DÉVELOPPER ET ÉVALUER LA CRÉATIVITÉ ET L'ESPRIT CRITIQUE DANS L'ÉDUCATION

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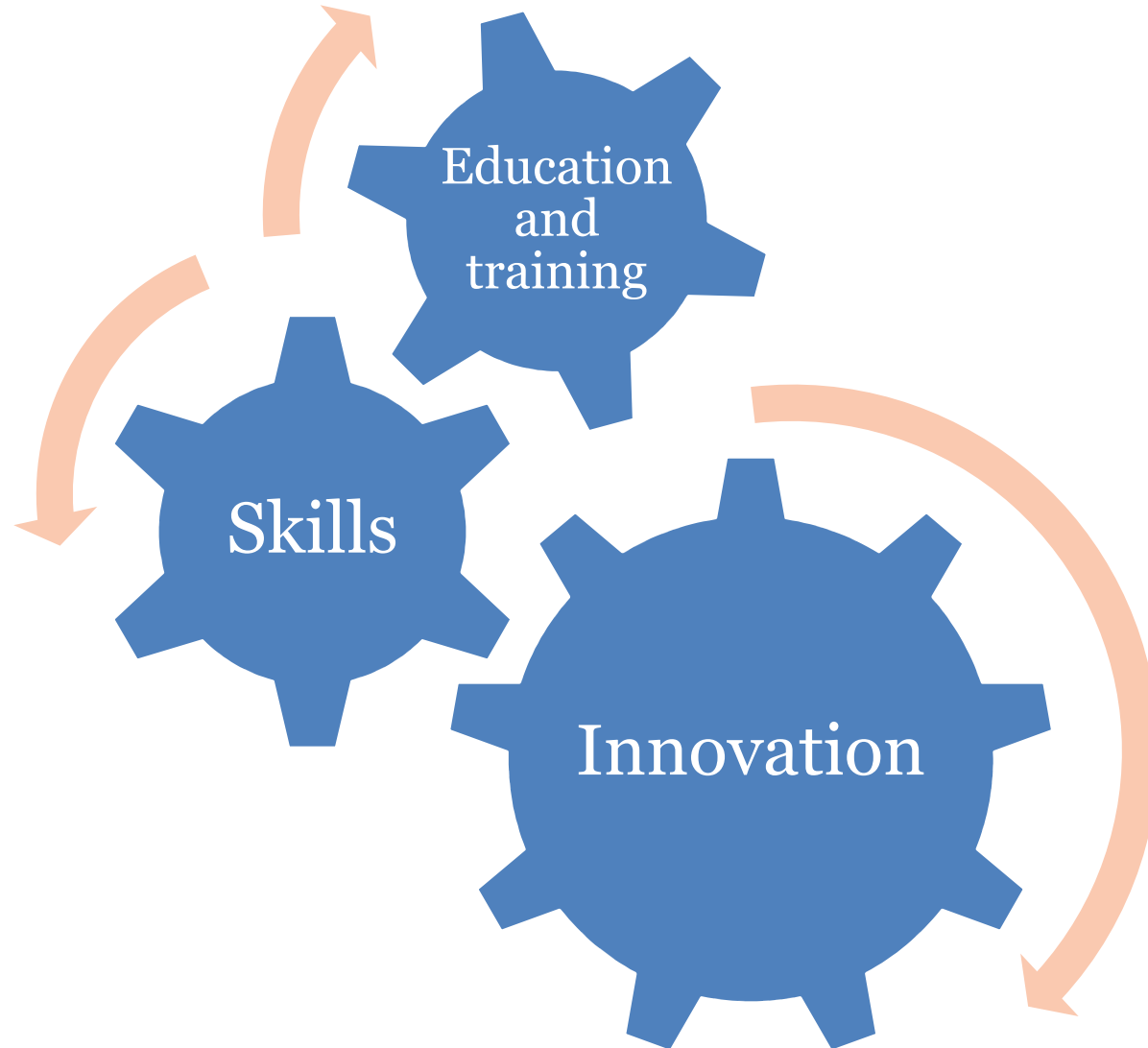Direction de l'Education et des Compétences

OECD
BETTER POLICIES FOR BETTER LIVES

education for innovation
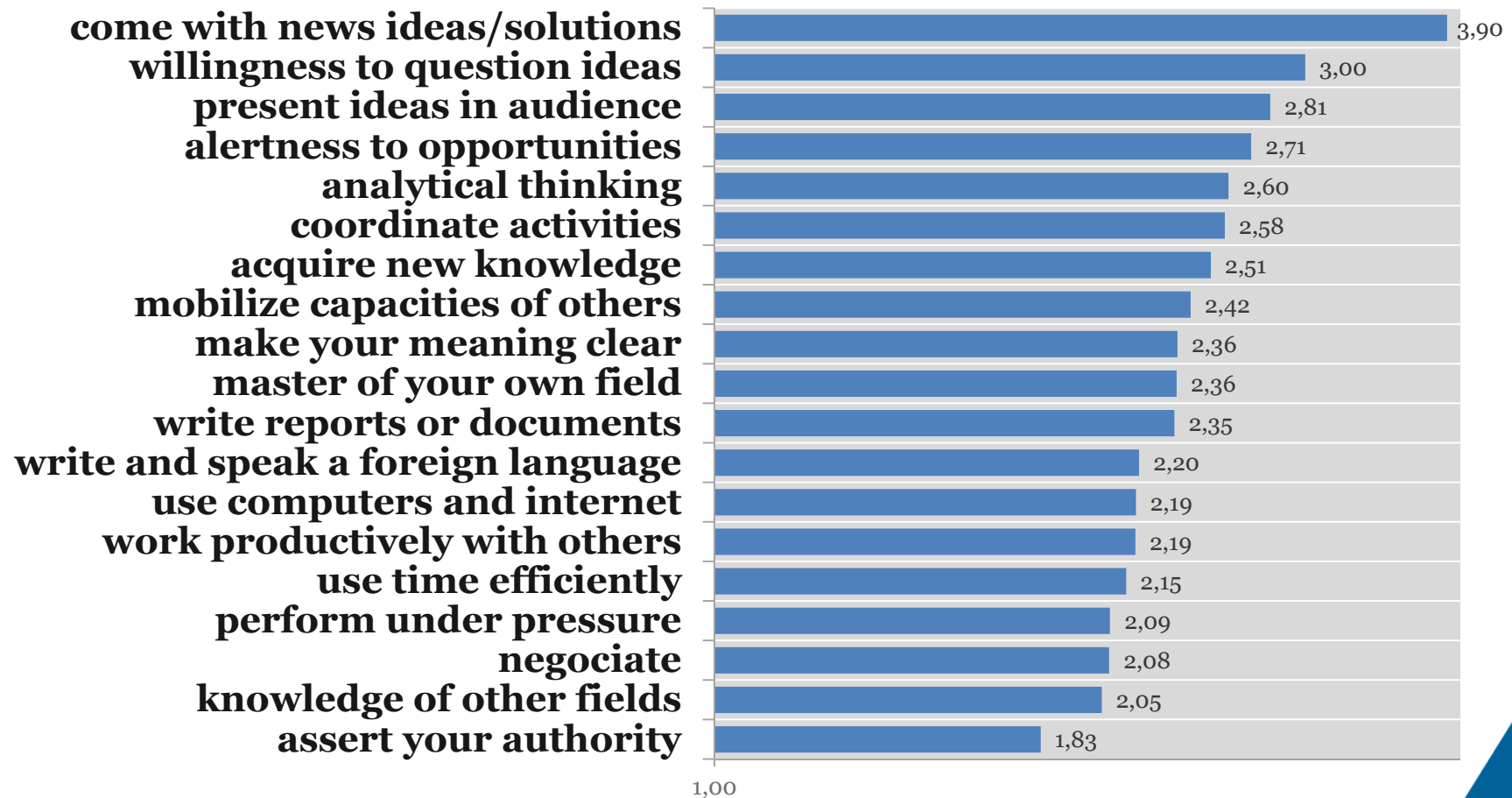
Skills and education for innovation
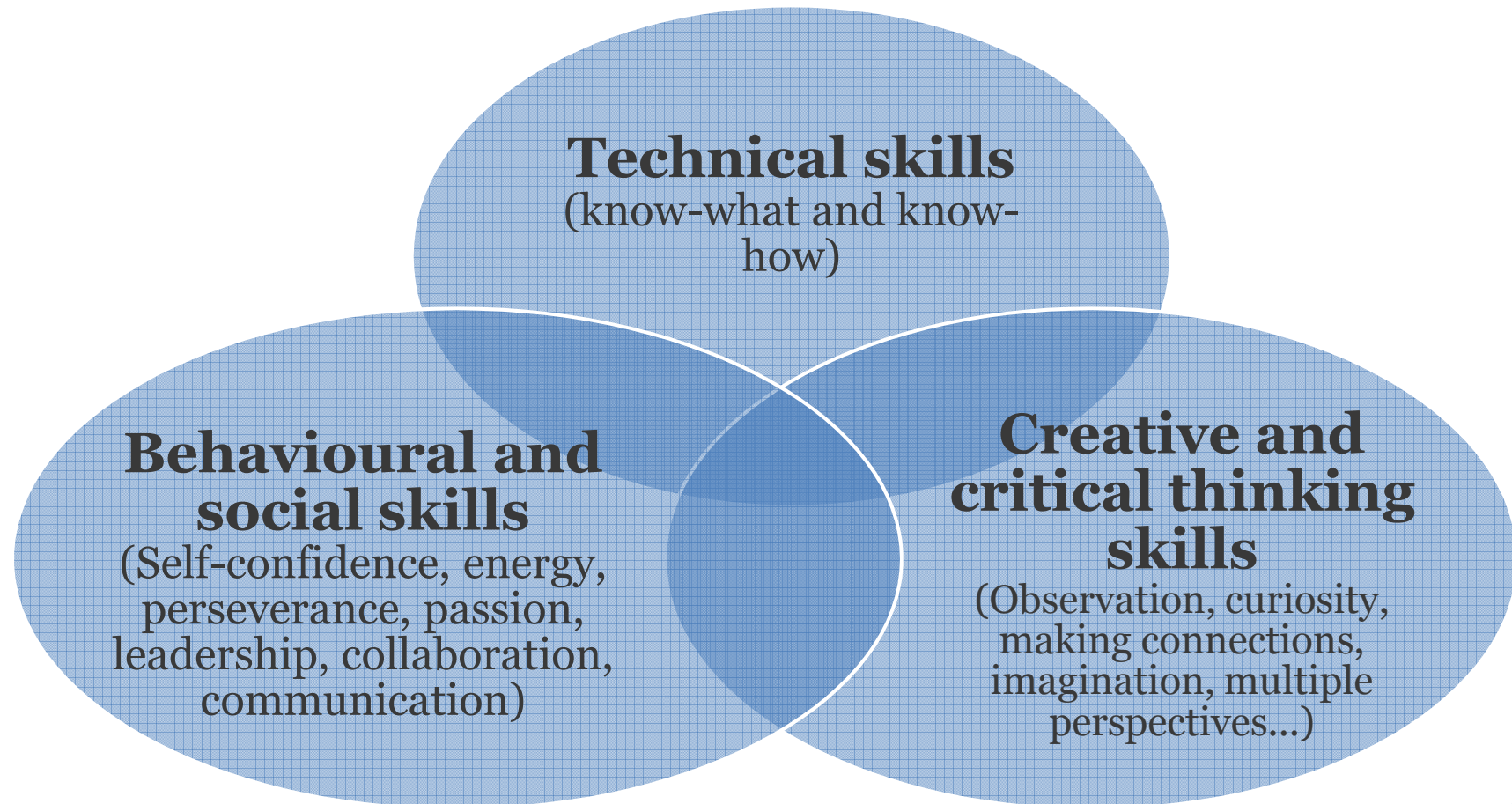« 21st Century Skills »

Critical skills for the most innovative jobs (according to tertiary-educated workers)

Likelihood (odds ratios) of reporting the following skills: people in the most innovative jobs vs. least innovative jobs

Skill	Value
come with news ideas/solutions	3,90
willingness to question ideas	3,00
present ideas in audience	2,81
alertness to opportunities	2,71
analytical thinking	2,60
coordinate activities	2,58
acquire new knowledge	2,51
mobilize capacities of others	2,42
make your meaning clear	2,36
master of your own field	2,36
write reports or documents	2,35
write and speak a foreign language	2,20
use computers and internet	2,19
work productively with others	2,19
use time efficiently	2,15
perform under pressure	2,09
negociate	2,08
knowledge of other fields	2,05
assert your authority	1,83

1,00

What individual skills should education systems foster?

Technical skills
(know-what and know-how)

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

Creative and critical thinking skills
(Observation, curiosity, making connections, imagination, multiple perspectives...)

fostering an assessing creativity and critical thinking

Theory of action

- Need for a common language, social representation and guidance about what some desired skills actually mean

- Skills that are not assessed are not taught consistently, but teachers need to teach what they assess

- There is generally little space for students to develop and demonstrate creativity and critical thinking as part of their usual disciplinary learning

- Start a process of change: pilot, prototype and develop pedagogical resources as a proof of concept for other teachers – before validation and possibly scale up (second phase)

Participation in primary and secondary education

- Participation in 11 countries overall
  - Brazil, France (3), India, Hungary, Netherlands, Russia, Slovakia, Spain, Thailand, United Kingdom (Wales), United States (3)

- 1st round (2015-16, 2016) in 9 countries
  - Brazil, France (3), India, Hungary, Netherlands, Russia, Slovakia, Thailand, United States (3)

- 2nd round (2016-17) in 9 countries
  - Brazil, France, India, Hungary, Russia, Spain, Thailand, United Kingdom (Wales), United States (2)
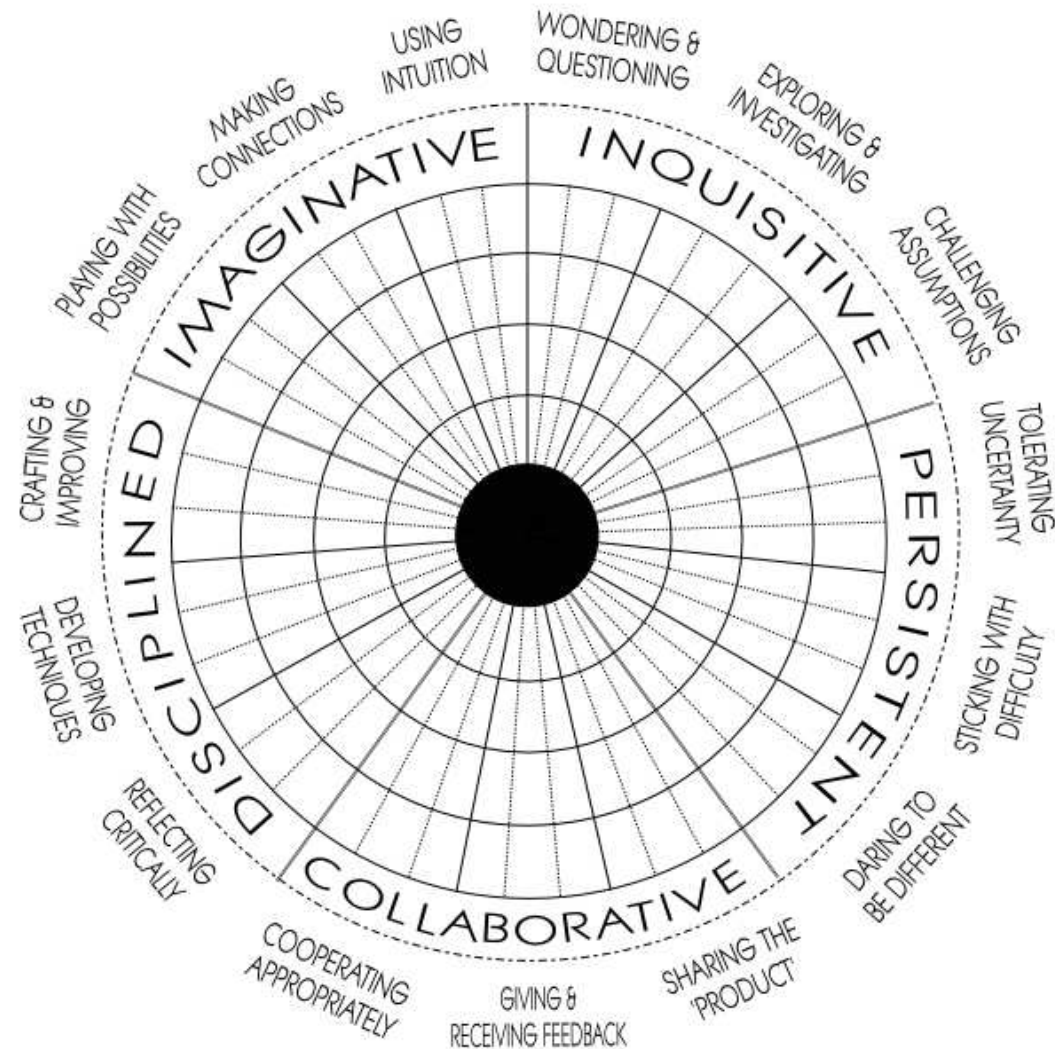
A pedagogical toolkit

A1.

Rubric for assessment

Dimensions

Levels of progression

A2.

Pedagogical activities

Specific for each domain

Designed to test dimensions and levels of progression

A3.

Set of exercises

Specific for each domain

Designed to prepare for the assessment

A4.

Portfolio of student work

For each domain

As examples of different skill levels
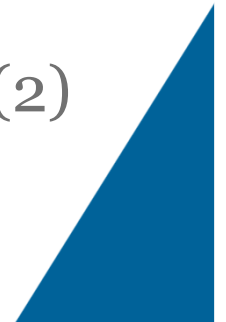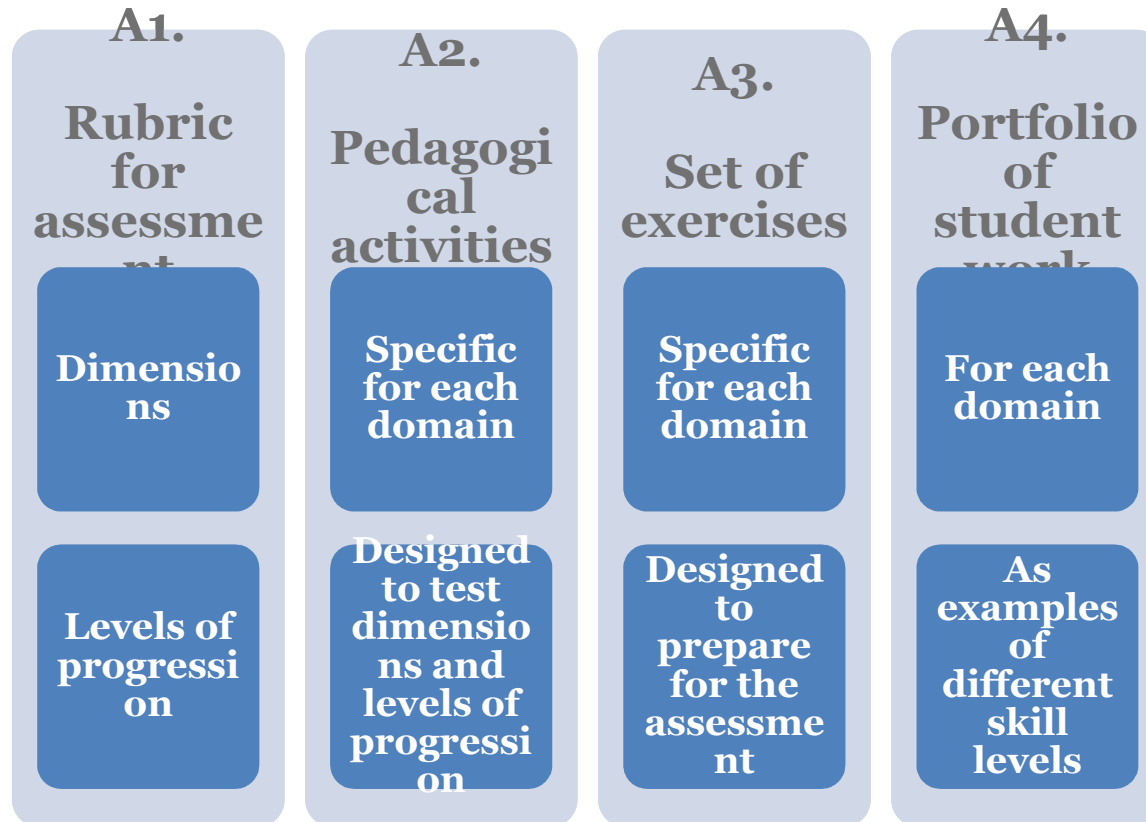
Starting point: 5 creative habits of mind (21st century skills)

Initial version of the rubric

	CREATIVITY (Coming up with new ideas and solutions)	CRITICAL THINKING (Questionning and evaluating ideas and solutions)
INQUIRE	• Feel, empathise, observe, describe relevant experience and information • Explore, seek and generate ideas	• Understand context/frame and boundaries of the problem • Review alternative theories and opinions and compare/find perspectives on the problem
IMAGINE	• Make connections, integrate other disciplinary perspectives • Stretch and play with unusual/risky/radical ideas	• Identify strengths and weaknesses of evidence, arguments, claims and beliefs • Challenge assumptions, check accuracy, analyse gaps in knowledge
DO / SHARE	• Envision / Express / Produce / Prototype new product / solution / performance • Appreciate the novelty of solution and/or possible consequences	• Appraise / Base / Justify opinion/products on logical, ethical or aesthetic criteria/reasoning • Acknowledge own bias (as perceived by others) and uncertainty/limits of endorsed opinion/solution

Uses of the rubric

- To develop new pedagogical activities

- To improve existing pedagogical activities

- To develop new rubrics (domain-specific, to assess studennts, self-assessment, etc.)

- To assess student work

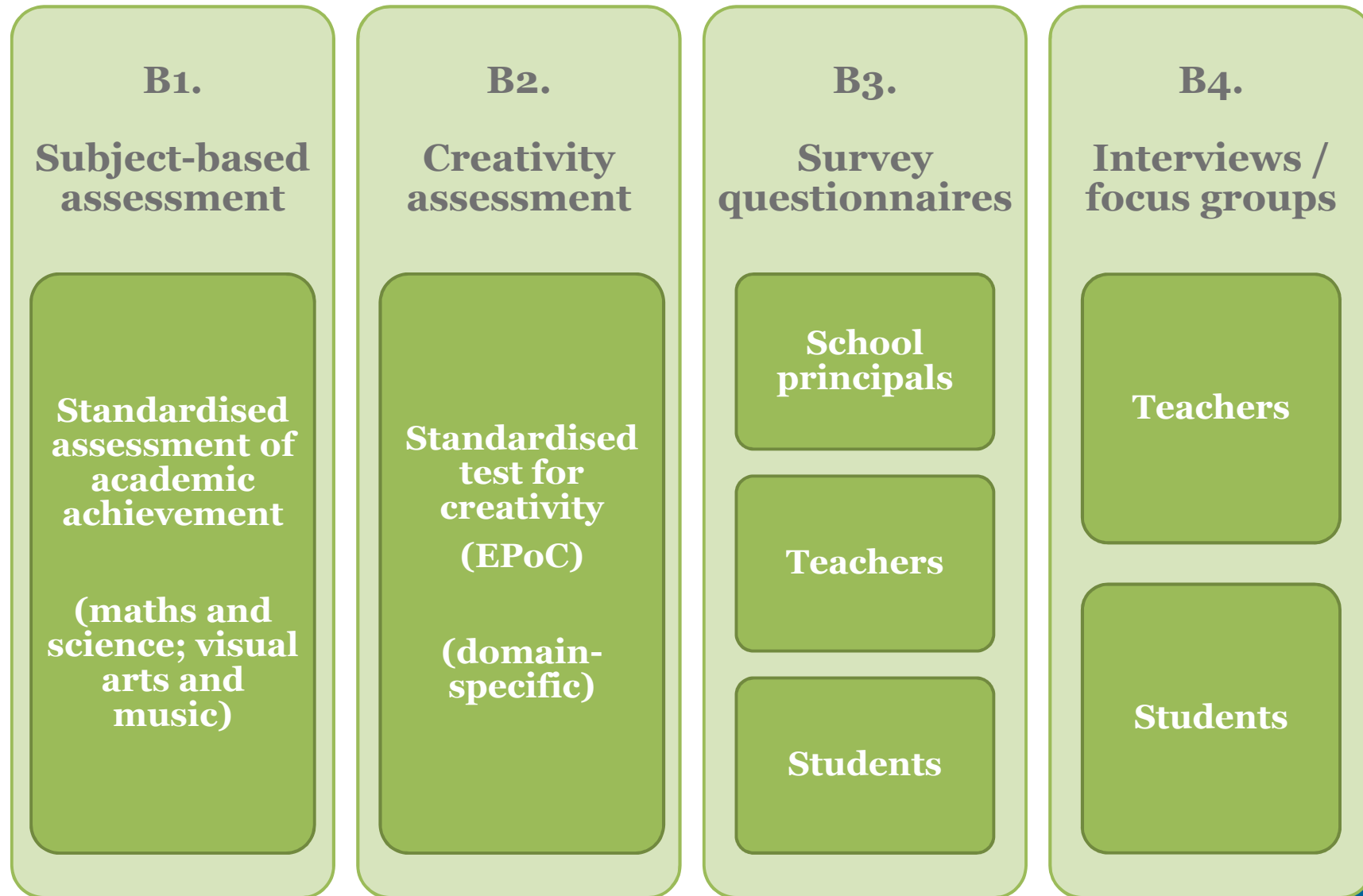- To keep in mind the importance of these competences
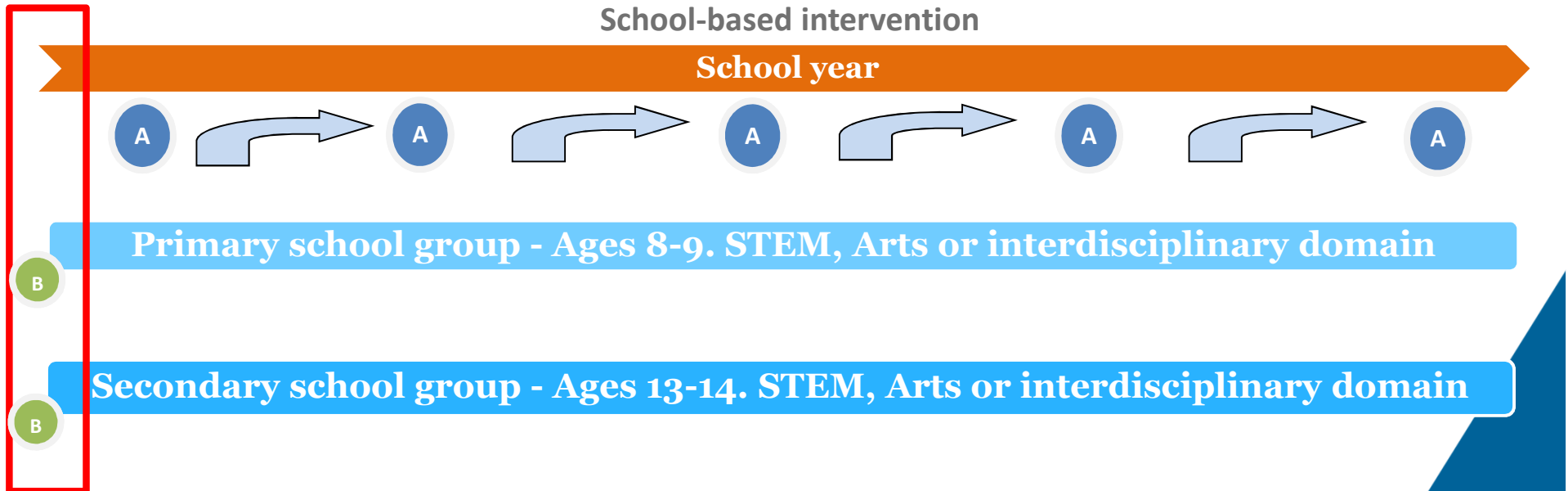
a monitoring framework with a quasi-experimental design

Contextual data collection

B1.
Subject-based assessment
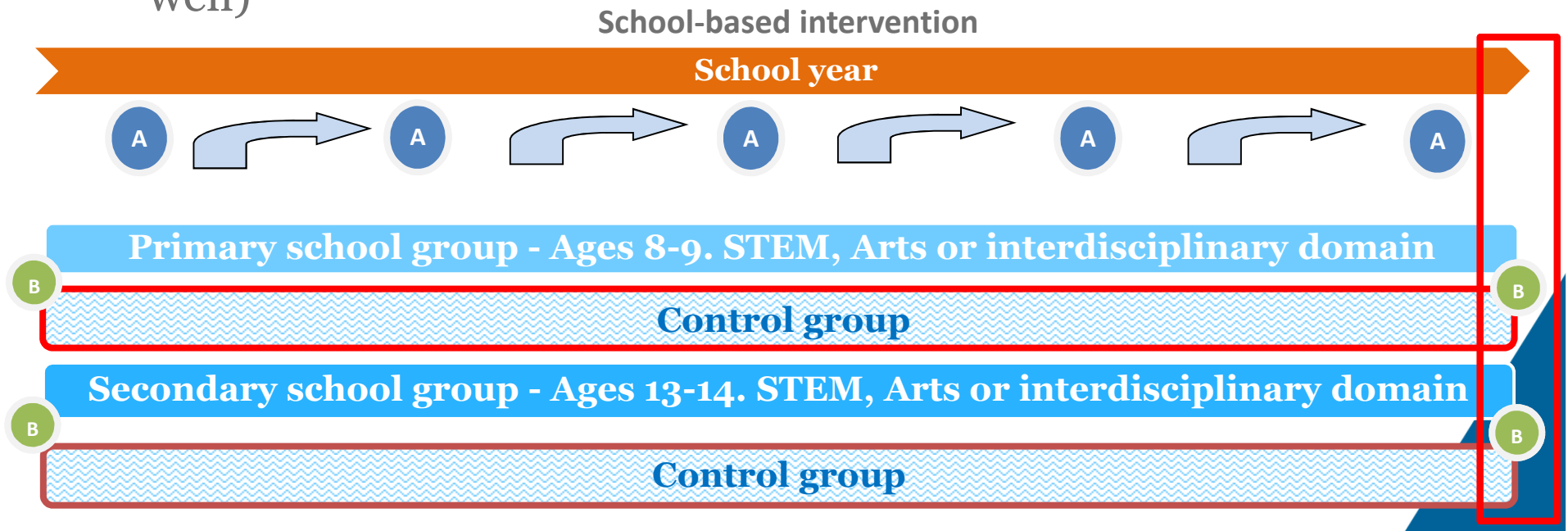
Standardised assessment of academic achievement

(maths and science; visual arts and music)

B2.
Creativity assessment

Standardised test for creativity (EPoC)

(domain-specific)

B3.
Survey questionnaires

School principals

Teachers

Students

B4.
Interviews / focus groups

Teachers

Students

What factors influence the outcomes?

- Pre-tests and questionnaires at the beginning of the intervention:
  - Are differences related to baseline in achievement, creativity, to student beliefs, to pedagogies, to socio-economic bacground, etc.?

- Observations and discussions within the network

School-based intervention

School year

A → A → A → A → A

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

B

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

B

What effects of the intervention?

- Measures after the intervention:
  - Post-tests and -questionnaires
  - Qualitative observations of pedagogies
  - Interviews

- Matched control group (with some kind of intervention as well)

School-based intervention

School year

A   A   A   A   A

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

B   B

Control group

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

B   B

Control group

examples

effects on teaching, learning

Primary education:
I have to use my imagination
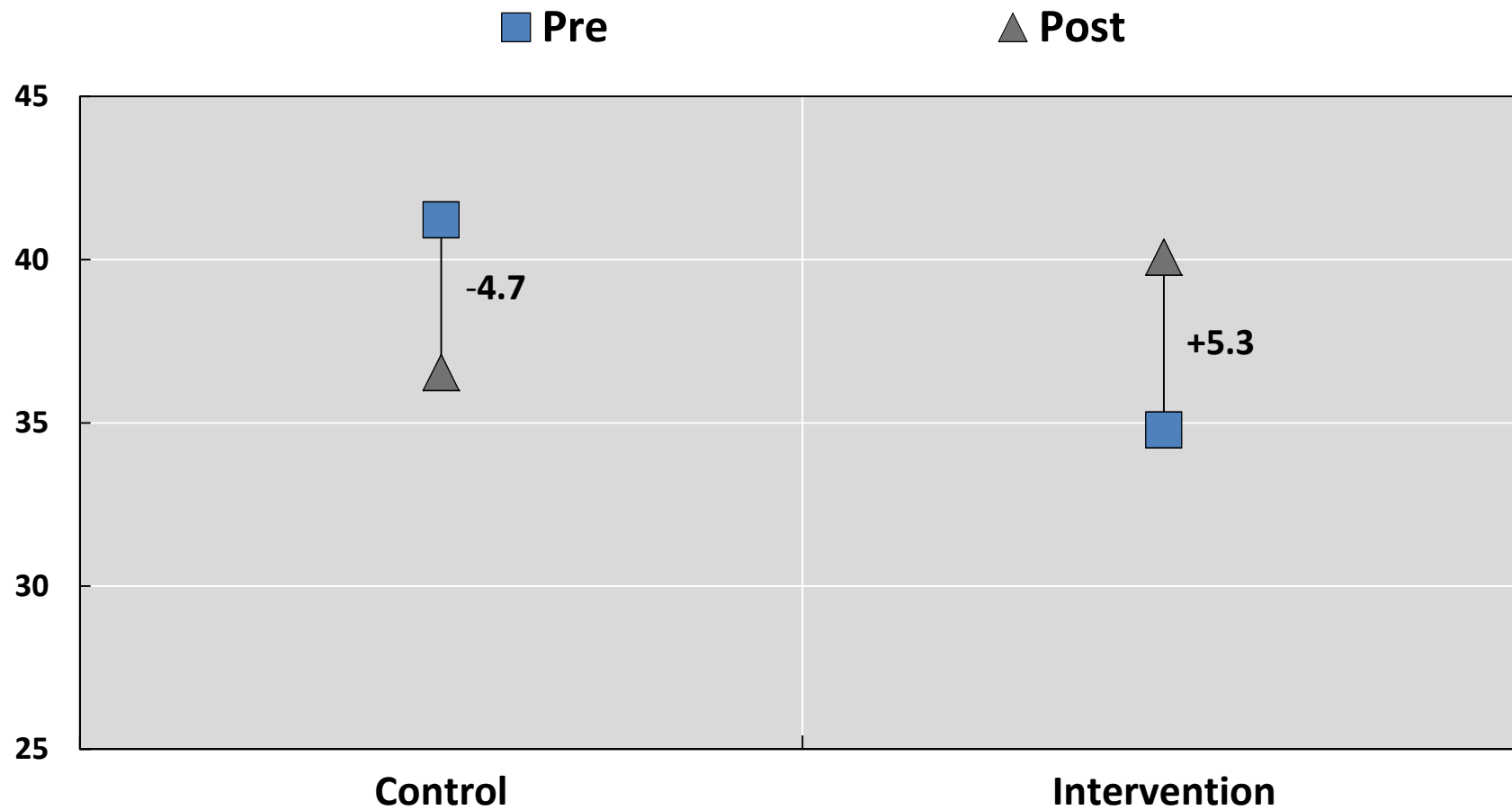
Primary education:
I have to make connections
between different school subjects
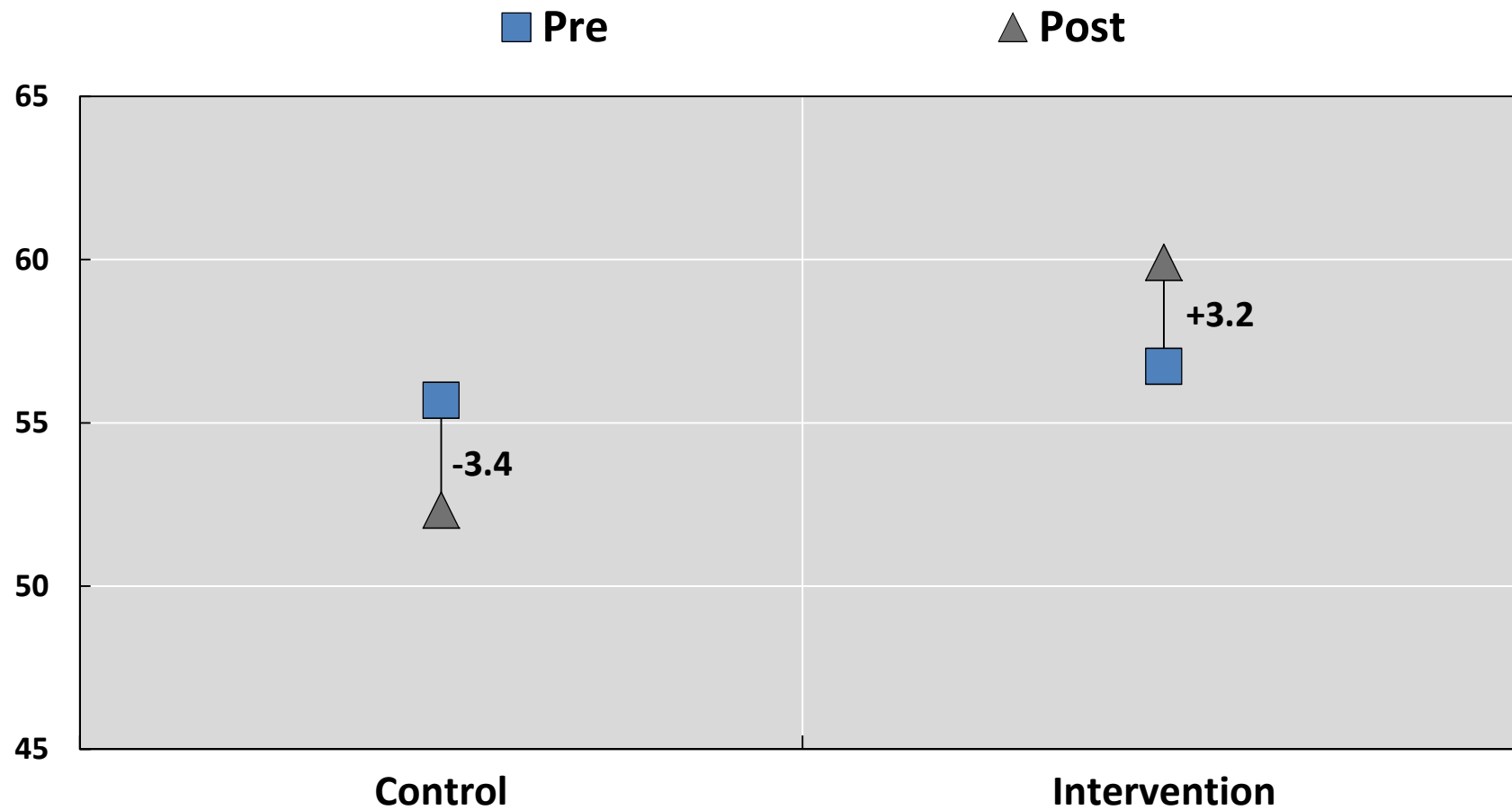
Primary education:
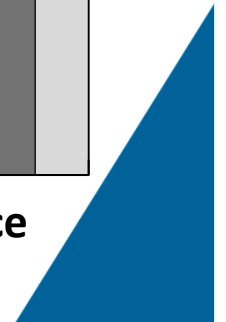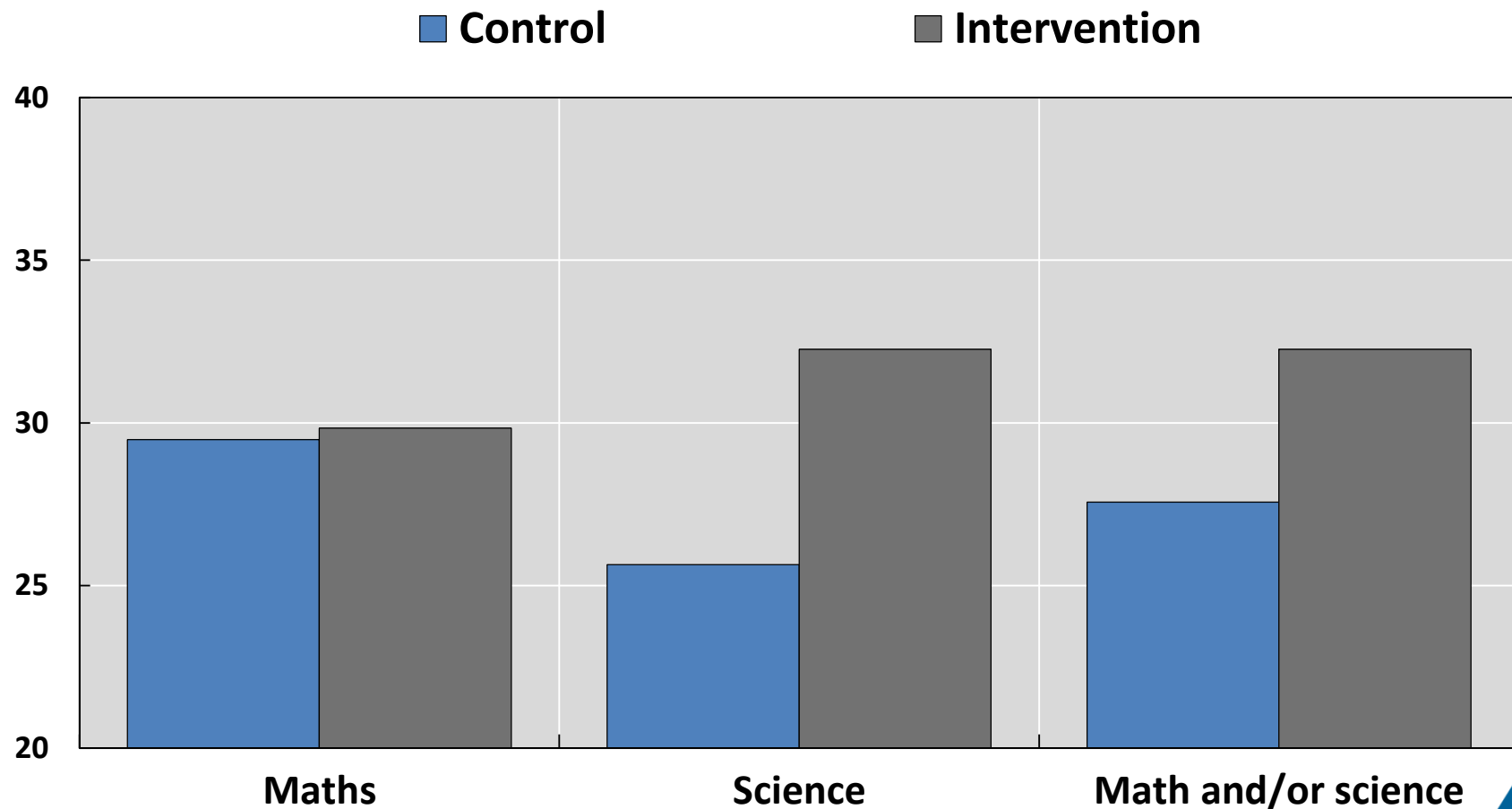# I have to look for several explanations
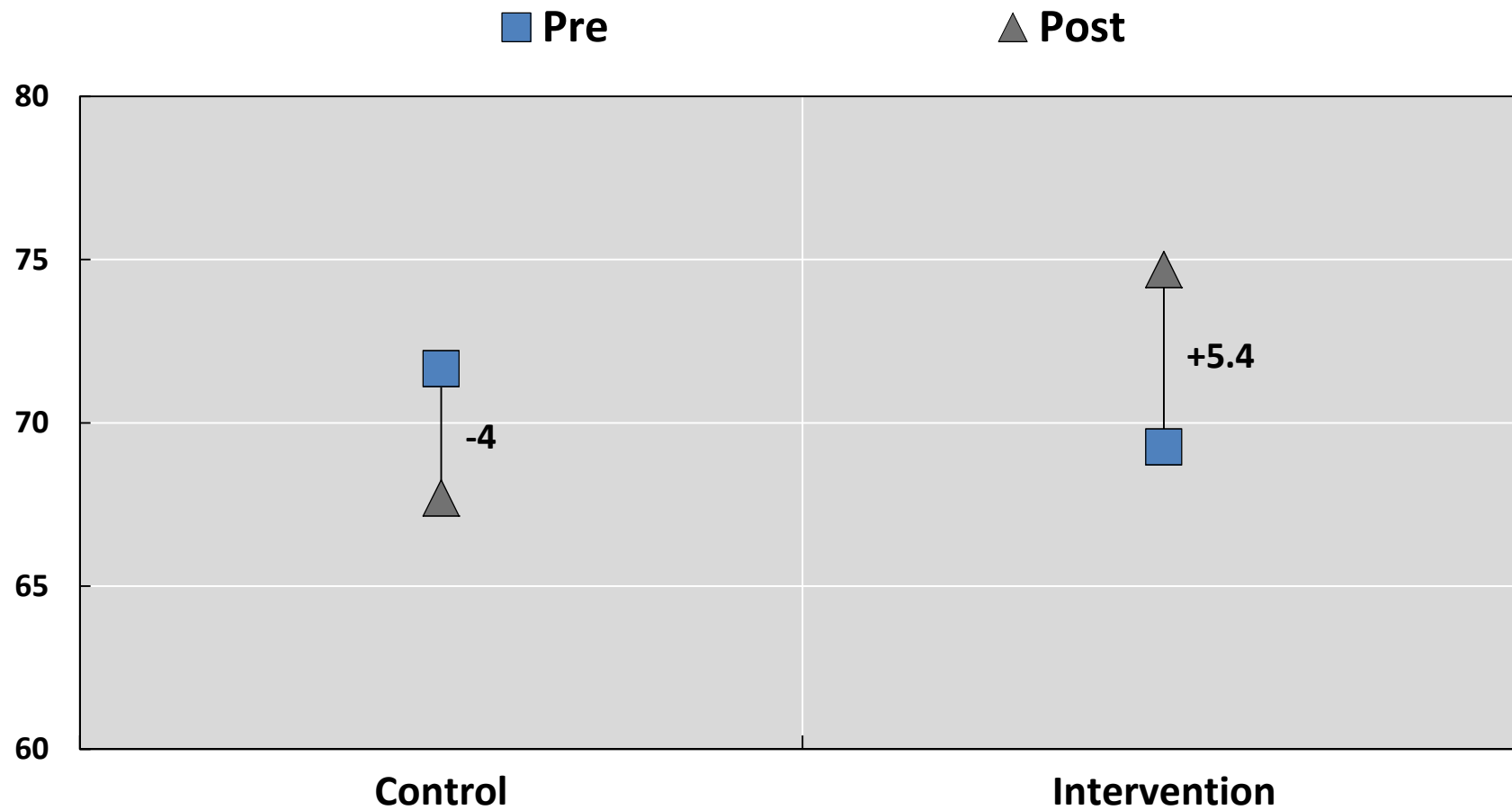
Primary education:
I do NOT only learn what I am interested in

■ **Pre**   ▲ **Post**

- Control: -0.8
- Intervention: +7.4
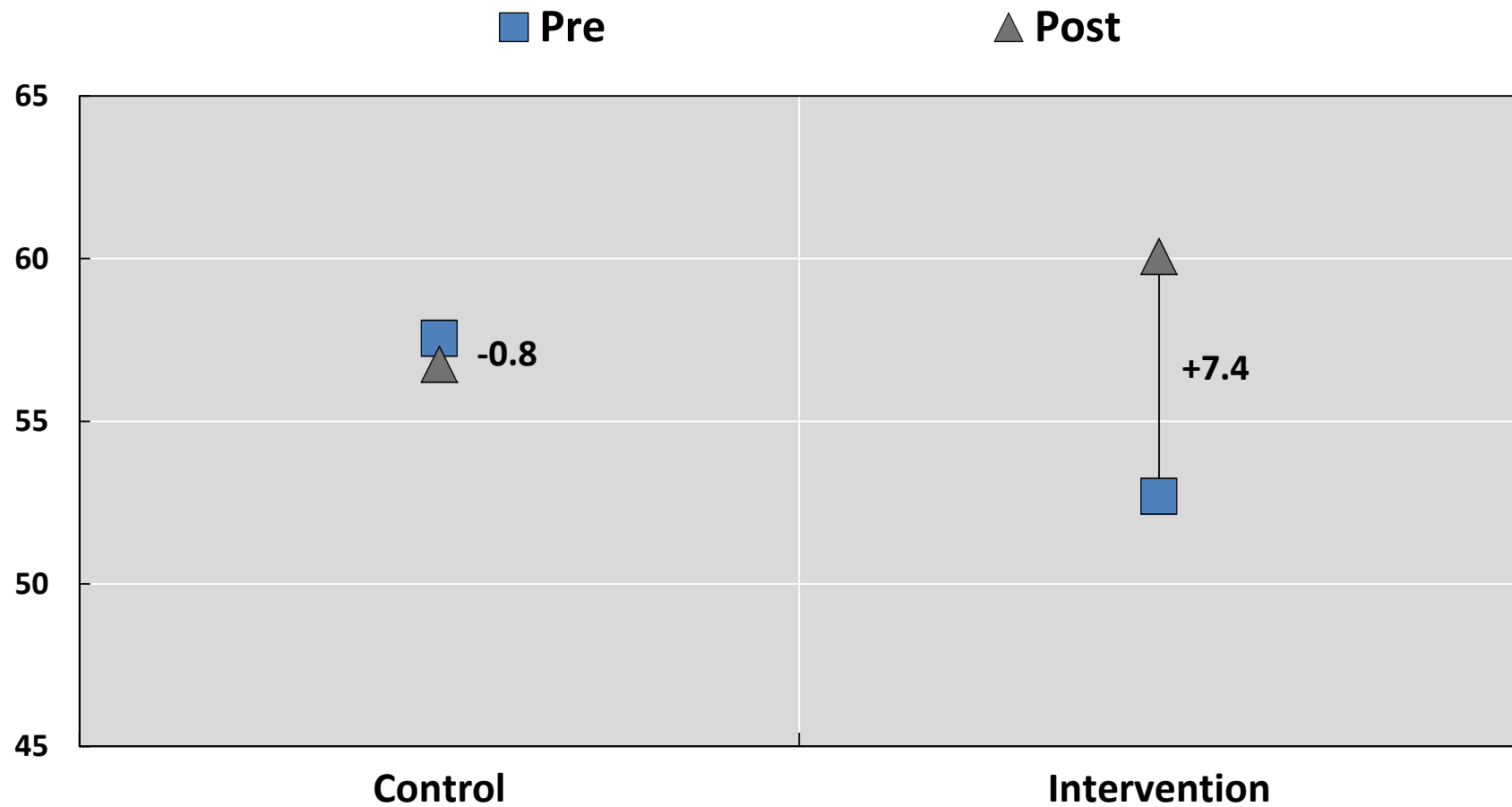
Primary education:
interest in maths and science

Increase in the percentage of students interestd between pre and post
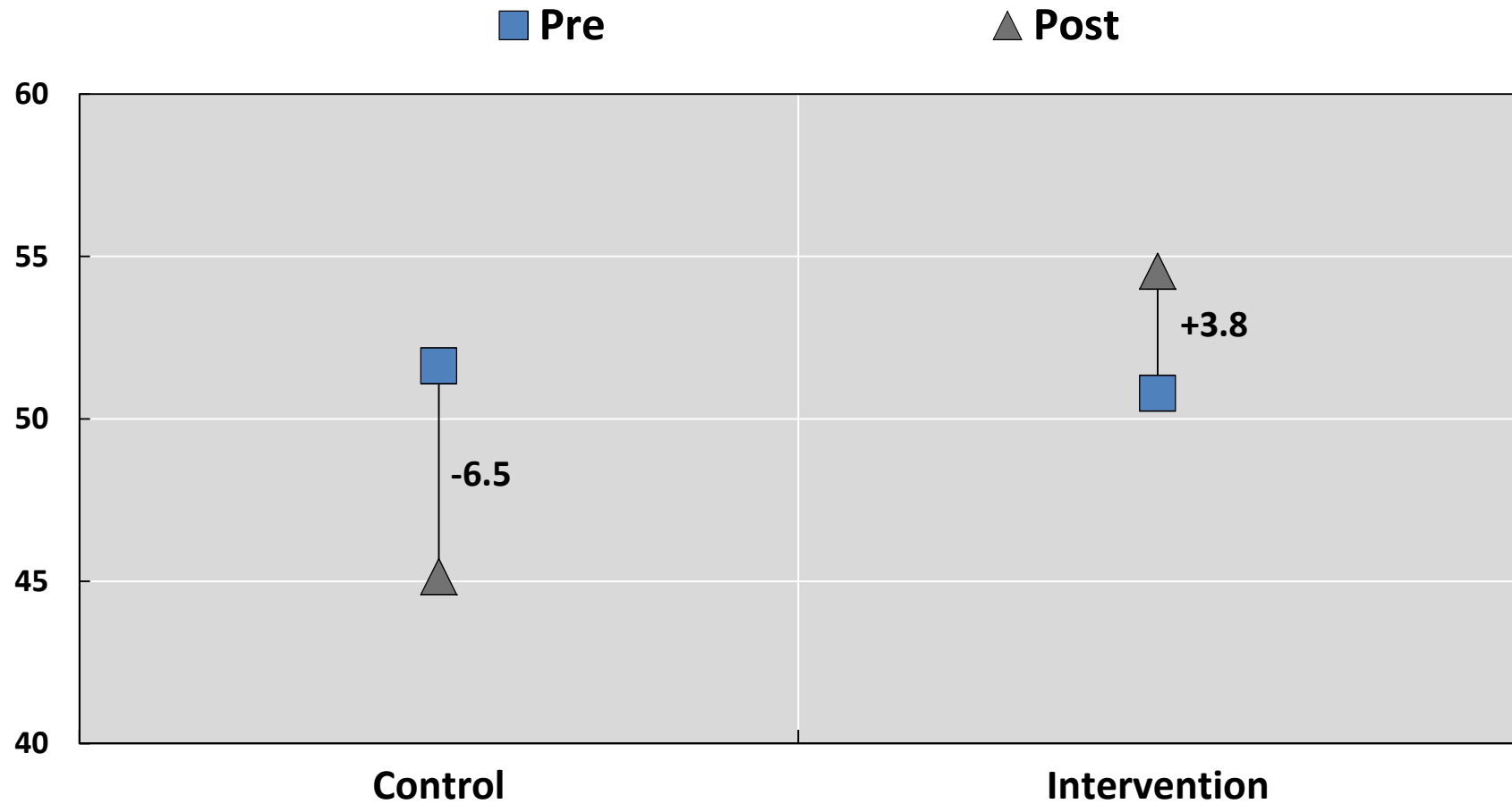
Out of school effects
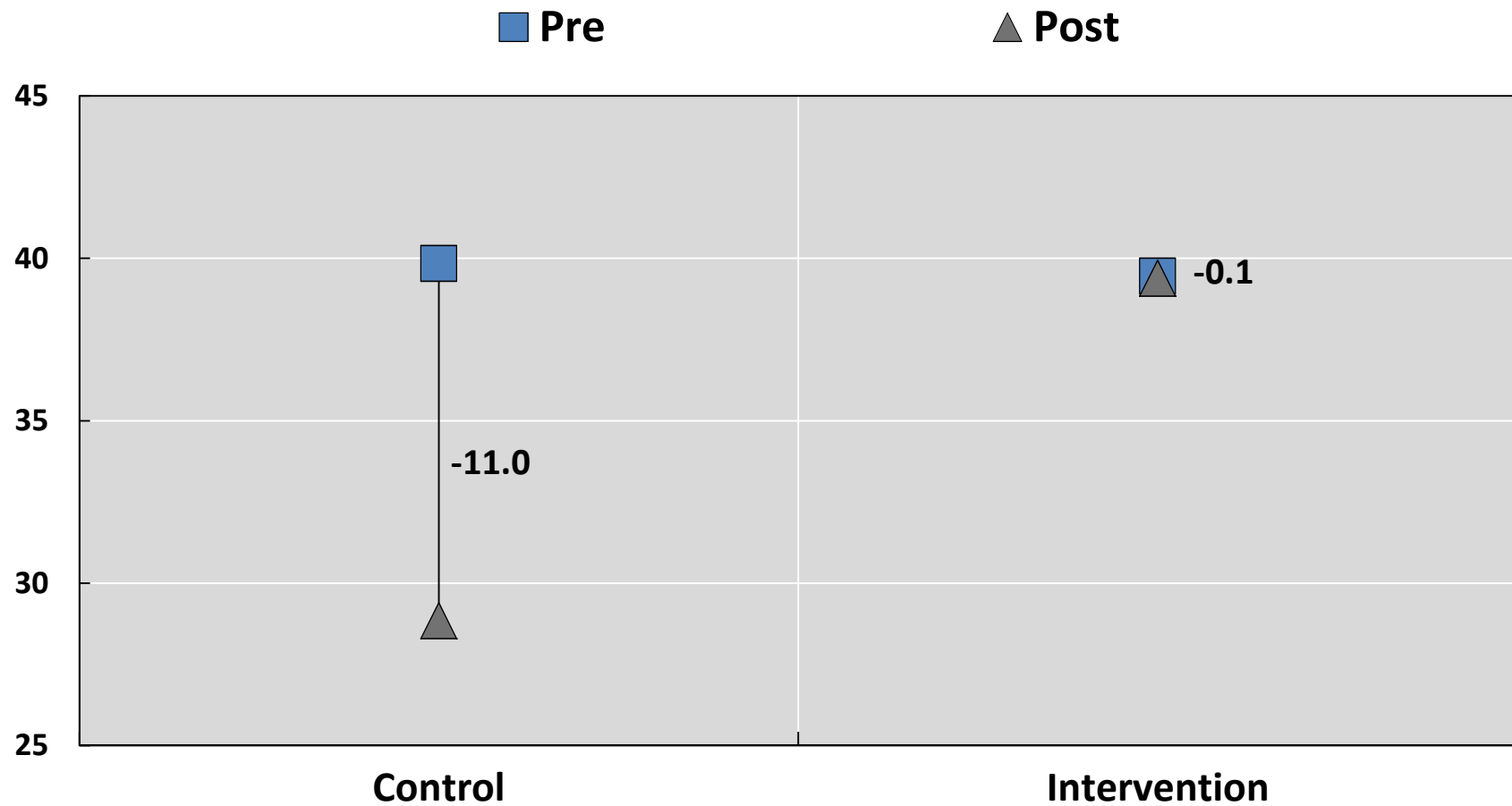
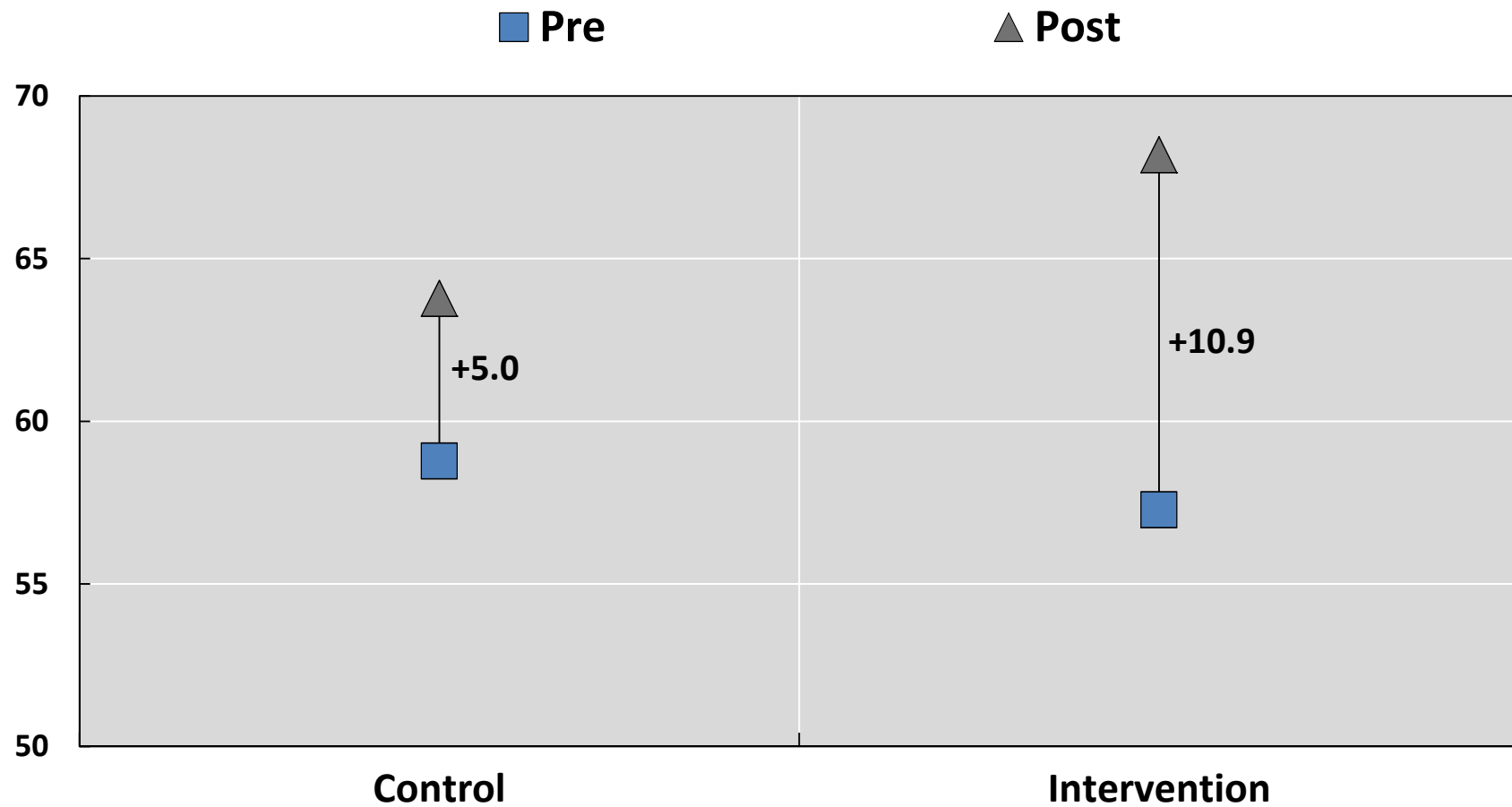Primary education:
I am curious about many different things
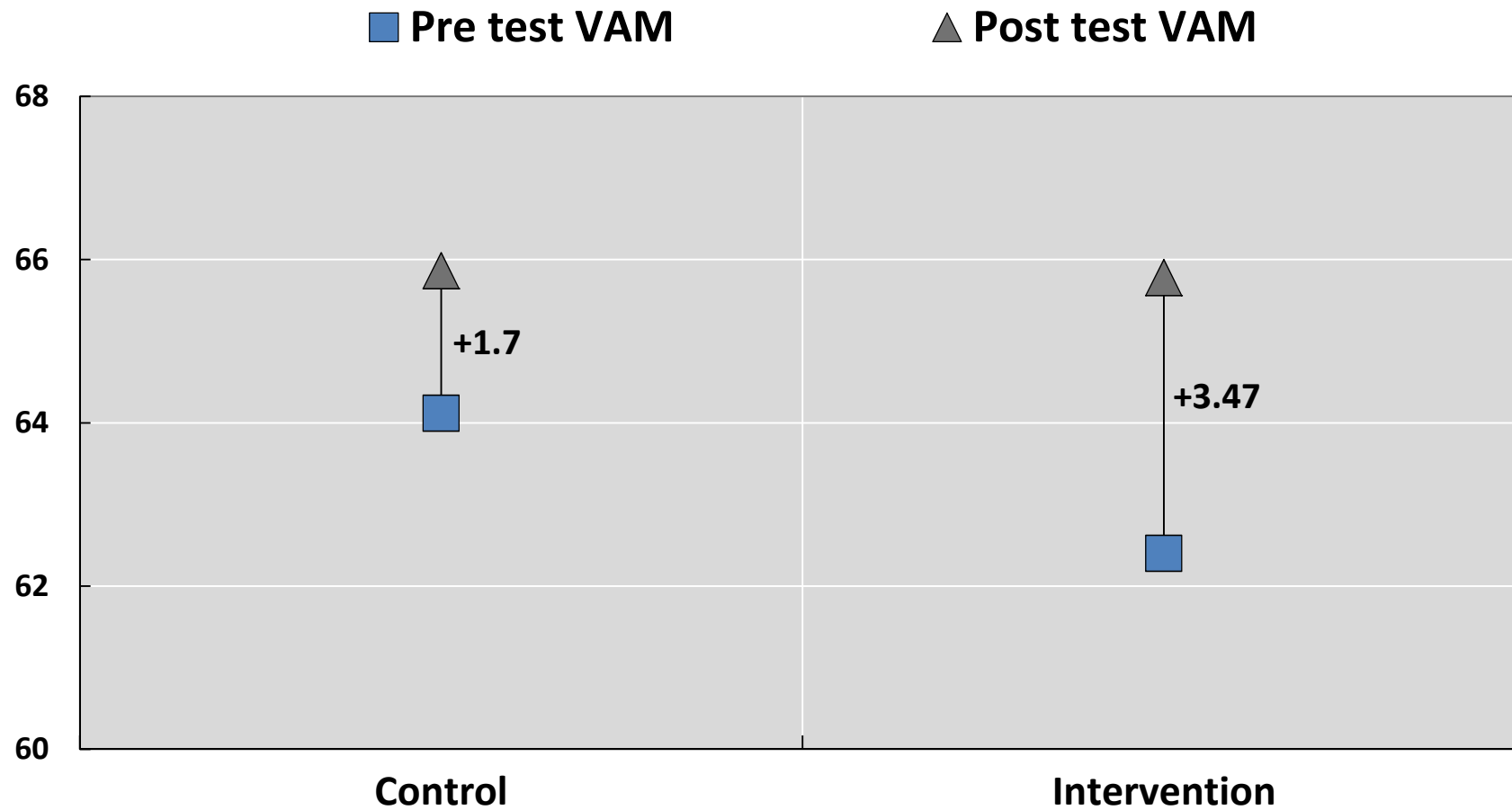
standardised tests

Primary education:
Performance in maths and science tests

Primary education:
Performance in visual art and music test

examples

Next steps

- Launch a new strand in tertiary education

- End of pilot phase in 2018

- Design of a validation phase based on developped resources

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THANK YOU

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