

Extrinsically integrated instructional quizzes in learning games: an educational disaster or not?

Lucie Jičínská¹, Petra Sedláčková², Lukáš Kolek², Tereza
Tetourová^{1,2}, Kristina Volná³, Jiří Lukavský⁴, **Cyril Brom**^{2*}

¹Faculty of Education, Charles University, Prague

²Faculty of Mathematics and Physics, Charles University, Prague

³Development and New Media (decko.cz and ctart.cz), Czech Television

⁴Institute of Psychology, Czech Academy of Sciences, Prague

Czech Republic

*brom@ksvi.mff.cuni.cz

<https://ksvi.mff.cuni.cz/amulab/>

Keywords

game-based learning

educational games

quiz

instructional quiz

multiple-choice

extrinsic integration

experiment

learning outcomes

About the paper

Frontiers in Psychology 12 (2021) 19-Aug

<https://doi.org/10.3389/fpsyg.2021.678380>

Introduction

- Extrinsic game integration in **game-based learning**
 - shallow integration of game play and learning content
 - criticized as a **chocolate-covered-broccoli** approach
 - example: a quiz in an unrelated game
- Instructional quizzes
 - provide feedback on correct answers
 - serve as a teaching instrument on their own
 - used in educational games
- **Is extrinsic integration** (a quiz in a game) **a bad guy?**
 - no one really knows...



Method

Method – participants

N = 69

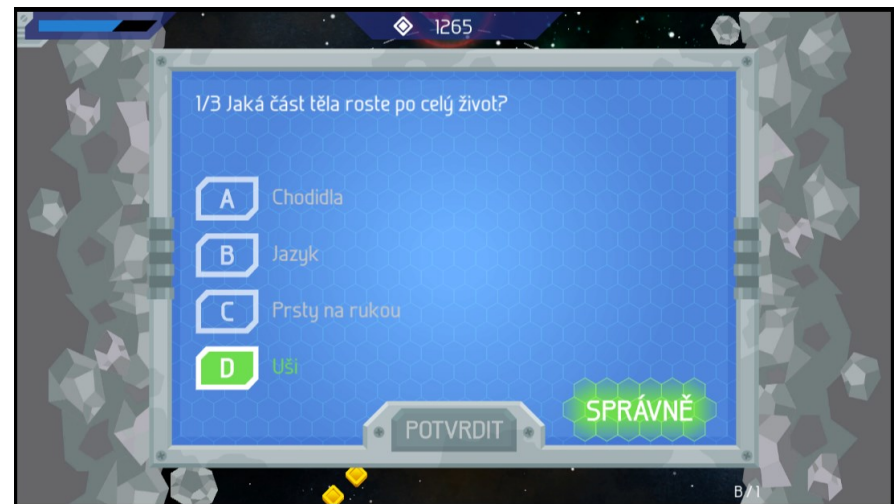
Grade 5

Age: 10-12

48% girls

Method – design

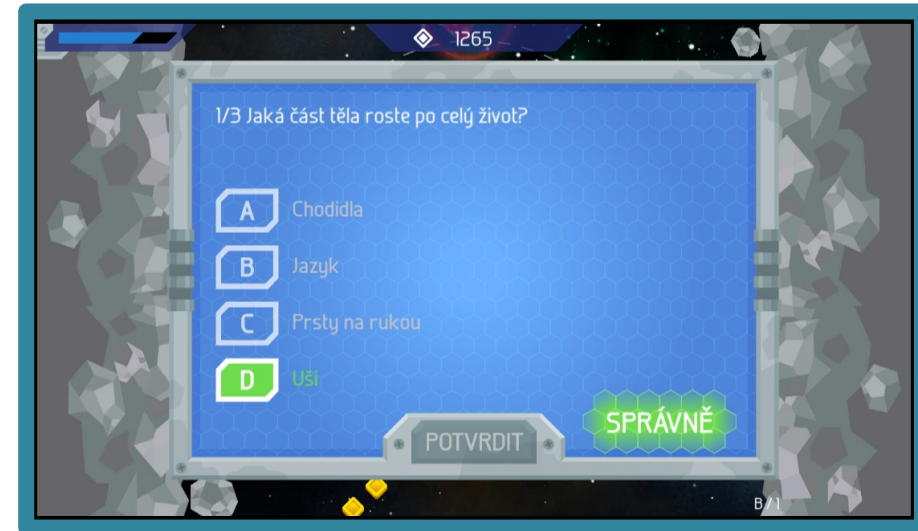
- Within-subject design
 - quiz in a **game** vs bare **quiz** (correct answer showed)
 - 12 + 12 questions



Method – design

- Within-subject design
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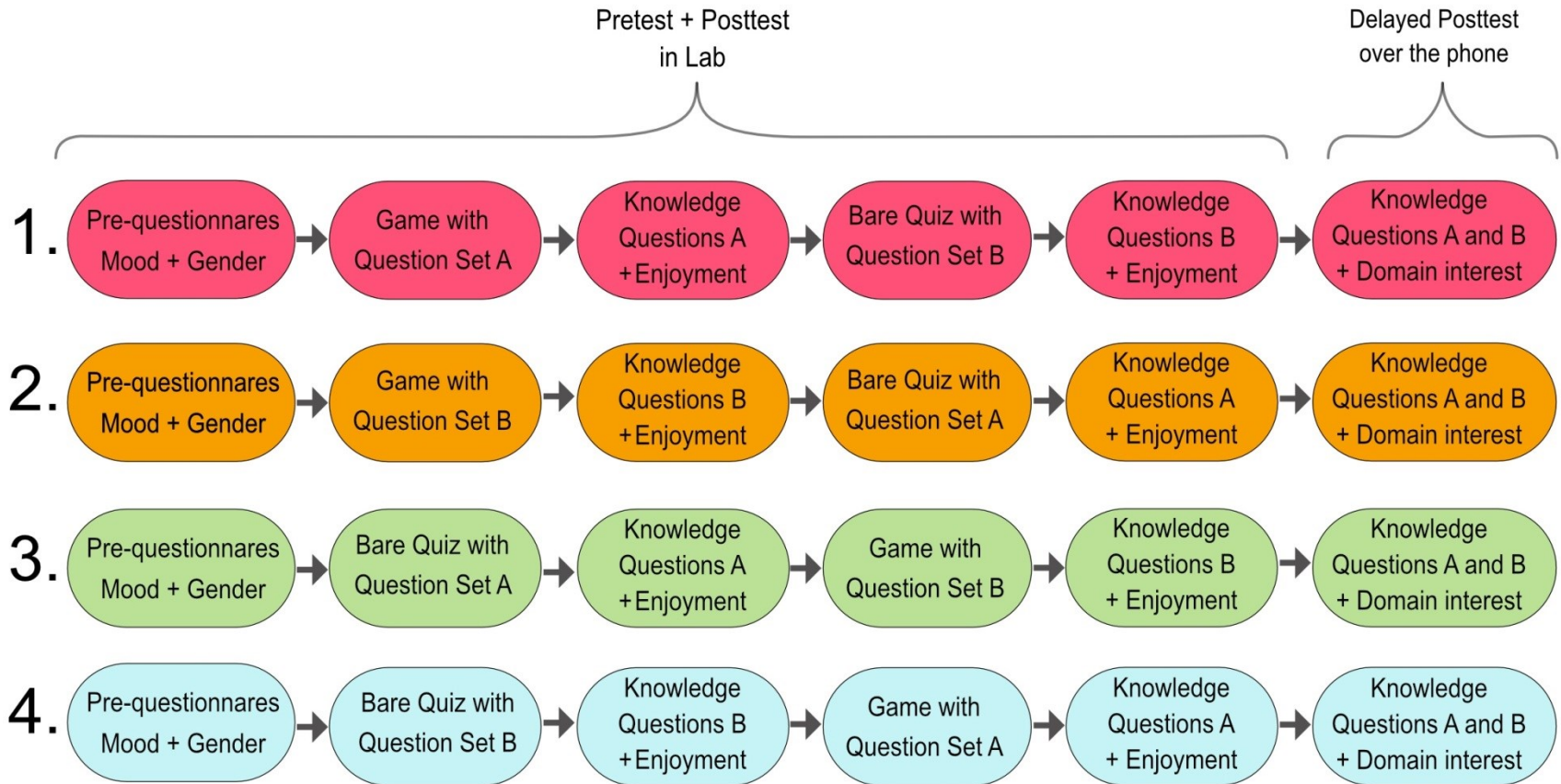
counterbalanced



Method – variables

- Test scores
 - initial: answers from the intervention multiple-choice
 - post: immediately after the intervention open-ended
 - delayed: three weeks later open-ended
- Affective-motivational variables
 - enjoyment 😄 😊 😌 😐 😞 😡
 - free-choice motivation (“game or quiz”?)

Method – procedure





Results

Results

- post-tests: bare **quiz** > quiz in **game** ($d = 0.46$ ***)
- delayed tests: bare **quiz** = quiz in **game** ($d = 0.09$)
- enjoyment: bare **quiz** < quiz in **game** ($d = 0.65$ ***)
- free-choice: bare **quiz** < quiz in **game** ($n = 10$ vs. 59 ***)

	Initial knowl.		Post-tests		Delayed tests		Enjoyment	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Game	3.38	1.68	5.93	2.38	4.12	2.15	1.48	0.68
Quiz	3.33	1.80	6.91	2.12	3.96	1.67	2.16	1.04

multiple-choice
(chance level = 3 pts.)

test scale: 0-12

open-ended



Conclusions

Discussion and Conclusions

Extrinsic integration can be useful.

- Extrinsic integration
 - neither detrimental nor beneficial to learning in the long term for **10 to 12-year-olds** compared to bare instructional quizzes
- Game
 - notably preferred
 - but takes longer to complete and is more expensive to develop
- Both a quiz extrinsically embedded in a game and a bare quiz:
 - useful tools for knowledge acquisition
 - albeit for different contexts (leisure time vs. school time)

Questions?

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