Educational research

DigiMaths4All

No. P-EDU-23-13

Matematikos problemų sprendimo taikant technologijomis grindžiamą mokymąsi ir informatinį mąstymą stiprinimas

Ketvirtokų matematikos intervencijų apžvalga

Co-funded by the European Union

RCL Research Council of Lithuania

Vilnius University

This research, *DigiMaths4All*: Strengthening mathematical problem solving using technology-enhanced learning and computational thinking", No. P-EDU-23-13 is co-funded by the European Union (the project „ Breakthrough in Educational Research" No 10-044-P-0001) under the 1st April 2025 Agreement with the Research Council of Lithuania RCOL) and the 15th April 2025 Joint Activity Agreement with Vilnius University.

Content

- Intervention
- Exploratory data-analysis
- Initial results

- Class results in ViLLE

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Starting point for the research

- Previous research: TEL can improve Math learning in general
- Problem-solving skills increasingly important
- Can TEL improve higher order Math skills?
- Can computational thinking support improvement?

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Intervention design

DigiMaths4All

- Pre- and post-assessment
  - math, reading, attitudes
- Three groups
  - IM, Ž and K
- 16 intervention lessons in ViLLE
  - 50% of tasks the same,
  - 50% enriched with either CT or gamification

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Exploratory data-analysis (with class data)

A. Were groups similar before intervention?

B. Did groups improve?

C. Did one intervention outperform the others?

D. What behaviors were associated with improvement?

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Descriptive statistics

	IM	Ž	K
Classes	56	57	50
Students	1251	1297	1014
	22,3	22,8	20,3

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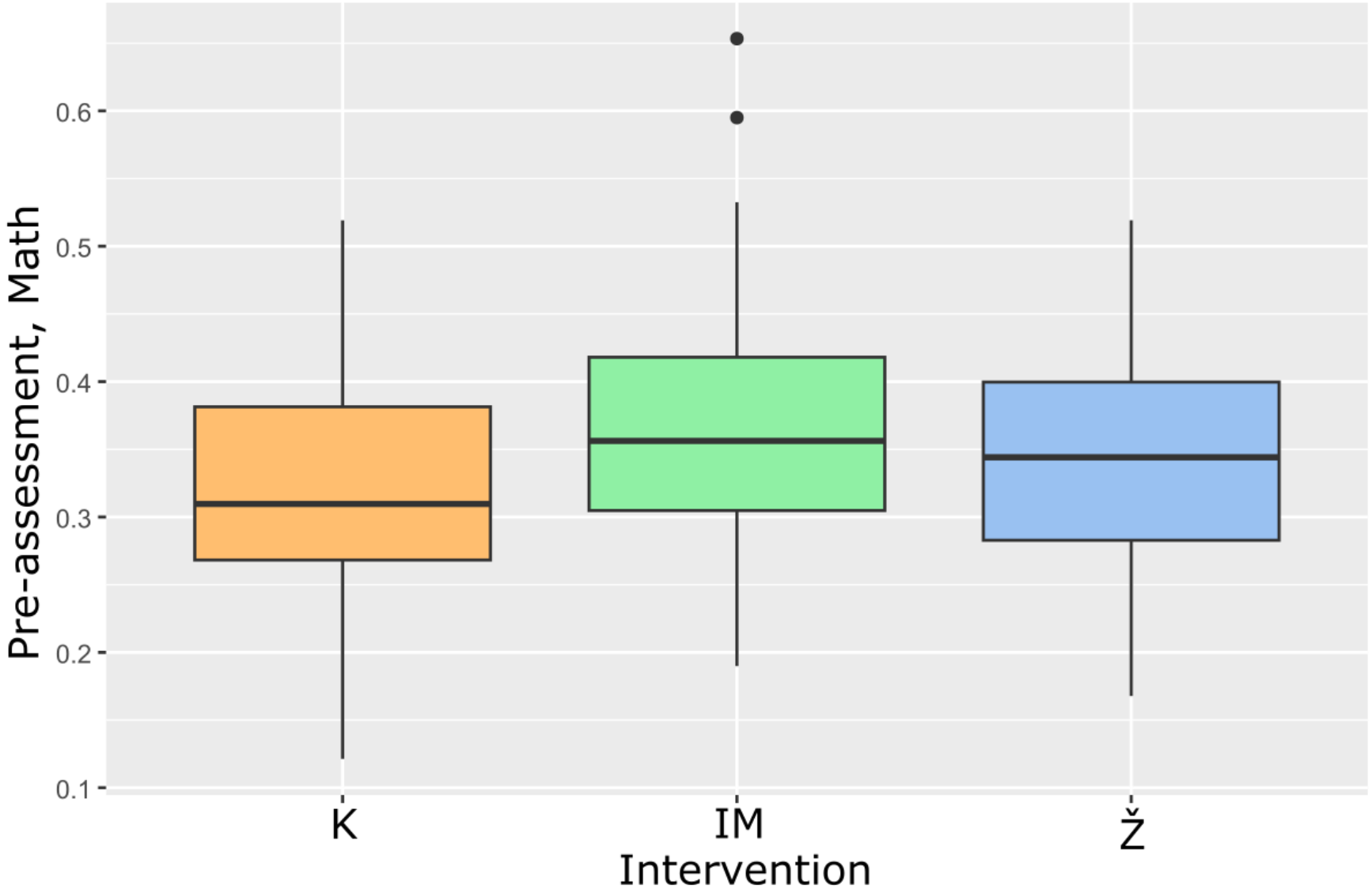
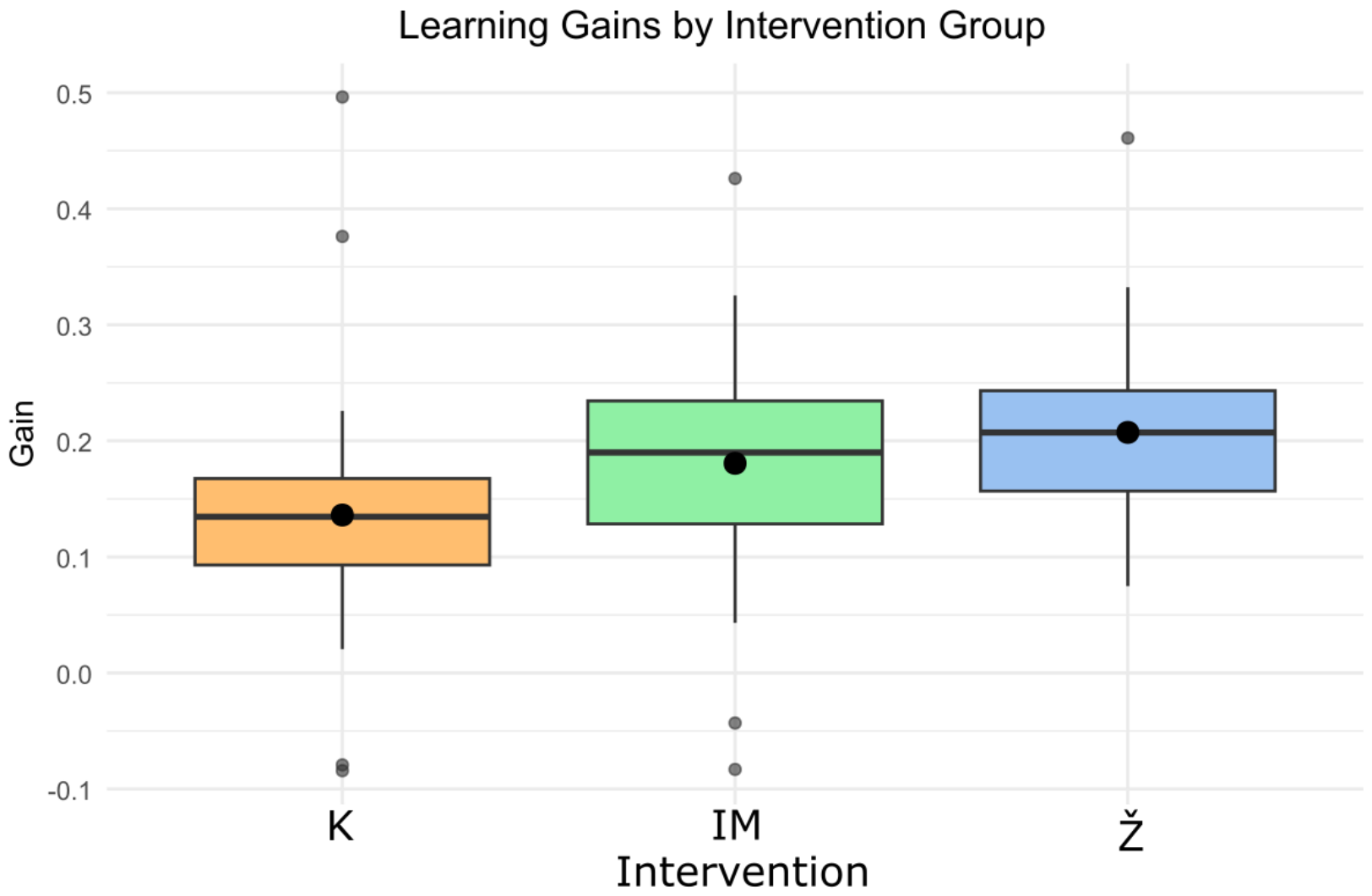
Before intervention

Intervention	n	Math score (%), mean	Math, SD
IM	56	0.37	0.090
Ž	57	0.34	0.086
K	50	0.33	0.085

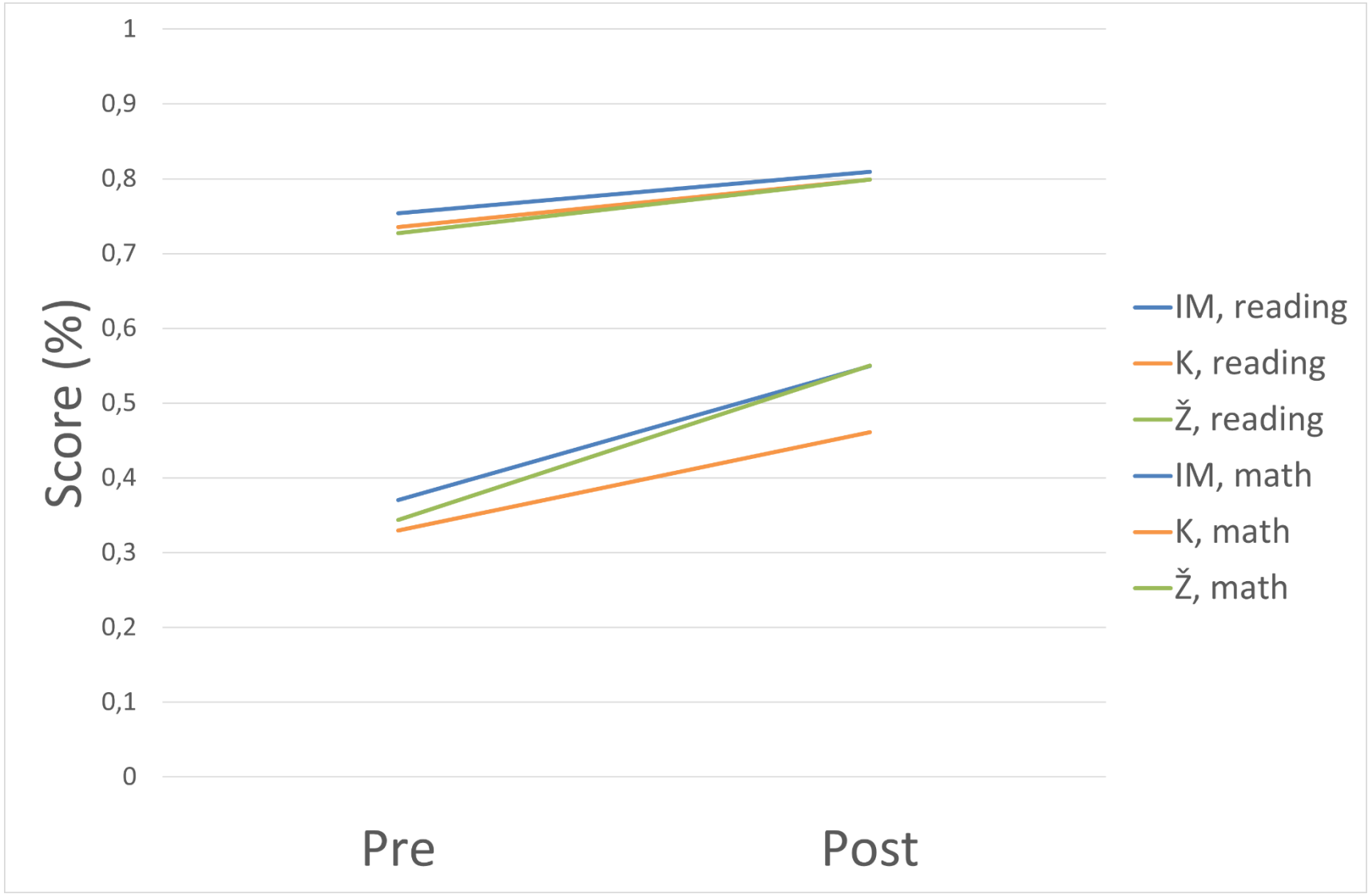
Before intervention



Learning gains by intervention



Math and reading, pre- and post-assessment



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Controlled variables

- Time used
- Accuracy during lessons
- Class size

→ Didn’t explain the gain in Math score.

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Summary

- Our exploratory analysis with class data was aligned with starting point:
- Pure TEL had highest effect on general math skills.
- Both intervention groups showed significantly larger gain in math skill.
- Gain was not explained by controlled variables.
- Starting point to more detailed analysis about higher order skills.

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