

Exploring the Impact of Game-Based Learning on Young People's News Literacy and Digital Citizenship

Explorando o Impacto da Aprendizagem Baseada em Jogos na Literacia de Notícias e na Cidadania Digital das Pessoas Jovens

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Abstract

In a world flooded with information, the need to promote critical literacy, full digital citizenship, and engagement with the news is becoming a priority. In this context, this Systematic Literature Review aimed to explore the potential impact of Game-Based Learning (GBL) on young people's understanding and engagement with news consumption and digital citizenship, particularly within the context of societal and cultural diversity. Through the analysis of 33 studies, it was possible to elucidate the significant role of GBL in enhancing News Literacy and digital citizenship skills, ta-

ckling disinformation and promoting informed decision-making. Games including simulation, role-playing, and question-based mechanics are the most used to fulfil such educational goals, namely considering the different levels of thinking skills they can foster. Moreover, the results highlight diversity and inclusion as critical concerns, emphasising the need for equitable access and representation in GBL interventions.

Keywords

news literacy, digital citizenship, games-based learning, systematic literature review, youth

Resumo

Num mundo inundado de informação, a necessidade de promover a literacia crítica, a cidadania digital plena e o envolvimento com as notícias está a tornar-se uma prioridade. Neste contexto, esta Revisão Sistemática da Literatura visou explorar o potencial impacto da Aprendizagem Baseada em Jogos (ABJ) na compreensão e no envolvimento dos jovens com o consumo noticioso e a cidadania digital, particularmente no contexto da diversidade societal e cultural. Através da análise sistemática de 33 estudos, foi possível sustentar o papel significativo da ABJ no reforço da literacia de notícias e das competências de cidadania digital, para enfrentar os desafios decorrentes da desinformação e garantir a tomada de decisão informada. Jogos que incluem simulação, *role-playing* e mecânicas baseadas em perguntas são os mais utilizados para cumprir tais objetivos educativos, nomeadamente considerando os diferentes níveis de competências de pensamento que são capazes de fomentar. Além disso, os resultados destacam a diversidade e a inclusão como preocupações críticas, enfatizando a necessidade de acesso equitativo e representação nas intervenções de ABJ.

Palavras-chave

literacia de notícias, cidadania digital, aprendizagem baseada em jogos, revisão sistemática da literatura, jovens

Introduction

In the rapidly evolving digital landscape, the proliferation of disinformation and the increasing complexity of online interactions entail innovative approaches to education in news literacy and digital citizenship (DeJong, 2023). Deeply embedded in online ecosystems, younger generations are faced with a vast array of sources, often lacking the necessary tools to discern credible content from misleading information – mis-, mal- and disinformation (Swart, 2023). Besides this, the growing complexity of digital contexts presents youth with demanding challenges related to privacy, digital security and inequalities, radicalization, polarising narratives and more (Gaultney et al., 2022; Swart & Broersma, 2021). Given these aspects, innovative approaches to education in Media and Information Literacy (MIL), particularly in News Literacy (NL) and digital citizenship, are crucial for reaching younger audiences and empowering them with the skills and competencies needed to navigate digital contexts in

an effective and enlightened manner (Geers et al., 2020) – contributing to their integration as civic-minded, democratically engaged and socially conscious citizens.

Game-Based Learning (GBL) emerges as a promising pedagogical tool, offering engaging and interactive pathways to enhance young people's skills in navigating the digital world. This study presents a comprehensive Systematic Literature Review (SLR) to investigate the effects of GBL on youth's abilities to critically engage with news media and participate in digital communities responsibly. The guiding research question was: How does GBL influence young people's understanding and engagement with news consumption and digital citizenship within the context of societal and cultural diversity?

Digital Citizenship in Contemporary Society

According to Ribble et al. (2004, p. 7) Digital Citizenship is a set of “norms of behaviour with regard to technology use” that encompass different areas and levels of responsibility towards technology - from etiquette and communication, to education, rights, and safety. The recent rise of anti-democratic trends and threats to human and civil rights has raised the spotlight on the link between digital citizenship and democracy – particularly the former as a factor in strengthening democracy. In this scenario, digital citizenship conveys the right to democratically access technologies and the respect for the appropriate rules of use (Lauricella et al., 2020), as well as the legal, ethical, and positive attitude towards the use of technologies (Mattson & Curran, 2017). Being a digital citizen implies the ability to navigate digital environments and engage in online activities in a safe, responsible and competent manner. From this perspective, the Internet functions both as a platform for civic engagement and as a means for facilitating social, political, economic and cultural activities (Yue et al., 2019).

When it comes to younger generations, the high degree of proximity to (digital) technology is clear (Ponte & Batista, 2019; Smahel et al., 2020). Digital media are deeply integrated into youth's routines and are crucial platforms for socialisation – and therefore democratic processes. This relation has the potential to promote youth's sense of belonging and involvement in communities, as well as the possibility of building a voice that is heard and amplified (Dussel & Dahya, 2017; Harrison, 2018). However, this growing digitalisation also highlights challenges that demand that highly connected audiences – e.g. youth – are given opportunities to develop and strengthen their MIL skills. These aspects underline the urgency of considering new approaches to MIL, particularly NL, sensitive to the nuances of young people's engagement with digital media, news consumption, and preferred methods of interaction (Mihailidis, 2018).

How Young People Engage with the News and the Need for Innovative Approaches to News Literacy

In today's dynamic and multifaceted informational context, threatened by disinformation, NL is gaining increasing interest, particularly among journalists, educators and researchers - it presents itself as a path to combat disinformation (Amazeen &

Bucy, 2019). Those who advocate for NL emphasise that it enables individuals to discern high-quality journalistic content from other information. NL can be a crucial competence to sustain the news industry, as it ensures that press and media outlets play their democratic roles and foster well-informed citizens. When it comes to young people, this NL is especially relevant, as news consumption contributes to shaping their civic engagement and active participation. Understanding news events, current affairs, and social issues promotes a clearer vision of the world and helps develop informed opinions, critical thinking, and civic and political knowledge.

The advent of the digital age promoted profound changes to the news landscape. Internet-connected devices, online platforms and social media improved news accessibility and real-time information (Reinardy, 2010), becoming primary sources of information and news consumption (Newman et al., 2022). However, faster circulation of information increases the possibility of error and information disorder (Wardle & Derakhshan, 2017), amplifies polarising and misleading narratives (Van Bavel et al., 2021), and high personalisation can immerse citizens in biased narratives, reinforcing existing (dis)beliefs and limiting exposure to diverse viewpoints (Schaeffer, 2019).

The impacts on young people are noticeable. The 2022 Reuters Digital News report (Newman et al., 2022) detailed that the differences between “social natives and digital natives” were increasingly evident, with the former displaying greater scepticism towards news and a heightened wariness regarding the agendas of news outlets – a trend that remained in the 2023 data (Newman et al., 2023). Faced with this scenario, youths report feelings of overload due to the amount of information and the tendency for negative “news” to appear in their social media feeds (Newman et al., 2023), leading them to avoid the news because they perceive it as sad, frightening, boring and even uninteresting (Brites et al., 2023).

Given the urgency of the problem, several studies have proposed adopting innovative approaches to NL, highlighting the potential of combining learning by doing with formal knowledge and skills (Swartz, 2021), and the advantages of co-creation to develop skills and assimilate knowledge (Geers et al., 2020).

Game-Based Learning, News Literacy, and Digital Literacy

In recent years, the intersection of gaming and education has witnessed a significant paradigm shift with the emergence of GBL as a promising pedagogical approach that harnesses the immersive and interactive nature of digital games to enhance learning outcomes across various domains. As scholars continue to explore the effectiveness of GBL, its application in promoting NL and Digital Literacy (DL) has garnered considerable attention (DeJong, 2023).

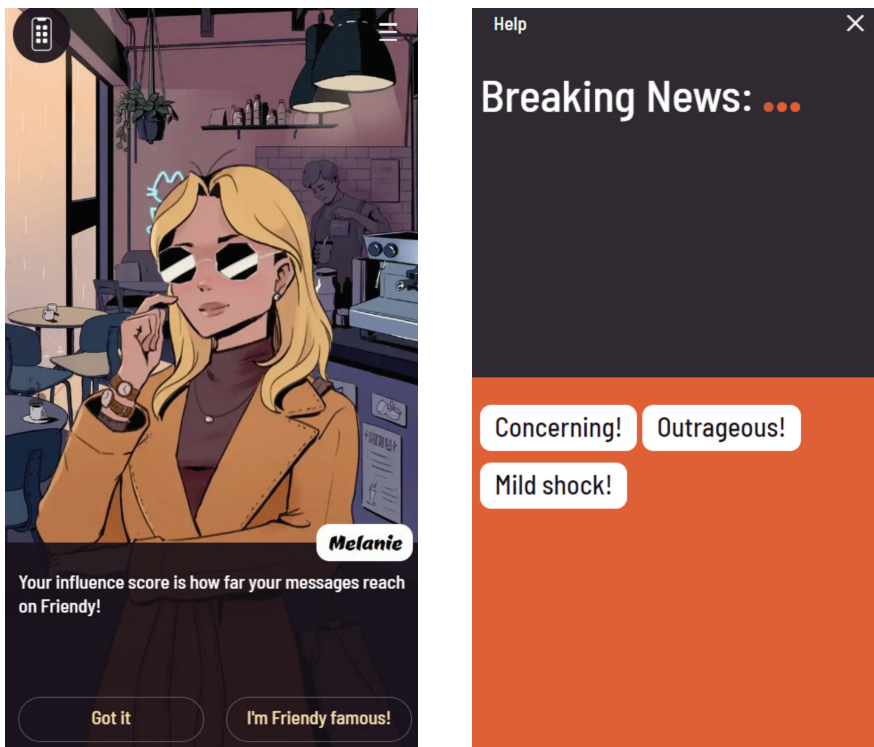
GBL involves the integration of games into educational contexts to engage learners and facilitate active participation in the learning process. By exploiting the inclusion of different game mechanics, challenges, rewards, and feedback systems, GBL fosters intrinsic motivation, problem-solving skills, and critical thinking abilities among learners (Yu et al., 2020).

In literacy promotion, particularly NL and DL, GBL holds the potential for cultivating essential competencies crucial in navigating today’s information-rich landscape

(Steinkuehler, 2011). One notable example in NL promotion is the game *Cat Park*¹ (Figure 1), developed by the Cambridge Social Decision-Making Lab. Grounded in inoculation theory, it immerses players in a simulated environment where they encounter dis- and misinformation. By guiding players through the process of creating, identifying, and debunking false claims, *Cat Park* serves as a practical tool for inoculating individuals against the harmful effects of misinformation (Roozenbeek & van der Linden, 2019a).

Figure 1

Screenshots of the game Cat Park, including characters' interactions and the news creation simulation



Despite the growing interest in exploring GBL to promote news and DL, there remains a notable gap in the literature concerning the specific characteristics and mechanics of games designed for this purpose. While studies have explored the efficacy of GBL, few have explored the nuanced design elements that contribute to their effectiveness. Understanding how game mechanics, narrative structures, and interactive features influence learning outcomes is crucial for informing the development of future GBL initiatives tailored to the complex challenges of NL and DL.

¹ <https://catpark.game/>

This study presents a SLR that seeks to investigate the influence of GBL on the viewpoints, actions, and attitudes of young people regarding news consumption and digital citizenship. It aims to consolidate current theoretical frameworks and empirical studies examining the correlation between GBL interventions and the enhancement of NL, critical thinking skills, and civic engagement in young individuals. Moreover, it intends to produce insights into the efficacy of game-based approaches in promoting informed and responsible citizenship in the digital age. Ultimately, this study seeks to enhance comprehension of how GBL can empower young individuals in effectively navigating the digital news environment and engaging in civic discourse with significance, through a methodical examination of pertinent literature.

The guiding question was: “How does Game-Based Learning influence young people’s understanding and engagement with news consumption and digital citizenship within the context of societal and cultural diversity?” (RQ1). To this end, it addresses other specific research questions (RQs), namely:

- RQ2: How are varying research methods and intervention strategies being adopted to approach GBL’s role in young people’s engagement with news consumption and digital citizenship?
- RQ3: How do specific game features and mechanics contribute to the adoption of GBL in promoting news literacy and digital citizenship among young people?
- RQ4: How are different research approaches adopted and how are inclusion and accessibility concerns for diverse populations being addressed?

Methods

Eligibility Criteria

This SLR followed the PRISMA 2020 statement principles, as outlined by Page et al. (2021). To facilitate the selection process of scientific papers, inclusion and exclusion criteria were established based on the RQs outlined above. These criteria also took into account the improved quality of systematic reviews that are based solely on the most up-to-date evidence (Elliott et al., 2014).

For inclusion criteria, we focused on peer-reviewed research articles published within the last decade (2014-2024) in English, Portuguese, or Spanish. These studies should specifically investigate GBL interventions targeting youth, with a focus on their effects on news consumption behaviours, news literacy, critical thinking skills, and digital citizenship-related variables. Additionally, we sought research that considered societal and cultural diversity’s influence on GBL outcomes, conducted across a variety of educational settings, and provided clear descriptions of the GBL interventions and their theoretical frameworks. Moreover, empirical studies presenting either quantitative or qualitative data analysis were preferred.

Conversely, we excluded secondary studies such as literature reviews, meta-analyses, and systematic reviews to focus on original research. Opinion pieces, editorials, non-peer-reviewed articles, dissertations, thesis, and unpublished works were also omit-

our results, limiting results to “peer-reviewed research only,” filtering for articles published in English, Portuguese, or Spanish, and narrowing our search to include only the “abstract and title” fields of the publications. The publication date range was set from 2014 to 2024 to capture the most relevant and recent research. The search was carried out on February 16, 2024.

Selection Process

The flowchart in Figure 2 illustrates the selection process used for the final sample. The research process was carried out in three main phases: identification, screening, and eligibility. Initially, a search strategy was applied to various information sources, leading to the retrieval of data. During the screening phase, titles and abstracts from an initial pool of 514 studies were examined using specific inclusion and exclusion criteria. Through this process, a final sample of 33 studies was gathered as Table 1 illustrates.

Table 1
Final sample of studies, author(s), and year (N = 33)

Study ID	Author(s)	Year	Study ID	Author(s)	Year
1	Bachen et al.	2015	18	Lee and Zhu	2022
2	Hill	2015	19	Lin et al.	2022
3	Campos	2018	20	Villarejo-Carballido et al.	2022
4	Costa et al.	2018	21	Feltrero et al.	2023
5	Grace and Hone	2019	22	Gómez-García and Conde-Pumpido	2023
6	Katsounidou et al.	2019	23	Iakovidis et al.	2023
7	McKernan	2021	24	Moreira et al.	2023
8	Roozenbeek and Linden	2019a	25	Panjaburee et al.	2023
9	Roozenbeek and Linden	2019b	26	Pomichal	2023
10	Sousa and Costa	2019	27	Shaheen and Fotaris	2023
11	Young et al.	2019	28	Sureephong et al.	2023
12	Jost	2020	29	Tandoc and Seet	2023
13	Literat et al.	2020	30	Zhong and Zheng	2023
14	Pimmer et al.	2020	31	Czauderna et al.	2024
15	Tapingkae et al.	2020	32	Harteveld et al.	2020
16	Yap and Peñaflor	2020	33	Zheng et al.	2024
17	Dalisay et al.	2021			

Analysis and Synthesis of Results

To conduct the analysis of the sample of studies collected ($N = 33$), the information was coded through a deductive coding process (Crockett, 2018), with a predefined set of codes, taking as a starting point the information considered most relevant for the defined research questions (RQ1, RQ2, RQ3, and RQ4). The development and testing of a coding form allowed for the capture of salient characteristics of each paper, facilitating data synthesis.

Eight categories were identified: 1) subject area of the journal and its higher quartile; 2) sample; 3) main goal of the study; 4) learning outcomes; 5) games selected and their game mechanics; 6) research design; 7) inclusion and accessibility; and 8) effectiveness of the game or study. To categorise the subject area and the higher quartile of the journal, we relied on Scimago Journal & Country Rank, and to categorise game mechanics we followed the classification proposed by Arnab et al. (2014). Having finalised the coding process, data was analysed through descriptive analysis procedures using Excel, and Windows 11. To reduce the risk of bias the coding of the articles was carried out by four members of the research team, in a collaborative process that involved constant discussions about the nature of the information to be included in each category.

Moreover, due to the nature of the categories “inclusion and accessibility”, and “effectiveness”, the results were summarised through critical analysis, involving deeper reflection and interpretation of the findings, considering underlying assumptions, biases, limitations, and implications, as proposed by Okoli (2015).

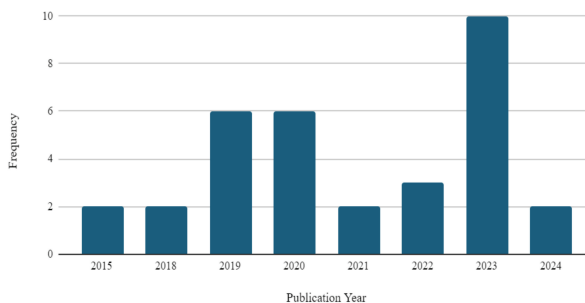
Results

Publication characteristics

To assess the general overview of the research done in the field, the years and area of publication of the journals were analysed. Figure 3 shows that 2023 was the year in which more studies in the sample were published ($n = 10$; 30.00%). 2015, 2018, 2021, and 2024 were the years with the smaller number of publications in the sample ($n = 2$; 6.00%); notwithstanding, since this search was performed at the beginning of 2024, it might be that some publications were not considered in this analysis. Additionally, no publications were found between 2016 and 2017 during our search.

Figure 3

Distribution of articles considered in the sample by year ($N = 33$)



As for the areas of publication of the journals, these were analysed in two levels. Firstly, according to the main scientific area of the journal in which the study was published. Secondly, according to the classification of the quartile according to the category/sub-area of the highest quartile – if applicable. Both of these procedures were conducted in February 2024, relying on the Scimago Journal & Country Rank classification³.

During the first level of analysis a total of seven areas were identified, having been coded: social sciences ($n = 11$; 40.74%); computer science ($n = 5$; 18.52%); arts and humanities ($n = 4$; 14.81%); multidisciplinary ($n = 2$; 7.41%); and psychology ($n = 1$; 3.70%). As for the second level, 10 categories or sub-areas were coded according to the highest quartile, and are presented in Table 2.

Table 2
Categories/sub-areas of the journals, based on the highest quartile (N = 23)

Category/Sub-area	N	%
Sociology and Political Science	2	8.70
Education	5	21.74
Arts and Humanities (miscellaneous)	4	17.39
Social Sciences (miscellaneous)	2	8.70
Cultural Studies	2	8.70
Human-Computer Interaction	1	4.35
Computer Networks and Communications	2	8.70
Psychology (miscellaneous)	1	4.35
Multidisciplinary	2	8.70
Library and Information Sciences	1	4.35
Computer Science (miscellaneous)	1	4.35
Total	23	100.00

It is possible to note that the categorisation/sub-area that presented a higher number of studies was education ($n = 5$; 21.74%), followed by arts and humanities ($n = 4$; 17.39%). Overall, it was possible to verify that there is a diversity of categories/sub-areas.

Study participants

This SLR encompassed a total sample size of 70551, including people, games, and online comments. Focusing solely on individuals, the sample size was 67107, with each article's sample varying from six to 45031 ($M = 2236.90$; $SD = 8493.37$). Afterwards, the total sample was categorised (Dyussenbayev, 2017) to understand what population was the most searched for. The data collected is detailed in Table 3.

³ <https://www.scimagojr.com/>

Table 3*Categorization of the sample (N = 33)*

Sample	N	%
Elementary School [7-13 years]	3	9.09
Young People [10-14 years]	1	3.03
Middle School Students [12-14 years]	1	3.03
Adolescence [13-17 years]	1	3.03
Youth [17-21 years]	1	3.03
Crown of Youth [21-25 years]	1	3.03
Adults [34-59 years]	1	3.03
Several Age Groups	21	63.64
Digital Games	2	6.06
Online Comments	1	3.03
Total	33	100.00

Data shows that most studies focused on combining different age groups ($n = 21$; 63.64%). In specific age groups, 9.09% focused on elementary school students ($n = 3$). If we compile all categories involving the “non-adult population” – elementary school, young people, middle school students, adolescents, youth, crown of youth, and college students – it is possible to note that most studies considered the specific aspects of young people’s interaction with games for news literacy purposes ($n = 8$; 24.24%). Moreover, three studies adopted media analysis as an approach (9.09%), exploring the content of digital games ($n = 2$; 6.06), or comments on online platforms ($n = 1$; 3.03%).

Learning, games, and their mechanics

Based on the information provided by the author(s), we proceed to code the main two learning outcomes. If the study had more than two games, it only considered the outcomes of the first two that appeared in the article, resulting in a total of 55 coded learning outcomes. The results of this analysis are presented in Table 4.

Table 4*Codification of the learning outcomes (N = 55)*

Learning outcome	N	%
Civic Engagement	3	5.45
Political Interest	3	5.45
Digital Citizenship	6	10.91
News Literacy	10	18.18
Journalism Ethics	1	1.82

Journalism Time Management	1	1.82
Media Literacy	5	9.09
Information Literacy	7	12.73
Critical Thinking	5	9.09
Cyberbullying Prevention	2	3.64
Reflective Learning	1	1.82
Literacy Skills	2	3.64
Responsible and Ethical Decision Making	2	3.64
Lifelong Learning Competencies	1	1.82
Game Engagement	1	1.82
Equitable Learning Outcomes	1	1.82
Political Psychological Outcomes	2	3.64
Motivational Aspects	1	1.82
Social-Emotional Learning	1	1.82
Total	55	100.00

The games studied focus primarily on NL ($n = 10$; 18.18%), followed by information literacy ($n = 7$; 12.73%), and digital citizenship ($n = 6$; 10.91%). Although news consumption and news literacy are the focus of this study, some games included in the sample also focused on journalism ethics, journalism time management, reflective learning, lifelong learning competencies, game engagement, equitable learning outcomes, motivations, and social-emotional learning ($n = 1$; 1.82% each).

As mentioned above, this study only considered a maximum of two games per study. Among the poll of 30 games considered, most studies referred to only one ($n = 26$; 86.67%), three mentioned two or more games (10.00%), and only two games were repeated in different studies – Bad News ($n = 3$; 9.09%), and Minecraft Education ($n = 2$; 6.06%). Moreover, it was found that only one game (3.33%) was developed for the specific purpose of the study.

As for the game mechanics, each one was coded according to Arnab et al.(2015), with up to two mechanics per study.

For the coding process, only game mechanics of the games identified in the aforementioned step were considered. In total, as shown in Table 5, 25 games were roughly described to be considered in this analysis, which resulted in 10 mechanics identified.

Table 5

Game mechanics of the games considered ($n = 10$)

Mechanic	N	%
Simulate/Response	13	52.00
Role Play	12	48.00

Questions & Answers	10	40.00
Competition	2	8.00
Selecting/Collecting	5	20.00
Reward/Penalty	3	12.00
Goods/Information	3	12.00
Editing/Design	3	12.00
Cascading Information	1	4.00
Movement	1	4.00

Simulate/Response was the most common mechanic of the games used in the studies ($n = 13$; 52.00%), followed by role-play ($n = 12$; 48.00%), and questions and answers ($n = 10$; 40.00%) mechanics. As for the least common, it was noted that it was the cascading information and movement mechanics ($n = 1$; 4.00%, respectively).

Research approaches

While analysing the methodological approaches of each study, it was possible to verify that most of the studies in the field of GBL were quantitative ($n = 18$; 54.55%), followed by the use of qualitative approaches ($n = 9$; 27.27%). Notwithstanding, there was a small quantity of mixed methods approaches ($n = 6$; 18.18%).

Concerning the type of assessment used in each study (Table 6), a part of the sample preferred following a pre and post-intervention ($n = 10$; 30.30%), that is before and after the game. However, a significant number opted to assess the in-game performance ($n = 7$; 21.21%) or to conduct a media analysis of games ($n = 6$; 18.18%). In contrast, only one study did a transversal assessment and another a pre and post-intervention with a control group (3.03%, each).

Table 6

Assessments used in the analysed studies ($n = 33$)

Assessment	N	%
Post Intervention	2	6.06
Performance (during intervention)	7	21.21
Performance and Post-intervention	3	9.09
Pre and Post-intervention	10	30.30
Pre and Post Intervention with Performance Assessment	3	9.09
Pre and Post with Control Group (experimental)	1	3.03
Media Analysis	6	18.18
Transversal	1	3.03
Total	33	100.00

Inclusion and accessibility

Of the 33 studies analysed, 10 (30.30%) showed clear concerns about the inclusion of young people with diverse characteristics in the interventions. These concerns collectively emphasise the importance of addressing issues of accessibility, representation, inclusivity, and empowerment in GBL interventions aimed at promoting NL and digital citizenship, and can be systematised below.

1. Accessibility and equity: Roozenbeek and Linden (2019b) highlighted concerns regarding equitable access to educational benefits, while Dalisay et al. (2021) explored the accessibility of immersive games as a differential factor that needs to be critically assessed in each intervention. In another study, Feltrero et al. (2023) proposed that games' feedback systems are crucial features to promote accessible and learning experiences.
2. Representation and cultural relevance: Iakovidis et al. (2023) emphasised the significance of incorporating diverse participants to ensure that interventions effectively promote responsible digital citizenship and data ethics across different demographics.
3. Promotion of diversity and inclusion: Panjaburee et al. (2023) identified themes for teaching digital citizenship practices, including critical analysis of gender stereotypes and promotion of inclusivity in online interactions, while Czauderna et al. (2024) observed appreciation for diversity among participants, indicating a positive attitude towards diverse playstyles.
4. Active participation and empowerment: Zhong and Zheng (2023) noted a lack of active online participation in their survey, suggesting the need to promote empathy, and diversity in GBL.
5. Inclusive data collection: Harteveld et al. (2020) mentioned including options for self-describing gender and additional racial/ethnic categories in data collection. Similarly, Costa et al. (2018) considered the cognitive specificities of children in the design of their data collection instrument.
6. Promotion of respect and inclusivity: Zheng et al. (2024) emphasised the importance of acknowledging diverse perspectives and behaviours in online interactions.

Effectiveness

The analysed sample ($N = 33$) provides a rationale for the potential effectiveness of GBL in enhancing young people's understanding of news consumption and digital citizenship. Bachén et al. (2015) noted that some games proved particularly adept at stimulating political interest, especially among students with lower academic attainment. Likewise, Hill (2015) elucidated how participation in Minecraft clubs facilitated constructivist learning, encouraging students to both contribute to and consume content, thereby fostering a deeper comprehension of digital culture.

Frey and Fisher (2009) posited that digital platforms, including games, can instil news literacy skills typically imparted in formal educational settings. Furthermore, Campos (2018) identified a positive correlation between the complexity of game design and the integration of learning principles, suggesting that more intricate games offer enriched educational experiences.

Costa et al. (2018) documented significant enhancements in MIL skills, digital identity management, and critical media literacy following engagement with creative-driven GBL interventions. Similarly, Katsaounidou et al. (2019) observed favourable outcomes in news verification training and DL improvement among participants engaged in gaming activities.

Significantly, game-based interventions were found to positively influence digital citizenship behaviours. Tapingkae et al. (2020) reported improvements in online harassment victimisation and perpetration resulting from such interventions. Additionally, Panjaburee et al. (2023) demonstrated the efficacy of decision tree-based gaming frameworks in promoting and adjusting digital citizenship behaviours.

Key Findings of the Systematic Literature Review

This research aimed to investigate the influence of GBL on young people's understanding and engagement with news consumption and digital citizenship, particularly within the context of societal and cultural diversity, as expressed in RQ1. Evidence suggests that certain games excel in stimulating political interest and fostering constructivist learning concerning news and information literacy, particularly among students with lower academic attainment. Moreover, the results show that GBL interventions, by integrating NL skills within immersive digital platforms, can effectively supplement formal educational settings. The complexity of game design appears crucial, with more intricate games offering enriched educational experiences by integrating specific learning principles, inherent to an informed and critical digital presence. The effectiveness of GBL interventions is further supported by documented improvements in MIL skills and critical media literacy. Notably, game-based interventions positively influence digital citizenship behaviours, as evidenced by decreases in online harassment victimisation and perpetration. While the focus of many games in the sample is on NL, other related aspects such as information literacy, digital citizenship, media literacy, and critical thinking are also addressed, reflecting the multifaceted approach of GBL in promoting holistic competencies among young people.

In a more specific manner, and by approaching RQ2, we examined the diverse research methods and intervention strategies employed to explore the role of GBL in fostering young people's engagement with news consumption and digital citizenship. Here, it is possible to note a prevalence of a positivist lens, expressed in a high number of quantitative studies approaching the use of games for such purposes, and employing pre and post-intervention research designs, without collecting other qualitative or comprehensive data on the learning and literacy promotion processes of young people.

Regarding the specific games and game features adopted to the promotion of NL and related outcomes, and through the approach of RQ3, it is possible to note a lack of in-depth descriptions of their characteristics, aligned with the above-explored research design options, that give more importance to comparing the baseline and endline outcomes of the developed educational interventions. Nevertheless, it is possible to see that most of the games adopted are quite specific to each context, with *Bad News*⁴

⁴ <https://www.getbadnews.com/en>

and *Minecraft Education*⁵ being the ones that are widely distributed. Considering the game mechanics, it can be said that the outcomes associated with promoting a more capable and critical consumption of news by young people are mainly promoted by simulation, role-playing and in-game questions and answers. Interestingly, according to the analytical framework adopted (Arnab et al., 2015), these mechanics correspond to three different levels of thinking skills. In other words, answering questions appears, at a more elementary level, as a way of retaining information, followed by the more in-depth understanding promoted by role-playing. At a higher level, simulation allows young people to apply the knowledge and literacy acquired in a “safe space” that replicates their everyday relationship with news and information.

Ultimately, and by answering RQ4, this study also shows how diversity and inclusion are not yet priority aspects, or at least directly addressed, in most of the studies that were analysed. However, key themes emerged, including the importance of ensuring equitable access to educational benefits, promoting representation and cultural relevance, and fostering diversity and inclusion, among others. Therefore, these findings underscore the critical need to address accessibility, representation, and inclusivity concerns to effectively enhance news literacy and digital citizenship among diverse youth populations through GBL interventions.

Final Notes, Limitations, and Future Perspectives

Overall, the literature suggests that GBL holds promise for enhancing young people’s understanding of news consumption and digital citizenship. However, further research is needed to optimise game design and evaluate long-term impacts in diverse cultural settings. Even so, it is possible to highlight gaps in this area of research, namely the need to adopt more comprehensive approaches that explore the specificities of young people’s relationship with news through games, and not just the outcomes of GBL interventions. Furthermore, the need to disseminate games that promote such skills is emphasised, so that they become easily accessible to different audiences in formal and non-formal education.

Given the gaps detected in this SLR, future studies should also take a deeper look at diversity – cultural, functional, gender identity, context and on many other levels – as aspects to consider in GBL interventions in this field.

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⁵ <https://education.minecraft.net/>

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References

- Arnab, S., Lim, T., Carvalho, M. B., Bellotti, F., De Freitas, S., Louchart, S., Suttie, N., Berta, R., & De Gloria, A. (2015). Mapping learning and game mechanics for serious games analysis. *British Journal of Educational Technology*, 46(2), 391–411. <https://doi.org/10.1111/bjet.12113>
- Bachen, C. M., Hernández-Ramos, P. F., Raphael, C., & Waldron, A. (2015). Civic play and civic gaps: Can life simulation games advance educational equity? *Journal of Information Technology & Politics*, 12(4), 378–395. <https://doi.org/10.1080/19331681.2015.1101038>
- Campos, I. R. (2018). Digital games to teach news literacy to children. In K. Tyner, & C. Costa (Eds.), *Proceedings of Play2Learn 2018* (pp. 195–212). CICANT.
- Costa, C., Tyner, K., Henriques, S., & Sousa, C. (2018). Game creation in youth media and information literacy education: *International Journal of Game-Based Learning*, 8(2), 1–13. <https://doi.org/10.4018/IJGBL.2018040101>
- Crockett, C., Nguyen, K., Shekhar, P., DeMonbrun, R., Tharayil, S., Rosenberg, R., Waters, C., Borrego, M., & Finelli, C. (2018). How do students respond to active learning? A coding guide for a systematic review of the literature. *2018 ASEE Annual Conference & Exposition Proceedings*. <https://doi.org/10.18260/1-2--29997>
- Czauderna, A., Von Gillern, S., & Robinson, B. (2024). Informal social-emotional learning in gaming affinity spaces: Evidence from a reddit discussion thread on elden ring. *Simulation & Gaming*, 55(1), 30–50. <https://doi.org/10.1177/10468781231209697>
- Dalisay, F., Kushin, M. J., Kim, J., Forbes, A., David, C. C., & Somera, L. P. (2021). Motivations for video game play and political decision-making: Evidence from four countries. *The International Journal of Computer Game Research*, 21(3).
- DeJong, S. (2023). Playing with fake news: State of fake news video games. *International Journal of Games and Social Impact*, 1(1), 94–111. <https://doi.org/10.24140/ijgsi.v1.n1.05>
- Dussel, I., & Dahya, N. (2017). Introduction: problematizing voice and representation in youth media production. *Learning, Media and Technology*, 42(1), 1–7. <https://doi.org/10.1080/17439884.2016.1205602>
- Dyussenbayev, A. (2017). Age Periods Of Human Life. *Advances in Social Sciences Research Journal*, 4(6). <https://doi.org/10.14738/assrj.46.2924>
- Elliott, J. H., Turner, T., Clavisi, O., Thomas, J., Higgins, J. P., Mavergames, C., & Gruen, R. L. (2014). Living systematic reviews: An emerging opportunity to narrow the evidence-practice gap. *PLoS Medicine*, 11(2). <https://doi.org/10.1371/journal.pmed.1001603>
- Feltrero, R., Hernando, S., & Ionescu, A. (2023). E-Learning strategies for media literacy: Engagement of interactive digital serious games for understanding visual online disinformation. *American Journal of Distance Education*, 37(4), 276–293. <https://doi.org/10.1080/08923647.2023.2231814>
- Gaultney, I. B., Sherron, T., & Boden, C. (2022). Political polarization, misinformation, and media literacy. *Journal of Media Literacy Education*, 14(1), 59–81. <https://doi.org/10.23860/JMLE-202214-1-5>
- Geers, S., Boukes, M., & Möller, J. (2020). Bridging the gap? The impact of a media literacy educational intervention on news media literacy, political knowledge, political efficacy among

- lower-educated youth. *The Journal of Media Literacy Education*, 12(2), 41–53.
<https://doi.org/10.23860/jmle-2020-12-2-4>
- Gómez-García, S., & De La Hera Conde-Pumpido, T. (2023). Newsgames: The use of digital games by mass-media outlets to convey journalistic messages. *Games and Culture*, 18(4), 449–474.
<https://doi.org/10.1177/15554120221105461>
- Grace, L., & Hone, B. (2019). Factitious: Large scale computer game to fight fake news and improve news literacy. *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–8. <https://doi.org/10.1145/3290607.3299046>
- Harrison, J. (2018). Tiny Rebellions: Making Young People's Voices Audible. *Jeunesse: Young People, Texts, Cultures*, 10(2), 1–8. <https://doi.org/10.1353/jeu.2018.0014>
- Harteveld, C., Javvaji, N., Machado, T., Zastavker, Y. V., Bennett, V., & Abdoun, T. (2020). Gamin-g4All: Reflecting on diversity, equity, and inclusion for game-based engineering education. *2020 IEEE Frontiers in Education Conference (FIE)*, 1–9.
<https://doi.org/10.1109/FIE44824.2020.9274176>
- Hill, V. (2015). Digital citizenship through game design in Minecraft. *New Library World*, 116(7/8), 369–382. <https://doi.org/10.1108/NLW-09-2014-0112>
- Iakovidis, M., Papakostas, C., Troussas, C., & Sgouropoulou, C. (2023). Empowering responsible digital citizenship through an augmented reality educational game. In K. Kabassi, P. Mylonas, & J. Caro (Eds.), *Novel & Intelligent Digital Systems: Proceedings of the 3rd International Conference (NiDS 2023)* (Vol. 784, pp. 31–39). Springer Nature Switzerland.
https://doi.org/10.1007/978-3-031-44146-2_4
- Lauricella, A. R., Herdzina, J., & Robb, M. B. (2020). Early childhood educators' teaching of digital citizenship competencies. *Computers & Education*, 158, 103989.
<https://doi.org/10.1016/j.compedu.2020.103989>
- Jost, P. (2020). Because it is fun: Investigating motives of fake news sharing with exploratory game quests. In Demetrios G. Sampson, D. Ifenthaler, & Pedro Isaías (Eds.), *Proceedings of the IADIS International Conference Cognition and Exploratory Learning in the Digital Age 2020* (pp. 35–42). IADIS Press.
- Katsaounidou, A., Vrysis, L., Kotsakis, R., Dimoulas, C., & Veglis, A. (2019). MAtHE the Game: A serious game for education and training in news verification. *Education Sciences*, 9(2), 155.
<https://doi.org/10.3390/educsci9020155>
- Lee, Y. N., & Zhu, M. (2022). Digital game-based learning can develop students' literacy skills and meet learning standards in the US. *Computers in the Schools*, 39(3), 274–296.
<https://doi.org/10.1080/07380569.2022.2075163>
- Lin, W., Wang, J.-Y., & Yueh, H.-P. (2022). Learning information ethical decision making with a simulation game. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.933298>
- Mattson, K., & Curran, M. B. (2017). Digital citizenship education: Moving beyond personal responsibility. In B. S. de Abreu, P. Mihailidis, A. Y. L. Lee, J. Melki, & J. McDougall (Eds.), *International handbook of media literacy education* (pp. 144–155). New York, NY: Routledge.
- Mihailidis, P. (2018). Civic media literacies: re-Imagining engagement for civic intentionality. *Learning, Media and Technology*, 43(2), 152–164.
<https://doi.org/10.1080/17439884.2018.1428623>
- McKernan, B. (2021). Digital texts and moral questions about immigration: Papers, Please and the capacity for a video game to stimulate sociopolitical discussion. *Games and Culture*, 16(4), 383–406. <https://doi.org/10.1177/1555412019893882>
- Newman, N., Fletcher, R., Eddy, K., Robertson, C.T., Nielsen, R.K. (2023). *Reuters Institute Digital*

- News Report 2023. Reuters Institute for the Study of Journalism. Retrieved from <https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2023>
- Newman, N., Fletcher, R., Robertson, C. T., Eddy, K., & Nielsen, R. K. (2022). *Digital News Report 2022*. Reuters Institute for the Study of Journalism. Retrieved from <https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2022>
- Okoli, C. (2015). Critical realist considerations for literature reviews. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2700524>
- Oliveira Moreira, T. D., Passos, C. A., Matias Da Silva, F. R., Souza Freire, P. M., Fernandes De Souza, I., Bosaipo Sales Da Silva, C. R., & Goldschmidt, R. R. (2023). JEDi - A digital educational game to support student training in identifying portuguese-written fake news: Case studies in high school, undergraduate and graduate scenarios. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-023-12309-z>
- Paez, A. (2017b). Grey literature: An important resource in systematic reviews. *Journal of Evidence-Based Medicine*. <https://doi.org/10.1111/jebm.12265>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The Prisma 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*. <https://doi.org/10.1136/bmj.n71>
- Panjaburee, P., Hwang, G.-J., Intarakamhang, U., Srisawasdi, N., Poompimol, S., & Tapingkae, P. (2023). Effects of decision tree-based online gaming framework on students' digital citizenship behaviors and patterns. *2023 IEEE 6th Eurasian Conference on Educational Innovation (ECEI)*, 127–130. <https://doi.org/10.1109/ECEI57668.2023.10105413>
- Pimmer, C., Eisemann, C., & Mateescu, M. (2020, *accepted*). Fake news resilience through online games? Tentative findings from a randomized controlled trial in higher education *Paper presented at the CELDA - 17th International Conference on Cognition and Exploratory Learning in Digital Age 2020, Lisbon, Portugal*.
- Pomichal, V., & Trnka, A. (2023). With games against fake news – Developing critical thinking with the help of the card game Follow Me. *Media Literacy and Academic Research*, 55–69. <https://doi.org/10.34135/mlar-23-01-04>
- Ponte, C., & Batista, S. (2019). EU Kids Online Portugal - Usos, competências, riscos e mediações da internet reportados por crianças e jovens (9 - 17 anos). EU Kids Online e Nova FCSH.
- Ribble, M., Bailey, G. & Ross, T.W. (2004). Digital Citizenship: Addressing Appropriate Technology Behavior. *Learning & Leading with Technology*. 32(1), 6-12. <https://files.eric.ed.gov/fulltext/EJ695788.pdf>
- Roozenbeek, J., & van der Linden, S. (2019). Fake news game confers psychological resistance against online misinformation. *Palgrave Communications*, 5(1), 65. <https://doi.org/10.1057/s41599-019-0279-9>
- Roozenbeek, J., & Van Der Linden, S. (2019). The Fake News Game: Actively inoculating against the risk of misinformation. *Journal of Risk Research*, 22(5), 570–580. <https://doi.org/10.1080/13669877.2018.1443491>
- Shaheen, A., & Fotaris, P. (2023). Exploring reflective learning in digital game-based learning: A user research. *European Conference on Games Based Learning*, 17(1), 574–582. <https://doi.org/10.34190/ecgb1.17.1.1640>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Ólafsson, K., ... Hasebrink, U. (2020). EU Kids countries, (February), 156. <https://doi.org/10.21953/lse.47fdeqj01ofo>

- Sousa, C., & Costa, C. (2019). Game creation to promote media and information literacy (MIL) skills in basic education teachers. *Revista Lusófona de Educação*, 46, 139–152.
<https://doi.org/10.24140/issn.1645-7250.rle46.09>
- Sureephong, P., Chernbumroong, S., Sangamuang, S., Sirasakamol, O., Intawong, K., & Puritat, K. (2023). Enhancing information literacy for spotting fake news: A study on the efficacy of a serious game for M-Learning across different age groups. *International Journal of Interactive Mobile Technologies (iJIM)*, 17(15), 103–119.
<https://doi.org/10.3991/ijim.v17i15.40865>
- Steinkuehler, C. (2010). Video games and digital literacies. *Journal of Adolescent & Adult Literacy*, 54(1), 61–63. <https://doi.org/10.1598/JAAL.54.1.7>
- Swart, J. (2023). Tactics of news literacy: How young people access, evaluate, and engage with news on social media. *New Media & Society*, 25(3), 505–521.
<https://doi.org/10.1177/14614448211011447>
- Swart, J., & Broersma, M. (2021). The Trust Gap: Young people's tactics for assessing the reliability of political news. *The International Journal of Press/Politics*, 27(2), 396–416.
<https://doi.org/10.1177/19401612211006696>
- Tandoc, E., & Seet, S. (2023). Winning the game against fake news? Using games to inoculate adolescents and young adults in Singapore against fake news. *Estudios Sobre El Mensaje Periodístico*, 29(4), 771–781. <https://doi.org/10.5209/esmp.88599>
- Tapingkae, P., Panjaburee, P., Hwang, G.-J., & Srisawasdi, N. (2020). Effects of a formative assessment-based contextual gaming approach on students' digital citizenship behaviours, learning motivations, and perceptions. *Computers & Education*, 159.
<https://doi.org/10.1016/j.compedu.2020.103998>
- Villarejo-Carballido, B., Pulido, C. M., & Tejedor, S. (2022). Key competences for lifelong learning through the "Animal Crossing: New Horizons" video game. *Future Internet*, 14(11).
<https://doi.org/10.3390/fi14110329>
- Yap, J. M., & Peñaflor, J. (2020). The amazing library race: Developing students' media and information literacy skills through games. *Journal of Information Literacy*, 14(1), 66–82.
<https://doi.org/10.11645/14.1.2708>
- Young, D. G., Baum, M. A., & Prettyman, D. (2021). vMOBilize: Gamifying civic learning and political engagement in a classroom context. *Journal of Political Science Education*, 17(1), 32–54.
<https://doi.org/10.1080/15512169.2019.1609486>
- Yu, Z., Gao, M., & Wang, L. (2021). The effect of educational games on learning outcomes, student motivation, engagement and satisfaction. *Journal of Educational Computing Research*, 59(3), 522–546. <https://doi.org/10.1177/0735633120969214>
- Yue, A., Nekmat, E., & Beta, A. R. (2019). Digital Literacy through Digital Citizenship: online civic participation and public opinion evaluation of youth minorities in Southeast Asia. *Media and Communication*, 7(2), 100–114.
<https://doi.org/10.17645/mac.v7i2.1899>
- Zheng, Y., Zhang, J., Li, Y., Wu, X., Ding, R., Luo, X., Liu, P., & Huang, J. (2024). Effects of digital game-based learning on students' digital etiquette literacy, learning motivations, and engagement. *Heliyon*, 10(1), e23490.
<https://doi.org/10.1016/j.heliyon.2023.e23490>
- Zhong, J., & Zheng, Y. (2023). "What It Means to be a Digital Citizen": Using concept mapping and an educational game to explore children's conceptualization of digital citizenship. *Heliyon*, 9(9), e19291. <https://doi.org/10.1016/j.heliyon.2023.e19291>

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