace

Q5 Do you see character qualities for the workplace becoming a more important issue for your organization in the future?

- Yes
- Not sure/maybe
- No
BIAC Survey 2015: Character Qualities for the Workplace

Employers consider the following character qualities as being of “very high” importance to the workplace (in descending order):

1. Ethics
2. Leadership
3. = Resilience = Curiosity
4. Mindfulness
5. Courage
What is holding us back?

University Entrance Requirements
Higher Ed Biases Assessments!

- **Work**
  - Incomplete and changing

- **LIFE**
  - Unclear and changing
  - HUGE impact on Standards & Assessments

- **Higher Education**
  - Clearer but outdated

**School (preK-12)**
And a Sobering Reality

“...there is nothing... more dangerous to manage than a new system. For the initiator has the enmity of all who would profit by the preservation of the old institution and merely lukewarm defenders in those who gain by the new ones.”

Nicolo Machiavelli

“The Prince”
What is holding us back?

Assessments
Logically - Our Responsibility

“All men are mortal. Socrates is a man → Socrates is mortal”

“Lack of/poor education is at the root of human problems.
Assessments define the education we get.
→ Assessments are the root of human problems”
“What gets measured gets managed”
Lord Kelvin
Report to OECD

PISA Mathematics in 2021
An analysis of the Center for Curriculum Redesign (CCR)

Authored by:
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ZbigniewMarciniak
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And Charles Fadel

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January 15, 2016
The science of assessments is lagging

“The Emperor has no clothes!”  Source: Hans Christian Andersen “The Emperor's New Clothes” (1835)
Education Research is Lagging

Public expenditures in education and health as % of GDP (2014)

Share (%) of public research budget on education and health (2014)

OECD average

Education: 5.5
Health: 6.5

OECD average

Education: 1.8
Health: 9.3

Source: Andreas Schleicher, OECD

5X lower R&D!
Needs large and patient capital
At a time of critical need

- Lack of unifying framework $\rightarrow$ imprecise outcomes
- Fragmentation $\rightarrow$ lack of critical mass to tackle complexity
- Assessment gap $\rightarrow$ preventing scaling of transformation:

$\rightarrow$ VERY slow progress worldwide!
Pre-competitive R&D consortium

• 20+ years, >50% of world semiconductor capacity
• IBM, Intel, AMD, T.I., Toshiba, Samsung, Micron, TSMC, etc.
• “We reduce cost and risk”
Pre-competitive R&D consortium

“To collate, curate and host datasets for use by the entire research community”

Other examples:
• Innovative Medicines Initiative
• Biomarkers Consortium
• Predictive Safety Testing Consortium
• Coalition Against Major Diseases
ARC’s Mission Statement

To catalyze the development of systems of assessments for Knowledge, Skills, Character, and Meta-Learning competencies, by

• Aligning stakeholders behind a common framework

• Rapidly advancing and disseminating research, development and practice (R&D+P)
Focus on “21st Century Skills”, “Social-Emotional Learning”
Granting Organizations to date

- Argosy Foundation
- Ellen Koshland Family Fund
- Nellie Mae Education Foundation
- Oak Foundation
- Porticus
Members & Advisory Board

- ACT
- National Association of Independent Schools
- NZQA
- The University of Melbourne
- The Enrollment Management Association
- Yield Your Best
- IRAD Science Solution
- The World Bank
- OECD
- The Conference Board
Value for Members

1. Accelerate/expand their own products and services by participating in/benefiting from joint R&D *funded by grants*

2. Help the world of education progress much faster, for everyone’s sake
Workforce Assessments for the 21st Century:
What do we actually measure?

March 25th, 2016
contact: info@curriculumredesign.org


Evolving Assessments for a 21st Century Education

Maya Bialik
Jonathan Martin
Merilee Mayo
Bernie Trilling

February 15th, 2016
contact: info@curriculumredesign.org


Draft:
• Curiosity
• Metacognition

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Scorecard Drives Behavior
Thank You

“What should students learn for the 21st century?”

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