Session 3 F: Individuality & Transformational Leadership

The BIG FIVE

The Science Gap in Educational Reform

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Introduction:

Developed in the 18th century

50 Points (PISA): 2 years; 0.6% economic growth

It takes 50 years to make a change

We do not tap into the full potential

Fryer R.G. 2013ff
Tough P. 2016
Pritchett L. 2013
The Big Five: The science gap in educational reforms

1. J. Heckman Equation

https://heckmanequation.org/resource/lifecycle-benefits-influential-early-childhood-program/
OECD, 2012
N.Yaljian et al 2015
The Big Five: The science gap in educational reforms

1. J. Heckman Equation

2. J. Hattie Findings

<table>
<thead>
<tr>
<th>Effect in additional months’ progress</th>
<th>Relative costliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback to pupils</td>
<td>9 $</td>
</tr>
<tr>
<td>Meta-cognitive strategies*</td>
<td>8 $</td>
</tr>
<tr>
<td>Peer tutoring</td>
<td>6 $</td>
</tr>
<tr>
<td>Collaborative group learning</td>
<td>5 $</td>
</tr>
<tr>
<td>Reducing class size to &lt;20</td>
<td>3 $</td>
</tr>
<tr>
<td>Individualised instruction</td>
<td>2 $</td>
</tr>
<tr>
<td>Mentoring of pupils</td>
<td>1 $</td>
</tr>
<tr>
<td>Teaching assistants</td>
<td>1 $</td>
</tr>
<tr>
<td>Improving school buildings</td>
<td>0 $</td>
</tr>
<tr>
<td>Streaming by ability</td>
<td>-1 $</td>
</tr>
</tbody>
</table>

Source: Education Endowment Foundation

J.Hattie 2012 ff

OECD 2012, 2015,
Inter-personal variables oversteer institutional variables by factor 2

- Self-reported grades ($d=1.44$)
- Piagetian programs ($d=1.28$)
- Formative evaluation ($d=0.9$)
- Micro teaching ($d=-0.88$)
- Acceleration ($d=0.88$)
- Classroom behavioral ($d=0.8$)
- Comprehension interventions ($d=0.77$)
- Teacher clarity ($d=0.75$)
- Reciprocal teaching ($d=0.74$)
- Feedback ($d=0.73$)

Hattie 2009, 2012
The Big Five: The science gap in educational reforms

1. J. Heckman Equation

2. J. Hattie Findings

3. Input-Out put Fallacy

Intermediate Factors:
Schooling isn’t Education; Expenditure isn’t Learning; Cognition isn’t Creativity

OECD 2012, 2015, Brunnhuber 2017
https://www.oecd.org/pisa/
Building Block of Non-cognitive factors:

- Cognitive Flexibility
- Focused Attention
- Endurance
- Curiosity
- Novelty Seeking
- Grit
- Optimism
- Senso-motor Skills
- Resilience to Stress and Failure
- Self Coherence
- Impulse Control
- Emotional Attachment
- Self Awareness
- Executive Functions

Brooke Stafford K. 2016
Brunnhuber S. 2016; 2017
The Big Five: The science gap in educational reforms

1. J. Heckman Equation
2. J. Hattie Findings
3. Input-Out put Fallacy
4. Creativity Response

- Exercise and Cognition
- Mindfulness - IT
- Rest and Sleep - 7/24
- Multi-sensory learning - digital learning
- Social Competence - Competitiveness
- Nutrition and Supplements - Neuro-enhancement

Mihaly Csikszentmihalyi 2012
Carl Gustav Jung 1958 ff
Gazzangia 2013
Garrett, 2010
The Big Five: The science gap in educational reforms

1. J. Heckman Equation
2. J. Hattie Findings
3. Input-Output Fallacy
4. Creativity Response
5. The Causal Link

R. Klingholz (2015)
Conclusion:

We can not not learn

Learning ain’t Education / Creativity

Cognitive versus Non-cognitive Factors

Psychology and Life-Style changes required

Science makes the difference