

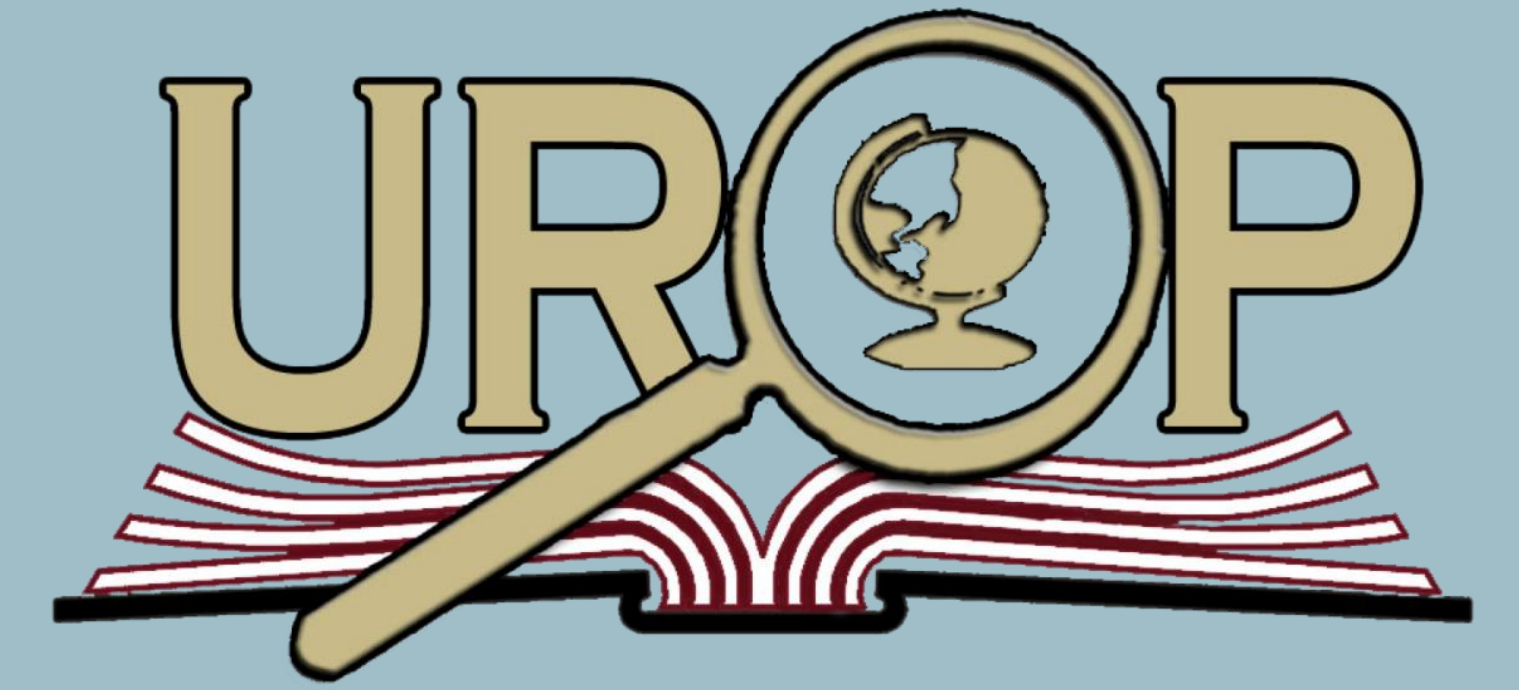


# Adopting educational games in K-12 teaching—

## From teachers' perspectives

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### Abstract

Nowadays, Digital Game-Based Learning (DGBL) has become one of the most prominent technology uses in education. However, the inclusion of game learning in the school curriculum is not widespread despite its advantages according to the previous research. To understand the challenges that teachers face when adopting educational games in their classrooms, we conducted a mini-literature review. The research looked at teachers' perceptions of DGBL to address the problems that inhibit the adoption of digital games in the classroom setting. We found two challenges teachers faced in adopting educational games: a lack of professional development programs and a lack of access to technological resources including quality educational games. Therefore, we collected 23 existing educational games, suitable for K-12 use, to a database that current teachers can utilize in their classes by searching the internet. We focused on games for special education and English Language Art (ELA) teaching and coded the grade level as well as teaching objectives of the games.

### Introduction

Despite the prevalence of technology in our daily lives, the adoption of technology as Digital Game-Based Learning (DGBL) is often held back. Teachers' perspectives, as shown in various studies, highlight the perceived necessity of technical experience in school curriculum for further incorporation of DGBL. The lack of experimentation of DGBL leads to the inhibition of adopting video games, thus we aim to provide information to teachers for using digital learning. There is a lack of teacher education programs that properly educate preservice teachers about digital literacy. This research examines the barriers that teachers face in incorporating Game-Based teaching methods into their classroom environments. Therefore, the research will help teachers across the country determine the appropriate games to incorporate into lessons to engage students and help create a future generation of technologically informed educators.

### Methodology

#### Mini literature review

For this mini literature review, we analyzed 10 peer-reviewed journal articles. We used search terms related to game-based learning, teacher perceptions, and serious games. The articles were searched across the ERIC (ProQuest) database. The search terms returned with a combined result of 1973 articles. We then screened titles and abstracts to include in the current literature review. The inclusion criteria were that papers should include in-service or preservice teachers or teachers' perceptions of digital games. The exclusion criteria were if papers included a non-technology supported game such as board games, only focused on learner's or researcher's views, or did not focus on K-12 education.

#### Game Collection

We searched google to find educational games. The filtering criteria included if the game was free and proper for K-12 students. We organized games in the spreadsheet by name, subject, grade level, developer, learning objectives, standard, and available resources.

### Results

#### Mini literature review

Based on the 10 articles, we found two common challenges that teachers faced on adopting games in the classroom.

1. lack of professional development programs

There is globally a collective lack in technologically informed professional development programs. Teachers do not feel knowledgeable enough to use technology. (Palha & Matic, 2023)(Low, 2023)(An, 2017)

2. Students and teachers have a significant lack of access to technological resources such as new computer equipment and educational software. (Buckenmeyer, 2010) (Polyxeni, 2021)(Alsuhaymi, 2019)

#### Game Collection

we collected 23 games, 11 for special education, and 12 for ELA. Due to space limitations, only part of these games are presented in the following tables.

### Special education learning games

	Name	Link	Access	Developer	Subject	Grade Level/Age	Learning Objectives
1	Choice Works	<a href="https://www.beevisual.com/">https://www.beevisual.com/</a>	Free	BeeVisual	Special Skills	All ages	Develop social skills and time management skills by completing daily routines and learning how to recognize emotions.
2	Do2Learn	<a href="https://do2learn.com">https://do2learn.com</a>	Free	Do2Learn	Special Skills	All ages	Enhance social skills and emotional regulation
3	Prism	<a href="https://prism.etc.cmu.edu/">https://prism.etc.cmu.edu/</a>	Free	Prism	Social Emotional Learning	2-6	Learn about inclusivity and community in the classroom
4	Special Bites	<a href="https://www.specialbites.com/">https://www.specialbites.com/</a>	Free	SpecialBites	Early Learning	All ages	Practice early mouse skills and cause and effect switch skills through various mini-games

### ELA learning games

1	SplashLearn	<a href="https://www.splashlearn.com">https://www.splashlearn.com</a>	Free	SplashLearn	English	K-5	Practice reading and writing skills
2	Grammar Ninja	<a href="https://www.playgrammarninja.com/">https://www.playgrammarninja.com/</a>	Free/mobile	Magma Gode LLC	English Grammar	1-6	Learning grammar rules while identifying parts of speech in sentences
3	Games to learn English	<a href="https://www.gamestolearnenglish.com/">https://www.gamestolearnenglish.com/</a>	Free	PixiJS	English	All ages	Learn English vocabulaires
4	ESL games+	<a href="https://www.eslgamesplus.com/fun-games/">https://www.eslgamesplus.com/fun-games/</a>	Free	Edutorials	English, science, math	All ages	Learn English, science, and math by playing mini-games
5	Learn English Kids	<a href="https://learnenglishkids.britishcouncil.org/fun-games/games">https://learnenglishkids.britishcouncil.org/fun-games/games</a>	Free	Cambridge English Online	English	1-3	Learn English by playing mini-games

### References

- Alsuhaymi, D., & Alzebidi, A. (2019). Saudi Teachers' Perceptions Regarding Adopting Digital Games in Teaching Practice. *Turkish Online Journal of Educational Technology - TOJET*, 18(4), 62-69. <https://www.proquest.com/scholarly-journals/saudi-teachers-perceptions-regarding-adopting/docview/2461138549/se-2>
- Buckenmeyer, J. A. (2010). Beyond Computers in the Classroom: Factors Related to Technology Adoption to Enhance Teaching and Learning. *Contemporary Issues in Education Research*, 3(4), 27-36. <https://www.proquest.com/scholarly-journals/beyond-computers-classroom-factors-related/docview/1773230919/se-2>
- Chen, S., Zhang, S., Grace, Y. Q., & Yang, J. (2020). Games Literacy for Teacher Education: Towards the Implementation of Game-based Learning. *Journal of Educational Technology & Society*, 23(2). <https://www.proquest.com/scholarly-journals/games-literacy-teacher-education-towards/docview/2515019460/se-2>
- Kenny, R. F., & McDaniel, R. (2011). The role teachers' expectations and value assessments of video games play in their adopting and integrating them into their classrooms. *British Journal of Educational Technology*, 42(2), 197-213. <https://doi.org/10.1111/j.1467-8535.2009.01007.x>
- Leonardou, A., Rigou, M., Panagiotarou, A., & Garofalakis, J. (2021). The Case of a Multiplication Skills Game: Teachers' Viewpoint on MG's Dashboard and OSLM Features. *Computers*, 10(5), 65. <https://doi.org/10.3390/computers10050065>
- Low, J. Y., Balakrishnan, B., & Mohd Ikhwan, H. Y. (2023). Game-Based Learning: Current Practices and Perceptions of Secondary School Physics Teachers in Malaysia. *The International Journal of Science, Mathematics and Technology Learning*, 31(1), 1-21. <https://doi.org/10.18848/2327-7971/CGP/v31i01/1-21>
- Palha, S., & Matic, L. J. (2023). Predisposition of In-Service Teachers to Use Game-Based Pedagogy: EJEL. *Electronic Journal of E-Learning*, 21(4), 286-298. <https://doi.org/10.34190/cjel.21.4.3135>
- Polyxeni, K., Emmanuel, F., Oikonomou, A., & Ioannis, D. (2021). Potential Barriers to the Implementation of Digital Game-Based Learning in the Classroom: Pre-service Teachers' Views. *Technology, Knowledge and Learning*, 26(4), 825-844. <https://doi.org/10.1007/s10758-021-09512-7>
- Sardone, N. B., & Devlin-Scherer, R. (2010). Teacher Candidate Responses to Digital Games: 21st-Century Skills Development. *Journal of Research on Technology in Education*, 42(4), 409-425.
- An, Y., & Cao, L. (2017). The Effects of Game Design Experience on Teachers' Attitudes and Perceptions regarding the Use of Digital Games in the Classroom. *TechTrends*, 61(2), 162-170. <https://doi.org/10.1007/s11528-016-0122-8>