ARTS EDUCATION: WHAT DO WE KNOW ON IMPACT AND LESSONS FOR RESEARCH

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Skills and education for innovation
« 21st Century Skills »
skills for innovation
Critical skills for the most innovative jobs (according to tertiary-educated workers)

<table>
<thead>
<tr>
<th>Skill</th>
<th>Likelihood (odds ratios)</th>
</tr>
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<tbody>
<tr>
<td>Come with news ideas/solutions</td>
<td>2.97</td>
</tr>
<tr>
<td>Acquire new knowledge</td>
<td>2.44</td>
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<tr>
<td>Willingness to question ideas</td>
<td>2.34</td>
</tr>
<tr>
<td>Alertness to opportunities</td>
<td>2.24</td>
</tr>
<tr>
<td>Present ideas in audience</td>
<td>2.18</td>
</tr>
<tr>
<td>Analytical thinking</td>
<td>2.15</td>
</tr>
<tr>
<td>Master of your own field</td>
<td>2.11</td>
</tr>
<tr>
<td>Coordinate activities</td>
<td>2.05</td>
</tr>
<tr>
<td>Write and speak a foreign language</td>
<td>2.02</td>
</tr>
<tr>
<td>Use computers and internet</td>
<td>2.00</td>
</tr>
<tr>
<td>Make your meaning clear</td>
<td>1.99</td>
</tr>
<tr>
<td>Use time efficiently</td>
<td>1.98</td>
</tr>
<tr>
<td>Mobilize capacities of others</td>
<td>1.97</td>
</tr>
<tr>
<td>Work productively with others</td>
<td>1.95</td>
</tr>
<tr>
<td>Write reports or documents</td>
<td>1.94</td>
</tr>
<tr>
<td>Perform under pressure</td>
<td>1.81</td>
</tr>
<tr>
<td>Knowledge of other fields</td>
<td>1.76</td>
</tr>
<tr>
<td>Negotiate</td>
<td>1.76</td>
</tr>
<tr>
<td>Assert your authority</td>
<td>1.56</td>
</tr>
</tbody>
</table>

Source: OECD, based on REFLEX and HEGESCO data
What individual skills should education systems foster?

**Technical skills**
(know-what and know-how)

**Behavioural and social skills**
(character)
(Self-confidence, energy, perseverance, passion, leadership, collaboration, communication)

**Skills in thinking and creativity**
(Critical thinking, observation, curiosity, ability to make connections, imagination,...)
the role of arts education: what do we know?
The impact of arts education on skills for innovation

• Report by Ellen Winner, Thalia Goldstein and Stéphan Vincent-Lancrin

• Available freely on line for reading

• Available on OECD iLibrary – or on OECD e-bookstore or on Amazon.com
Methodology

• The report synthesises all meta-analyses and quantitative studies since 1950 – 510 findings and 39 outcomes:
  
  – Cognitive, non-arts skills (verbal, maths, spatial-visual)
  – Skills in thinking and creativity (creativity, problem solving)
  – Behavioural and social skills (self-confidence, emotion regulation, empathy, perspective taking, motivation)

• 11 languages covered: Dutch, English, Finnish, French, German, Italian, Japanese, Korean, Portuguese, Spanish, Swedish

• Arts education: music, visual arts, theatre, dance – and « multi-arts »
academic achievement
Multi-arts education and non-arts academic achievement

An association...

United States: SAT scores of students taking following subjects in high school

- Drama: 503
- Music History/Theory/Appreciation: 503
- Drama Appreciation: 491
- Music Performance: 497
- Studio Art/Design: 495
- Art History/Appreciation: 489
- Dance: 474
- No Arts: 465

SAT scores range from 401 to 530.
Multi-arts education and non-arts academic achievement

...but no causality

- Composite
- Verbal
- Math

Correlational

Experimental
Arts education and non-arts academic achievement

• (Classical) music education:
  – Causal impact on IQ (and on academic achievement)

• No similar impact could be found for any other form of arts education

• Possible explanations:
  – This is a school-like activity (schooling also has such an impact)
  – Involves one-to-one interaction with an adult
  – Could be mediated by conscientiousness
verbal skills (literacy)
Classroom drama strengthens verbal skills

A clear causal link
Music education strengthens verbal skills

- Word decoding
- Ability to hear speech in a noisy environment – and phonological skills
- Foreign language learning
maths-related skills (numeracy)
Some findings related to visual-spatial and geometrical reasoning

- **Music education:**
  - Visual-spatial reasoning (but not sustained over time)
  - No evidence of causal impact on maths skills yet – in spite of elective affinities (and positive correlational results)
  - Perhaps with smaller music and math categories?

- **Visual arts:**
  - Geometrical reasoning (correlational)
  - Scientific observation

Circle Limit III by M. C. Escher (1959)
Dance education seems to have an impact on visual-spatial skills
creative and thinking skills (creativity)
Tentative evidence

• Almost no study on critical thinking

• Most studies (multi-arts, theatre, visual arts, dance) find a positive link between arts education and creativity, but there are too few studies and they are too weak statistically to generalise

• The lack of strong evidence does not imply that there is no effect
social and behavioural skills (character)
Motivational outcomes:
- Measures: attendance, persistence, dropout, engagement
- Positive correlational evidence, which does not allow us to conclude yet
- It is probably not about the arts, but can be powerful nonetheless

Social and behavioural skills (social norms, self-concept, self-efficacy, emotion regulation, empathy, perspective taking)
- Most promising on theatre
Theatre education impacts emotion regulation, empathy and perspective taking

Apologetic?  Friendly?  Uneasy?  ✅  Dispirited?

Confus?  Amical?  Gêné?  ✅  Démoralisé?

Sample Item from “Reading the Mind in the Eyes” Test
why arts education
Art for Art’s Sake? Yes, but also for the possible « collateral benefits »

- Music education → hearing (and thus verbal skills), perhaps visual-spatial skills
- Visual arts education → observing and envisioning
- Theatre education → verbal, social and emotional skills (communication)
- Dance education → visual-spatial skills

- These skills are key outcomes of learning in these arts forms, but they are also useful for reading and writing (theatre and music), learning foreign languages (music), science (visual arts), communication, etc.
Art for Art’s Sake? Yes, but perhaps also to contribute to innovation

Share of graduates having a highly innovative job (Product /service innovation)

Source: OECD, based on REFLEX and HEGESCO data
Art for Art’s Sake? Yes, first and foremost.

Woldgate Woods III by David Hockney
agenda for further research
Methodological improvements

• More experimental, quasi-experimental and longitudinal studies are needed

• Correlational studies need control for initial IQ (scores), socio-economic status, families valuing the arts, school factors, etc.

• Transfer studies should include measures about the learning in the arts (to make sure there is learning) and measure the readiness to learn other fields (rather than the mastering of these other fields)
Theoretical improvements

• Start by qualitative, ethnographic research to identify the habits of mind developed in different arts forms, and then craft good assumptions to test empirically

• Categories are often too broad which weakens the assumed theories. For example, perhaps training in composing fugues boosts skills in arithmetics (but not geometry, and piano playing may not have the same impact)

• Skill development may be more interesting to look at than « transfer » (in another subject)

• Not enough studies on arts pedagogies and their impact on the development of artistic skills
learning from arts education
What can schools expect from arts education?

• to foster « technical » artistic skills (and understanding of artistic forms) (first and foremost)

• To develop skills that are close to the « technical skills » of the activity (outcomes)

• To achieve outcomes that are not directly related to arts education but relate to features that generally comes with it (e.g. non-school like activity, low stake, performing)

• To develop skills/habits of mind that are important in the teaching/learning process (creativity, persistence, discipline) – if they are taught explicitly and if there is learning happening
What is taught in quality arts education?

- **Studio thinking** (Hetland et al.)
  - Envision, express, observe
  - Reflect
  - Engage and persist
  - Stretch and explore

- Could other disciplines benefit from typical visual arts pedagogies such as:
  - Class-time devoted to working on projects while teachers offer individual consultations of ongoing work
  - Regular, mid-project critiques
  - Peer learning
  - Presentation of work done to a public audience
arts education for school innovation
Singapore: School of the arts (SOTA)

- Created in 2008 to develop skills beyond and above those necessary to achieve high test scores

- Connected curriculum
  - physics – sculpture
  - chemistry – glazing and pottery
  - mathematics – music

- In 2013, 100% of success in International Baccalaureate, including 44% in the top 5 decile (against the predictions of the Direct Admission Scheme)

- Why? Change of classroom practices, etc.
Creative Partnerships: teaching with the help of artists

- UK (2002-2011): 1 million children, 90k teachers, 5000 schools, 8000 projects
- « Creative agents » from the creative and cultural industries address a specific need of the school
- Outcomes:
  - better student wellbeing, retention and attainment
  - better teacher professional development and school routines
- New pedagogy (rather than just arts education) is the proposed explanation
- UK, Germany, Lithuania, Norway, Pakistan
assessing progression in creative and critical thinking in education
Fostering and assessing creativity and critical thinking: a new CERI project

**Technical skills**
(know-what and know-how)

**Behavioural and social skills**
(character)
(Self-confidence, energy, perseverance, passion, leadership, collaboration, communication)

**Skills in thinking and creativity**
(Critical thinking, observation, curiosity, ability to make connections, imagination,...)
The challenge

• How can we support the fostering and assessment of creative and critical thinking skills in formal educational settings?

• Objectives:
  – Articulate expectations in a language that teachers and students understand
  – Articulate expectations in a way that relates to teaching and learning in a formal setting (example of tasks, links with taught disciplines, with curriculum, or other school activities)
  – Document progression/development (examples of accomplishments at different levels)
  – Document examples of pedagogic methods/interventions assumed (or shown) to foster these skills
  – Evaluate whether using an assessment tool makes any difference?
Research questions

• Can we develop an international pedagogical toolkit to assess (and teach) creativity and critical thinking? If yes, what does it look like?
  – Assessment rubrics (domain general + domain specific) with positive levels of proficiency (scale of development)
  – Pedagogical tasks
  – Assessment exercises
  – Examples of student work

• What are the contextual/cultural differences?

• Is there an effect of using this assessment toolkit on creativity and on academic achievement?
Research protocol

• Minimum sample for pedagogical intervention (« treatment »):
  – ≥ 5+5 schools (9 year olds / 14 year olds)
  – ≥ 10+10 teachers (classes)
  – ≥ 200+200 students

• 2 domains: arts education (music and visual arts), STEM (science and maths), other approach

• 2 levels: 9-year olds (often grade 3) and 14-year olds (often grade 8)

• Control group:
  – Same as treatment group (students and teachers of same ability)
  – Preferably also having some treatment and in a different school (to avoid contagion)
Expected outcomes

- Participants (14): Brazil, China, India, Finland (?), France, Hungary, Israel, Italy, Netherlands, Slovak Republic, Russian Federation, Thailand, United Kingdom (Wales), United States (+ perhaps Chile and Spain)

- Pedagogical toolkit with domain-specific resources tailored to countries’ curriculum – including music and visual arts pedagogical activities

- Identification of progression levels

- First measures of the effect of the use of the toolkit on standardised achievement and creativity tests + change in student and teacher attitudes

- Preparation for a validation and scale up phase (what happens if one want to use it with the “average” teacher)
A controlled international pedagogical intervention

A. The toolkit

- A1. Rubric for assessment
  - Dimensions
  - Levels of progression

- A2. Set of exercises
  - Specific for each domain
  - Designed to test dimensions and levels of progression

- A3. Pedagogical activities
  - Specific for each domain
  - Designed to prepare for the assessment

- A4. Portfolio of student work
  - For each domain
  - As examples of different skill levels

B. Contextual data

- B1. Subject-based assessment
  - Standardised assessment of academic achievement

- B2. Test for creativity/critical thinking
  - Standardised test for creativity/critical thinking

- B3. Questionnaires
  - School principals
  - Teachers
  - Students

- B4. Interviews/focus groups
  - Teachers
  - Students

School-based Research

School year

- Research teams work with teachers throughout the year to develop and refine the toolkit in an iterative process

Primary school group - Ages 8-9. STEM, Arts or other domain

Secondary school group - Ages 13-14. STEM, Arts or other domain

Control groups
conclusion
A few questions for France

- What are the learning goals of arts education in school and to what extent are they achieved?
- What is students’ know-how and know-what in arts following their school arts education? What does quality look like?
- What do students expect from their arts education? How does it relate to an informal practice?
- What are the typical pedagogies used in conservatories and in schools and do they work?
- What is the pedagogical knowledge of arts teachers?
- What is the relation between length of study, learning and admission procedures in public conservatories?
- What are the benefits of just a few years of different forms of arts education?
Impact evaluation questions

• Do the « Professeurs Ville de Paris » make a difference?
  – Are Parisians better in music and visual arts?
  – Are they better in academic domains?
  – Does it favour some students more than others?

• « Orchestre à l’école » (a first evaluation some time ago)
  – What benefits?
  – What does it take for collective practice to work well?

• After-school arts programmes (ARE reform): have they made a difference, and if yes, for what?
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THANK YOU
www.oecd.org/edu/innovation