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► To cite this version:

Cynthia Boggio, Maryse Bianco, Marie-Line Bosse. Spelling training in 1st grade with the digital application ECRIMO: The impact of tablet use and of gamification on children's spelling performance.. 22nd conference of the European Society for Cognitive Psychology, Aug 2022, Lille, France. . hal-03811725

HAL Id: hal-03811725

<https://hal.science/hal-03811725>

Submitted on 12 Oct 2022

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SPELLING TRAINING IN 1ST GRADE WITH THE DIGITAL APPLICATION ECRIMO: The impact of tablet use and of gamification on children's spelling performance

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Introduction



New technologies have a positive small effect on learning (e.g., Chauhan, 2017 ; Haßler et al., 2016 ; Jamshidifarsani et al., 2019 ; Sung et al., 2016).

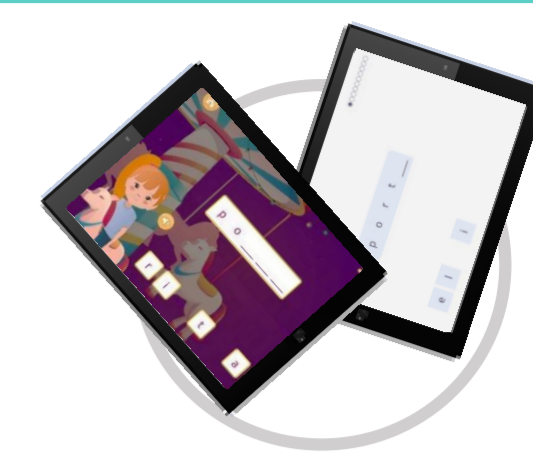
→ But very few studies compared the effectiveness of an application to its paper equivalent.

Does the tablet device add value to spelling training?

Educational applications are often gamified.

→ But the moderate positive effect of gamification on learning (Bai et al., 2020 ; Sailer & Homner, 2020) has been rarely tested with young children.

Does gamification bring a gain to spelling training?

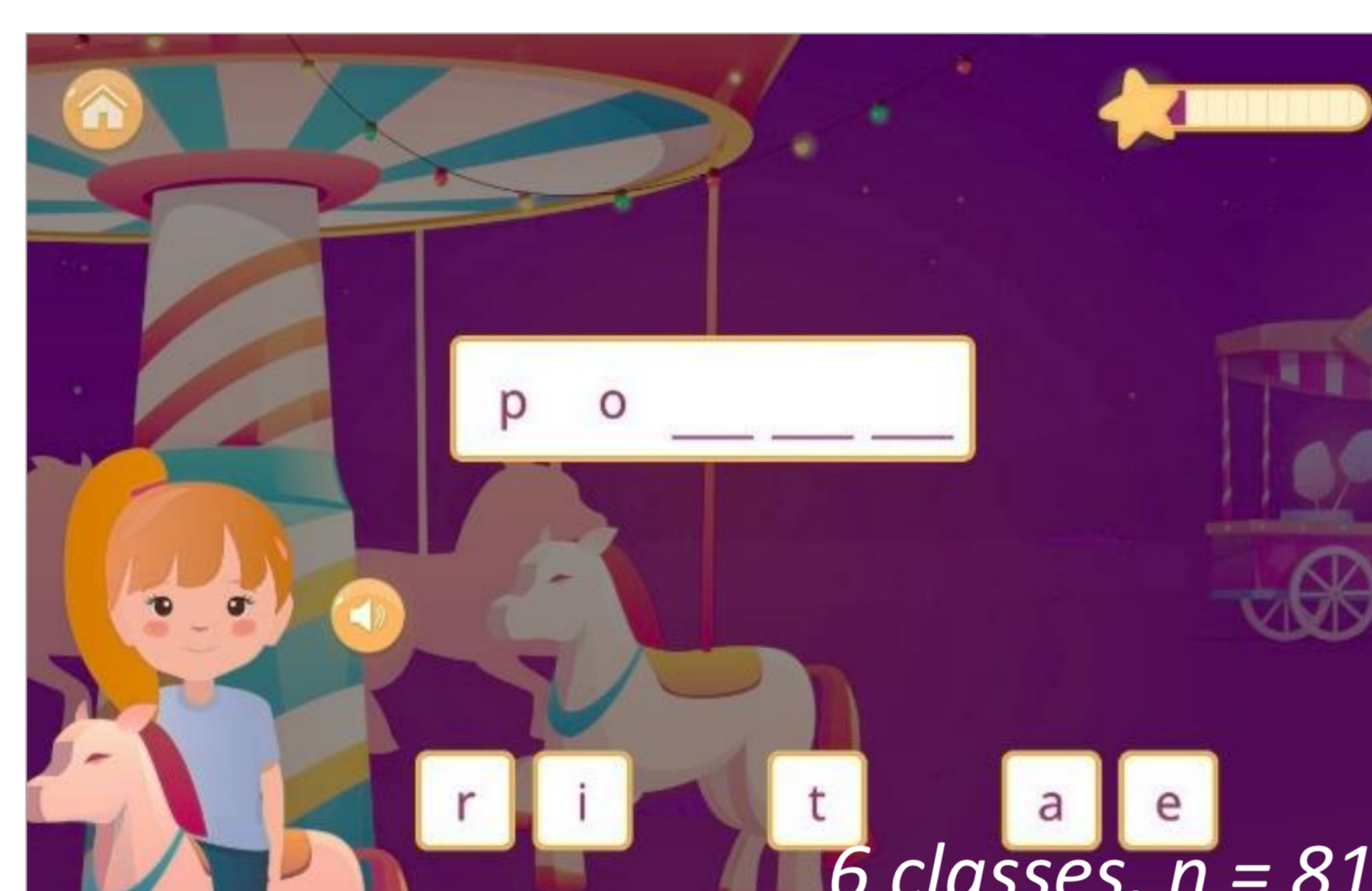


Method

Spelling on Ecrimo basic



Spelling on Ecrimo gamified



Spelling on paper



Business as usual



TEST 1
Oct, 2020

Training phase
14 sessions, 2/week, during 20 min

TEST 2
Jan, 2021



Participants

- 25 first grade classes, N = 311 students, Mean age = 7.27 years



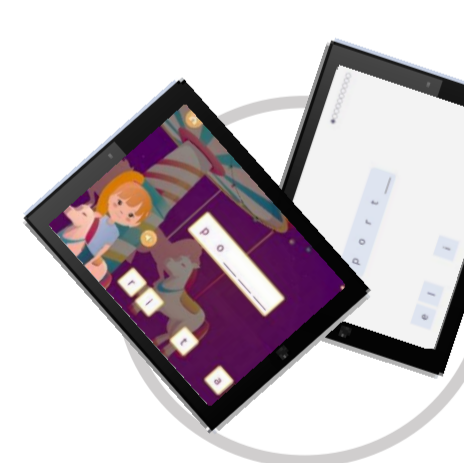
Measure

- Student performance in spelling (word dictation task with a score per correct letter)

Results

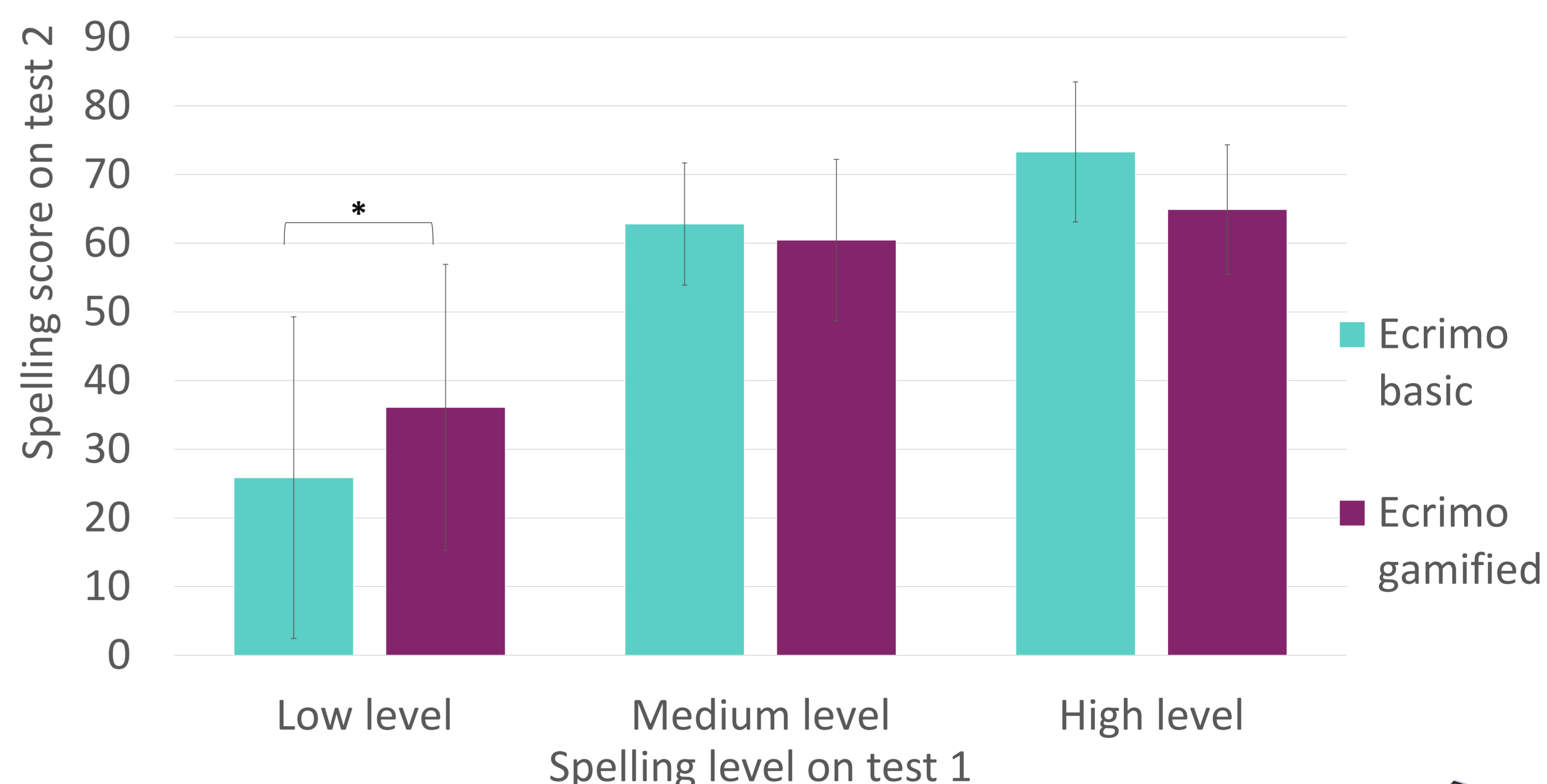


- **No significant effect** of the tablet on spelling performance.
→ Training on tablet = training on paper



- **Interaction effect** between gamification and students' initial level. ($\beta = -0.28, p = .02$)
→ For low initial level students: gamified > basic ($F = 4.89, p = 0.029$)
→ For medium and high level students: gamified = basic

Students' spelling scores on Test 2, depending on their level on Test 1 and the version (gamified or basic) they used.



Conclusion



Does the tablet device add value to spelling training?

Comparable effect of the training on tablet in autonomy and on paper with the teacher.

Does gamification bring a gain to spelling training?

The gamified version reduces the gap between weak and strong students compared to the basic version. It seems to be more favorable to low initial level students.



References:

- Chauhan, S. (2017). A meta-analysis of the impact of technology on learning effectiveness of elementary students. *Computers & Education*, 105, 14-30. <https://doi.org/10.1016/j.compedu.2016.11.005>
- Haßler, B., Major, L. & Hennessy, S. (2016). Tablet use in schools : A critical review of the evidence for learning outcomes. *Journal of Computer Assisted Learning*, 32 (2), 139-156.
- Jamshidifarsani, H., Garbaya, S., Lim, T., Blazevic, P. & Ritchie, J. M. (2019). Technology-based reading intervention programs for elementary grades : An analytical review. *Computers & Education*, 128, 427-451. <https://doi.org/10.1016/j.compedu.2018.10.003>
- Sung, Y.-T., Chang, K.-E. & Liu, T.-C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance : A meta-analysis and research synthesis. *Computers & Education*, 94, 252-275.
- Bai, S., Hew, K. F. & Huang, B. (2020). Does gamification improve student learning outcome ? Evidence from a meta-analysis and synthesis of qualitative data in educational contexts. *Educational Research Review*, 30, 100322. <https://doi.org/10.1016/j.edurev.2020.100322>
- Sailer, M. & Homner, L. (2020). The gamification of learning : A meta-analysis. *Educational Psychology Review*, 32, 77-112. <https://doi.org/10.1007/s10648-019-09498-w>

Acknowledgment:

Funding for this project was provided by *Les Editions Hatier* and we thank them for their support. We sincerely thank Ahmed ZAHER for data analysis. Finally, we are very grateful to all the teachers and students who agreed to participate in this study. We would also like to thank the Academy of Grenoble for agreeing to support us in this project.