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The Distributional Effects of the ‘Digital School’ Project

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The ‘Digital School’ project

- pilot project - 399 primary schools in Poland
- academic year 2012/2013
- comprehensive public intervention:
    - financed purchase of ICT equipment (1:1 project)
    - ICT use for all school subjects
    - teacher training
    - teacher cooperation networks
    - developing digital resources (e.g., e-textbooks)
- selection to the project:
    - more than 3500 schools applied
    - random selection within strata defined by the combination of voivodeship (region), project variant, school size

The ‘Digital School’ project – expected results

- more interested and engaged pupils
- more individualization
- more group work
- more student engagement techniques
- more satisfied teachers
- improved quality of education
- improved student basic skills and competences

Available data

Final exam scores

- 2012 (before the project was implemented)
- 2013 (3-5 months after delivery of ICT equipment)
- 2014 (15-18 months after delivery of ICT equipment)

Final exam – 6th grade, includes 5 exam sections:

- reading
- using information sources
- writing
- reasoning
- applying knowledge

Methodology

Control group constructed

- exploiting the random selection
- weighting to account for stratification
- accounting for various threats to internal and external validity

Comparison: treatment vs. control group

- treatment – 357 schools that participated in the „Digital School" project (12,731 pupils in 2013)
- control – 2,746 schools that applied to the „Digital School" project, but were not drawn to participate (104,406 pupils in 2013)

Statistical methods

Question: are observed differences a result of the intervention or rather may have occurred by chance (due to random school selection).

Statistical tests used:

- t-test for comparison of means
- Kolmogorov-Smirnov test for comparison of distributions
- Monte Carlo permutation test

Results - comparison of means

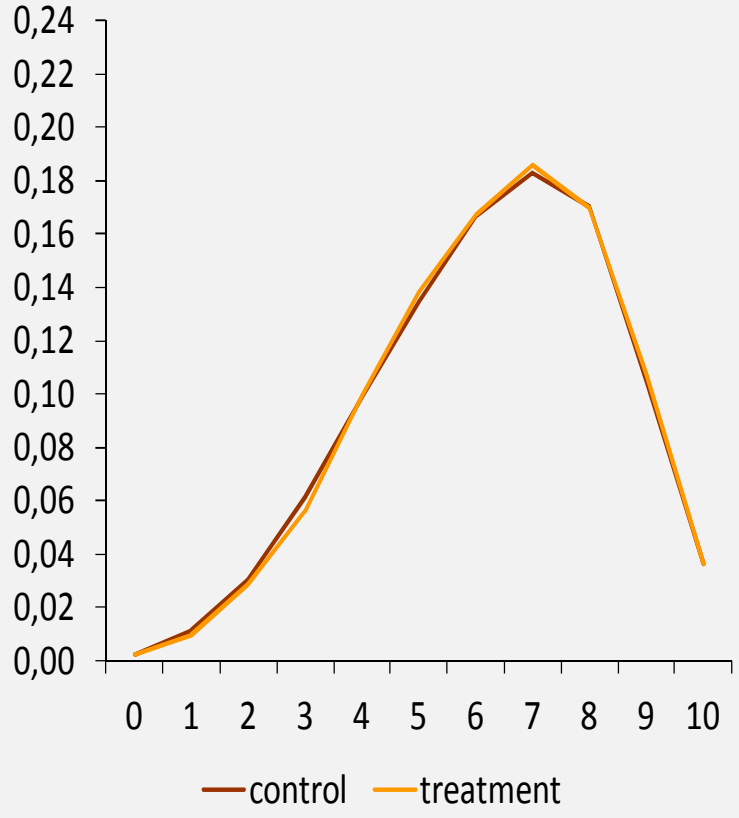
	Mean exam score 2013		Significant difference?
Exam section	Treatment group	Control group	
reading	7.34	7.32	no
using information sources	2.48	2.47	no
writing	6.38	6.34	no
reasoning	4.22	4.14	no
applying knowledge	3.77	3.70	no
TOTAL	24.19	23.97	no

Results

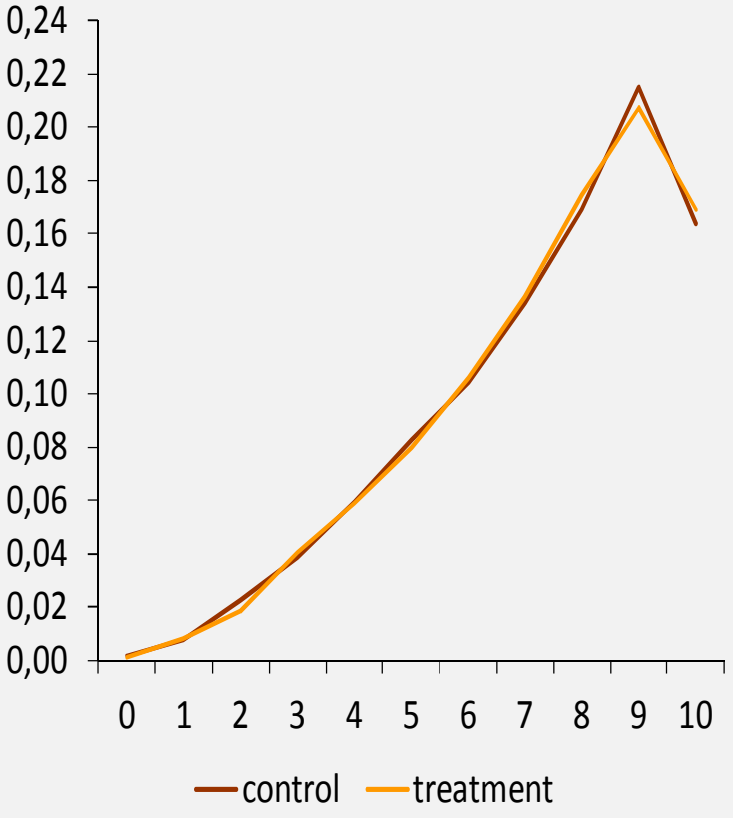
Reading

no significant differences

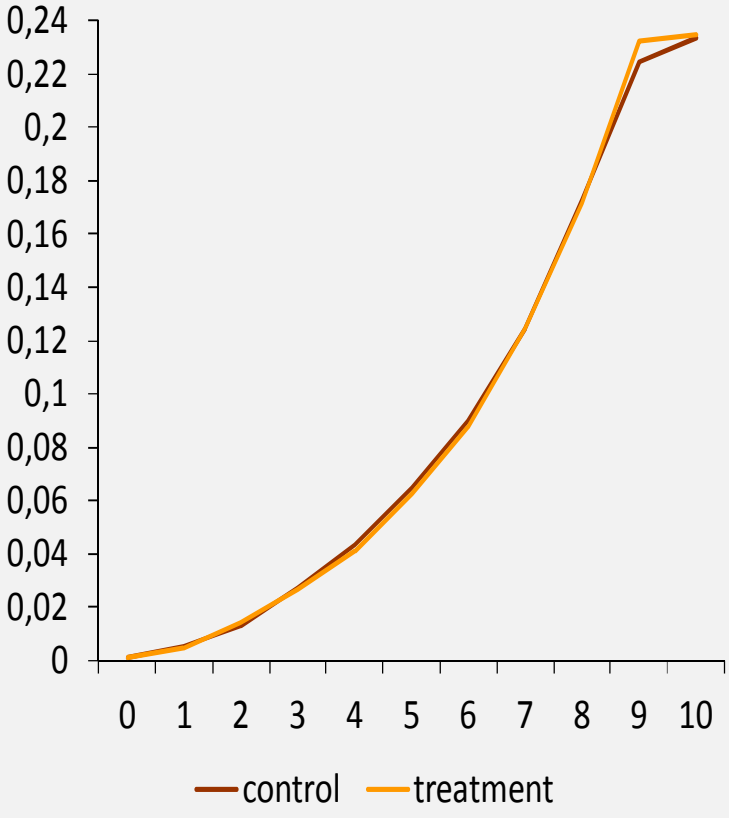
2012



2013



2014



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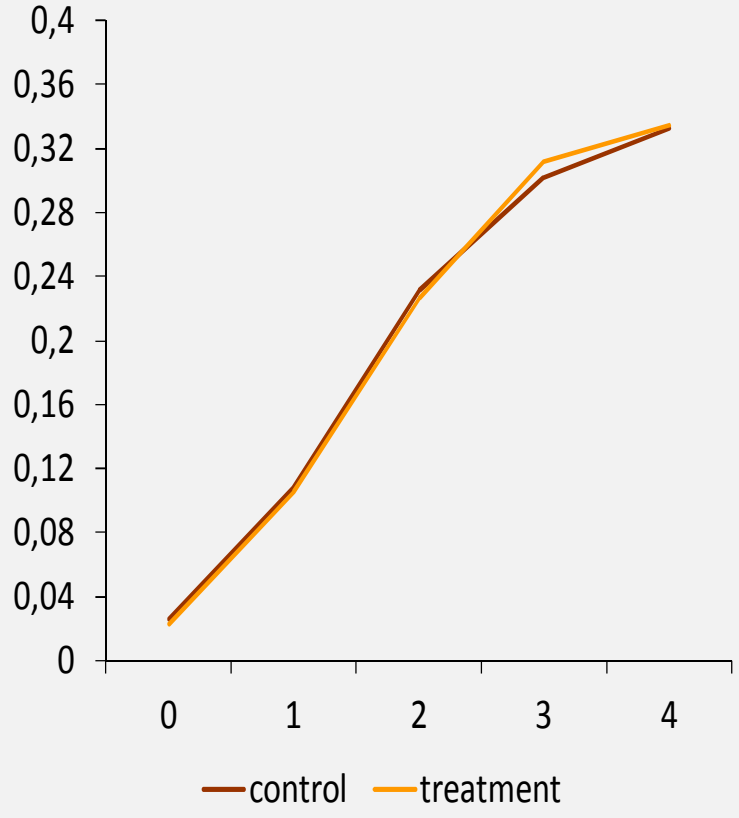
Results

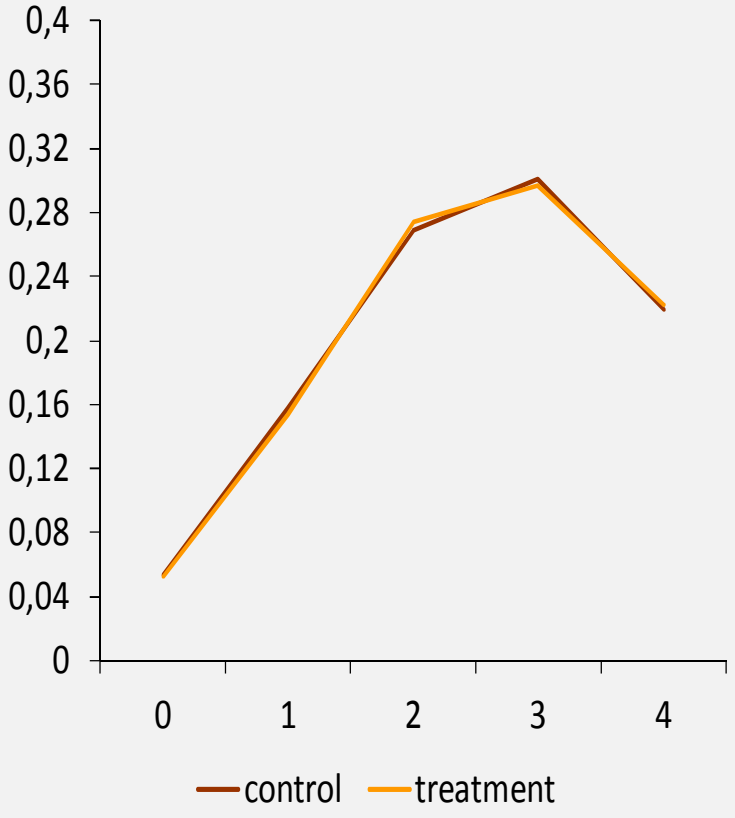
Using information sources

no significant differences

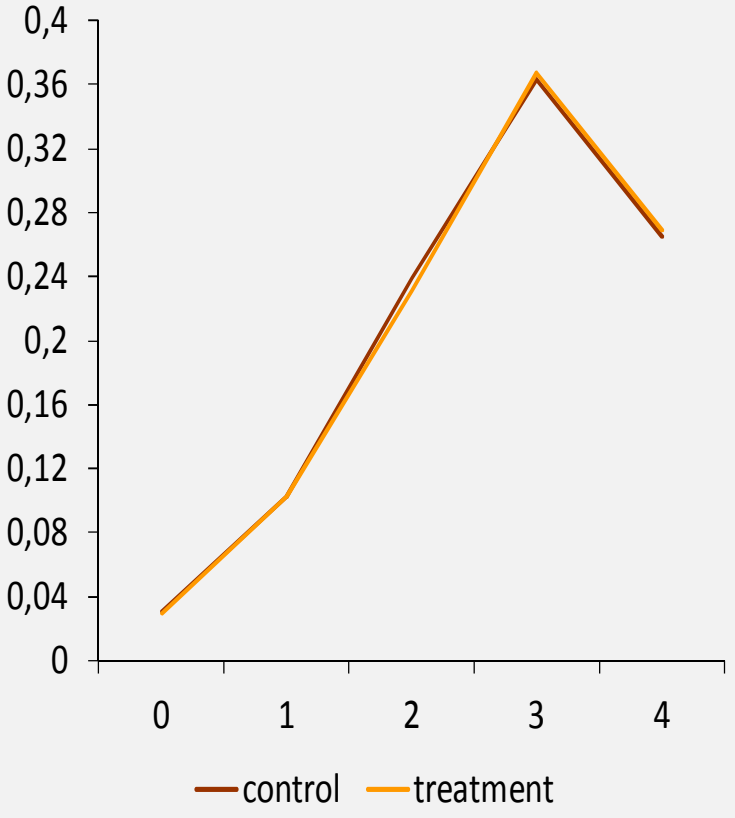
2012



2013



2014



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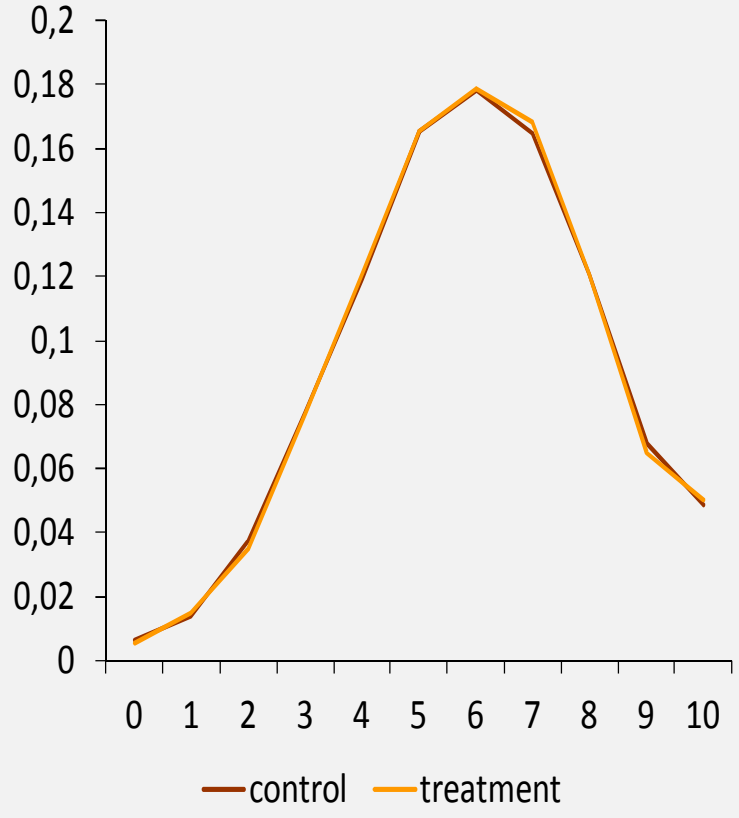
Results

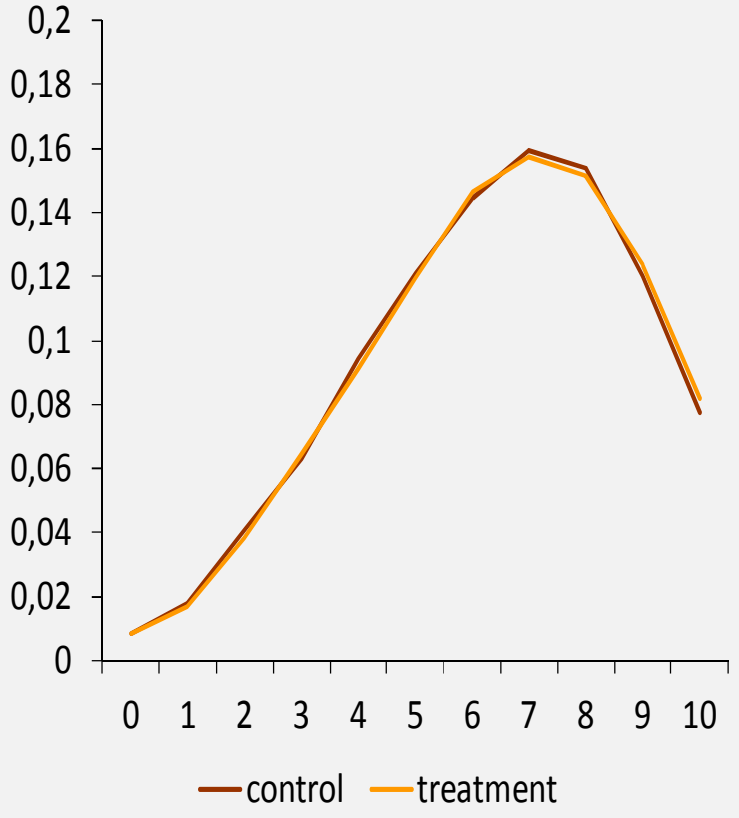
Writing

no significant differences

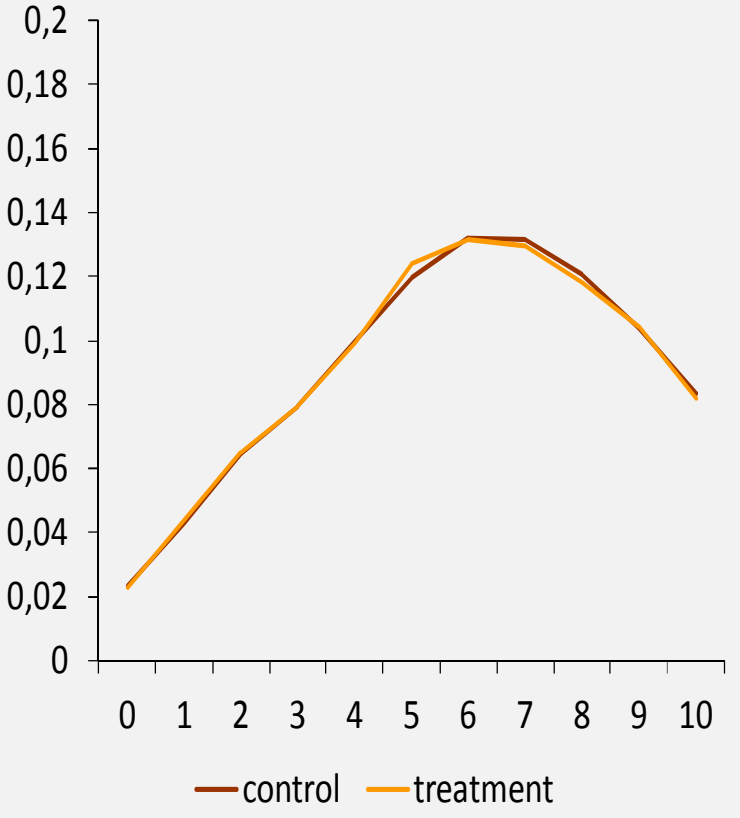
2012



2013



2014



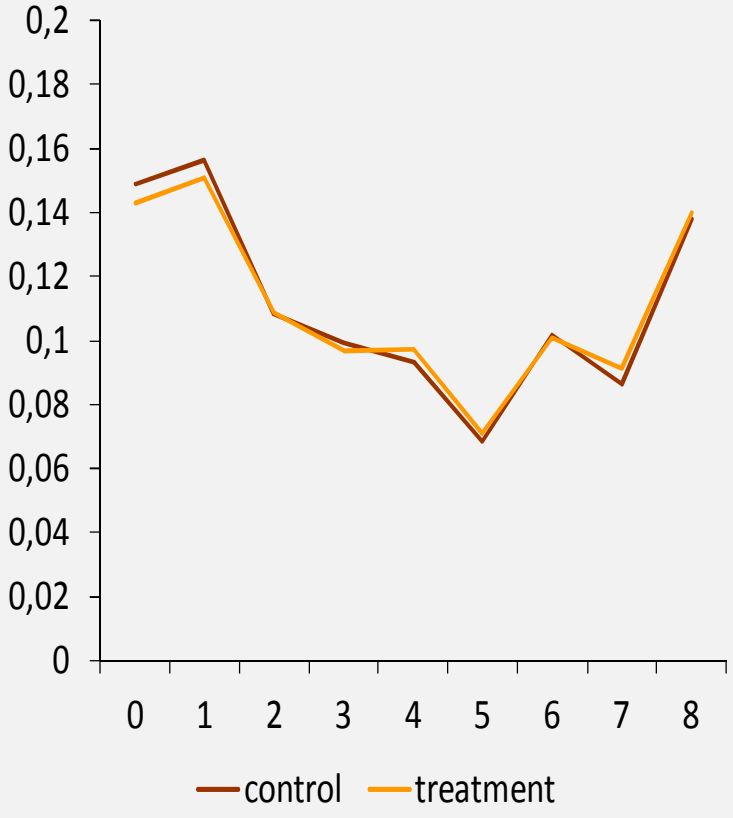
Results

Applying knowledge

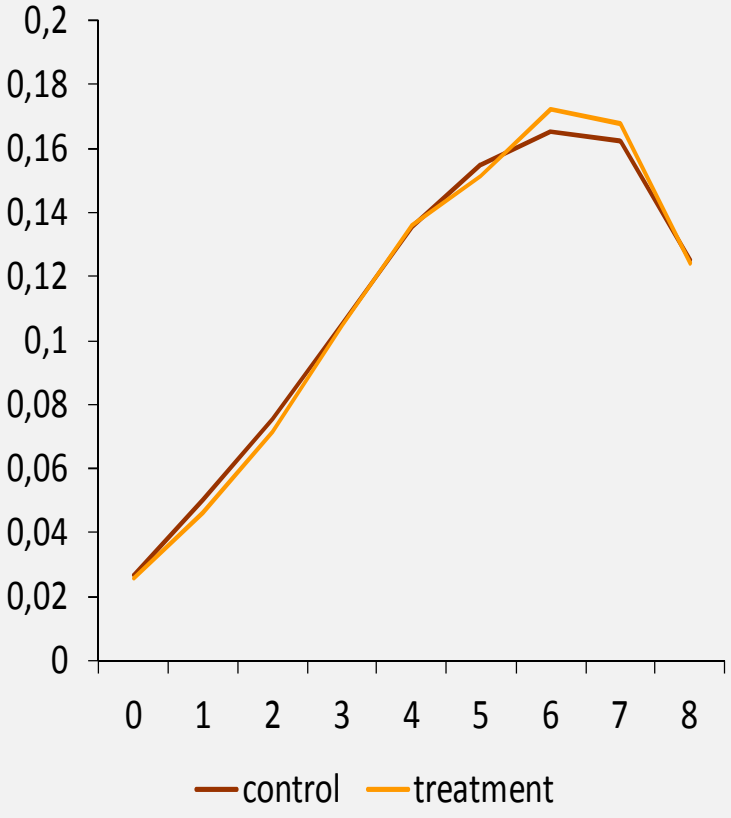
no significant differences

2012

2013



2014

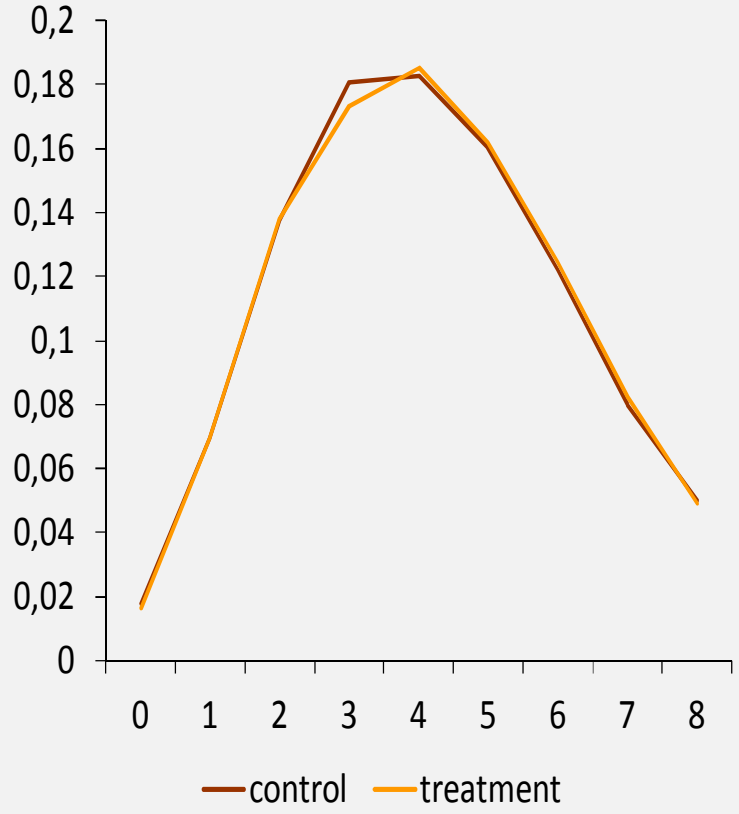


Results

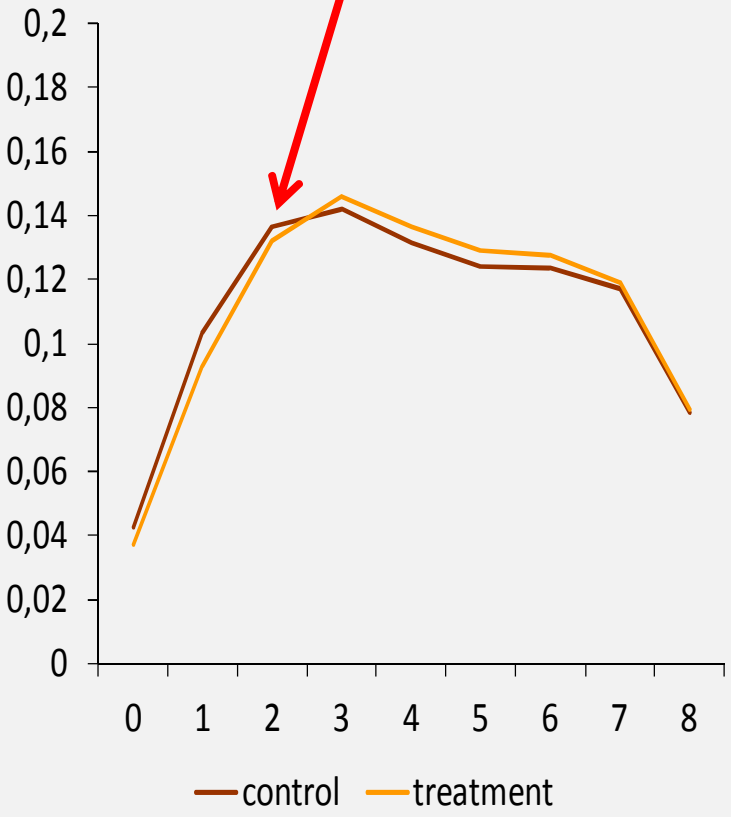
Reasoning

at the 0.05 threshold of significance

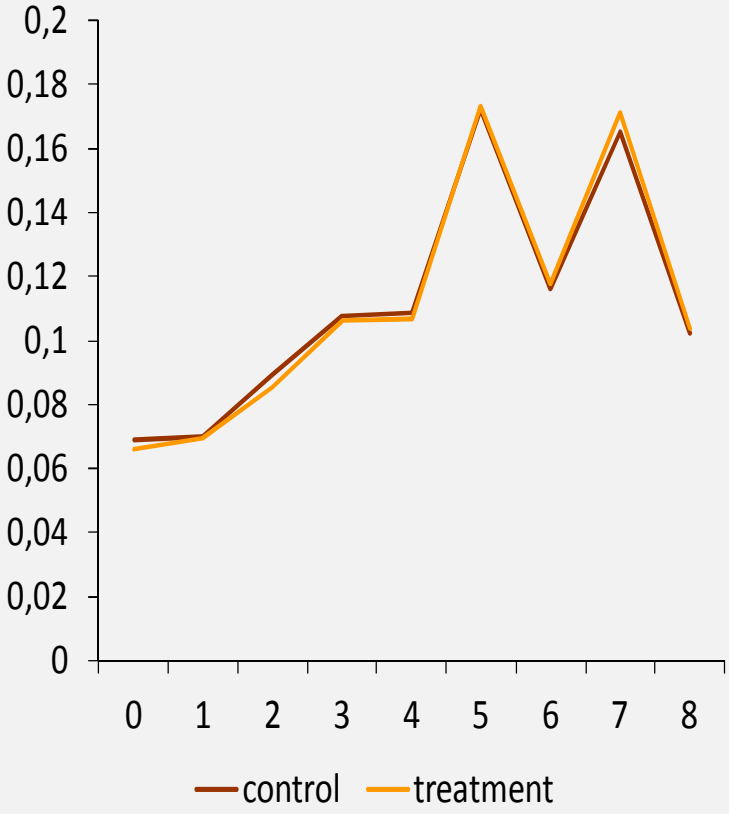
2012



2013



2014

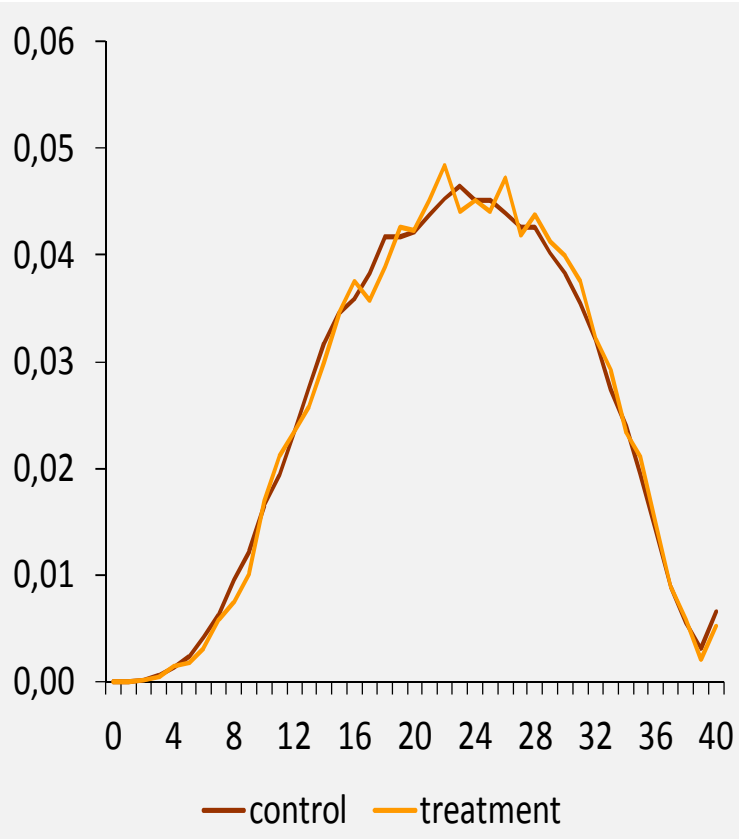


Results

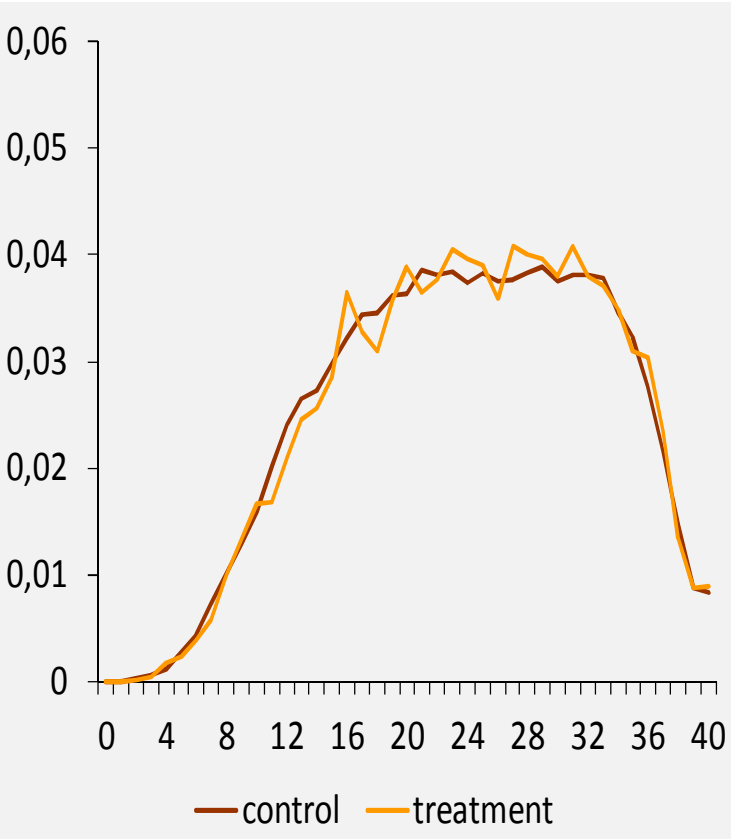
Whole exam

no significant differences

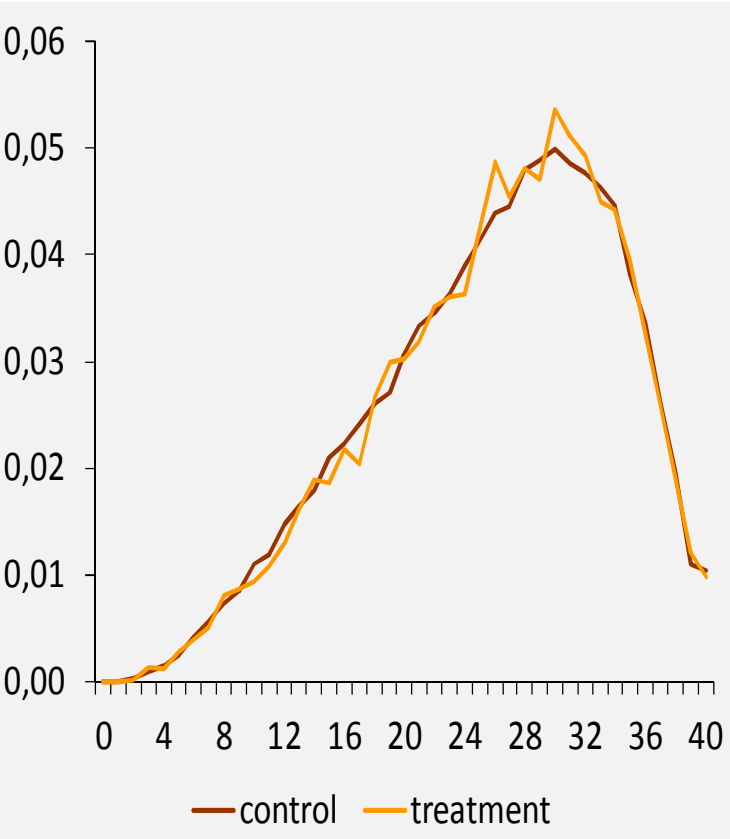
2012



2013



2014



Findings

The ‘Digital School’ project…

- probably improved mathematical and logic skills of some low scoring pupils in short term
- had no impact on other exam sections

Discussion

The ‘Digital School’ project…

- probably improved mathematical and logic skills of some low scoring pupils in short term

novelty effect?

Discussion

The ‘Digital School’ project…

- had no impact on other exam sections

Observational study

- increased ICT use in schools (but it is not intensive)
- improved pupil attitudes towards ICT
- did not profoundly affect pedagogical techniques, ways of teaching and learning

Thank you for your attention!

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