EMPLOYABILITY IN THE AGE OF ARTIFICIAL INTELLIGENCE

Charles Fadel,
Chair, BIAC Education Committee
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With Gratitude to our Sponsors

Ellen Koshland Family Fund

+ Tony MacKay (NCEE)
+ Amelia Peterson (CCR, etc.)
For Today and Beyond

*Goal-setting for continued work over the next 12 months*
Highly interactive with audience

Panel 1: Global comparisons and views from employers
Panel 2: The need for sorting in Higher Ed
Panel 3: Changing the Assessments to change the behavior
Panel 4: Could Accreditations provide the higher leverage?
Panel 5: “Double Bypass” by employers?
Employability in the Age of Artificial Intelligence
Change in Profiles

Substitution:
- Traders: 600 down to... 2
- Computer scientists: +200
- + IT support

“We’re headed for a world where you’re either going to be able to write algorithms and speak that language or be replaced by algorithms...”

Bridgewater hedge fund billionaire Ray Dalio
## Emergence of New Jobs

<table>
<thead>
<tr>
<th>Job</th>
<th>Pay level</th>
</tr>
</thead>
<tbody>
<tr>
<td>App developer</td>
<td>High</td>
</tr>
<tr>
<td>Driverless car engineer</td>
<td>High</td>
</tr>
<tr>
<td>Cloud computing specialist</td>
<td>High</td>
</tr>
<tr>
<td>Big data analyst/data scientist</td>
<td>High</td>
</tr>
<tr>
<td>Social media manager</td>
<td>Medium</td>
</tr>
<tr>
<td>Sustainability manager</td>
<td>Medium</td>
</tr>
<tr>
<td>YouTube content creators</td>
<td>Medium</td>
</tr>
<tr>
<td>Millennial generational expert</td>
<td>Medium</td>
</tr>
<tr>
<td>Drone operators</td>
<td>Medium</td>
</tr>
<tr>
<td>Uber driver</td>
<td>Low</td>
</tr>
</tbody>
</table>

Possible New Occupations

- 3D Printed Clothing Designer
- Drone Traffic Optimizer
- Custom DNA based Drug Designer
- Augmented Reality Architects
- Alternative Currency Bankers
- Seed Capitalists
- Robo Advisors
- Global System Architects
- Data Scavengers
- Geo-Taggers
- Urban Agriculturists
- Competition Managers
- Bounty Planners
- Machine Psychology
- Computer Behavior Expert
- Cyborg Relationship Manager
- 3D Food Chef
- Privacy Guards
- Data Hostage Negotiators
- Drone Pilots
- Self-Driving Car Mechanics
- Memory Augmentation Therapists
- Nano-Defense Experts
- Mass Energy Storage Developers
- Data Detectives
- Ethical Sourcing Officer
- Edge Developers
- Cyber City Analysts
- Chief Trust Officer
- Chief Experience Officer
- Financial Wellness Coach
- Quantum Computing Developer
- Quantum Computing Analyst
- Data Brokers
- Personality Managers
- Smart Contract Developers
- Nano-Medics
- Personal Memory Curators
- Freelance Relationship Officer
- Personal Content Curator
- Chief Happiness Officer
- Head of Social Robots
- Data Story Teller
- Autonomous Vehicle Operators
- Digital Archeologists
- Financial Technologists
- Green Career Coach
- Life Loggers
- IoT Architect
- AI Defense Lawyer
- Data Compliance Officer
- Cyber Risk Manager
- Digital Bias Investigator
- Smart Dust Programmers
Learning WITH the Machines

Deep Learning (A.I.) + “Deeper Learning” (H.I.)
= Augmented Intelligence
The Race between Technology and Education

Inspired by “The race between technology and education”
Pr. Goldin & Katz (Harvard)
Disconnect between youth, employers and educators

Respondents who agree that graduates/new hires are adequately prepared, %

- Employers': 35%
- Youth: 38%
- Education Providers: 74%

Source: McKinsey
BIAC Education Survey

Employers' Top Priorities for Education Policy Reform in Schools

Number of Positive Responses

Priorities

- Reform curriculum
- Link to labour market needs
- Improve cooperation with employers
- Improve teacher quality and training... (omitted for brevity)
- Boost vocational pathways at school level...
- Improve evaluation and assessment of...
- Effective career guidance
- Reduce numbers of school drop-outs
- Increase cost-effectiveness
- Improve access to pre-school education
- Other

The Business and Industry Advisory Committee to the OECD
Comité consultatif économique et industriel auprès de l'OCDE
Skills Required

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


**Figure 3**  Most Frequently Identified 21st Century Skills

<table>
<thead>
<tr>
<th>Skill</th>
<th>Number of Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>30</td>
</tr>
<tr>
<td>Creativity</td>
<td>23</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>20</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>19</td>
</tr>
</tbody>
</table>
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: 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
Occupations needs

Source: US O*NET and Bureau of Labor Statistics

https://curriculumredesign.org/onetexplorer_ccr/
WHAT IS HOLDING US BACK?

University Entrance Requirements
Higher Ed Biases Assessments!

Source: Center for Curriculum Redesign

- Work
  - Incomplete and changing
- LIFE
  - Unclear and changing
- Higher Education
  - Clearer but outdated
- School (preK-12)
  - HUGE impact on Standards & Assessments

© Center for Curriculum Redesign
WHAT IS HOLDING US BACK?

“What gets measured gets managed”

Assessments  
Lord Kelvin
Metaphor

Position: Education
Speed: Curriculum
Acceleration: Assessments
Impulse: Accreditations

Geometrically increasing leverage
“Double Bypass” Strategy

High School assessments

Higher Ed accreditations

Feedback + Predictive analytics of needs

Local & Global Employers

Alternative assessments and accreditations
Internships & Apprenticeships (incl. badges etc.)
Thank you

Charles Fadel
Chair, BIAC Education Committee

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Comité consultatif économique et industriel auprès de l’OCDE
More Information


FOUR EXCELLENT LINKS – MCKINSEY

https://public.tableau.com/profile/mckinsey.analytics#!/vizhome/AutomationandUSjobs/Technicalpotentialforautomation


https://public.tableau.com/profile/mckinsey.analytics#!/vizhome/AutomationBySector/WhereMachinesCanReplaceHumans

https://www.mckinsey.com/~/media/McKinsey/Industries/Advanced%20Electronics/Our%20Insights/How%20artificial%20intelligence%20can%20deliver%20real%20value%20to%20companies/MGI-Artificial-Intelligence-Discussion-paper.ashx
“Clear and actionable, first-of-its-kind organizing framework of competencies needed”

Andreas Schleicher, OECD

“Educators worldwide need to rapidly operationalize these dimensions”

Todd Rose, Harvard University


Framework in 21 languages
“The first internationally comprehensive attempt to help policymakers and educators to read through the lines of artificial intelligence

—Francesc Pedró, UNESCO

“This brilliantly reflective and forward-looking book helps the education community in navigating the storm... a daring intellectual undertaking!

—Dirk Vandamme, OECD

“A benchmark for understanding the impact of AI on the goals and methods of education in the 21st century.”

—Henry Kautz, Association for the Advancement of Artificial Intelligence