Effectiveness Of Educational Games In Enhancing Information Seeking Behavior Among Primary School Children In Nsukka Education Authority

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Abstract
This study investigated the effectiveness of educational games in enhancing information seeking behavior among primary school children in Nsukka Education Authority. The study was guided by five research questions. A descriptive survey research design was adopted for the study. The population comprised all the primary six children in Nsukka Education Authority, from which a sample size of 325 children was sampled using simple random sampling techniques. A structured questionnaire titled, "Educational Games and Information Seeking Behavior Questionnaire (EGISBQ)" was used as the main instrument for data collection. The instrument was validated by experts and its reliability was established using Cronbach Alpha method which yielded a reliability coefficient of .93. Data collected were analyzed using mean and standard deviation to answer the research questions. The findings of the study revealed that the types of educational games commonly used in teaching include card games, board games, quiz competitions, role-playing or drama-based games, puzzle games, and reward-based strategies such as points and badges, while computer-based and online games are less frequently used. The study further revealed that the level of information seeking behavior among pupils after exposure to educational games is high. In addition, the findings showed that educational games improve pupils' ability to identify their information needs, locate relevant information sources, and evaluate information critically to a high extent. The study concluded that educational games are effective instructional tools for enhancing pupils' information seeking behavior and overall learning outcomes. Based on the findings, it was recommended, among others, that teachers should integrate more educational games into their teaching, government should provide adequate ICT facilities to support digital game-based learning, and training programmes should be organized to equip teachers with the skills needed to effectively use educational games in the classroom.

Keywords: Educational Games, Information Seeking Behavior, Primary School Children, Game-Based Learning, Information Literacy.

Introduction

The rapid advancement of information and communication technologies (ICTs) has significantly transformed the way children access, process, and utilizes information in contemporary learning environments. In primary education, pupils are increasingly exposed to diverse information sources such as digital media, school libraries, and online platforms. This development necessitates the acquisition of effective information seeking behavior, which encompasses the ability to identify information needs, locate relevant sources, evaluate information critically, and use it appropriately. However, studies have shown

that while primary school children are capable of interacting with digital tools, they often lack structured strategies for searching and evaluating information effectively (Large et al., 1998; Bilal, 2000).

However, studies have consistently shown that while primary school children are capable of interacting with digital tools, they often lack structured strategies for searching, selecting, and evaluating information effectively. Earlier studies by Large et al. (1998) and Bilal (2000) established that children experience difficulties in query formulation and navigation of search systems. More recent studies reinforce this position, indicating that although children are digitally active, they tend to rely on simple search strategies, struggle with keyword selection, and have limited ability to evaluate the credibility of online information (Kuiper et al., 2019; Bilal & Beheshti, 2017). Similarly, research by Hashim and Vongkulluksn (2018) found that primary school learners often exhibit superficial browsing behaviors and rarely engage in critical evaluation of digital content. In the same vein, Kuhlthau et al. (2015) emphasized that young learners require guided inquiry to develop effective information seeking processes, as they often experience uncertainty and confusion during information search tasks. Further studies have shown that children frequently depend on the first results returned by search engines without assessing relevance or reliability (Sundin & Francke, 2016; Rieh et al., 2016).

Moreover, Aharony and Bar-Ilan (2018) observed that despite increased exposure to digital technologies, children's information literacy skills remain underdeveloped, particularly in evaluating online sources and distinguishing between credible and non-credible information. This is supported by the findings of McKechnie et al. (2018), who noted that children's information seeking behavior is often exploratory but lacks strategic depth and critical judgment. Recent work by Neumann (2020) also indicates that while children demonstrate confidence in using digital devices, this does not necessarily translate into effective information searching skills. In addition, Istance and Kools (2019) highlighted that the digital environment requires new competencies beyond basic operational skills, including critical thinking and information evaluation, which many primary school learners have not yet mastered. Studies conducted in developing contexts further reveal that the challenge is more pronounced due to limited access to structured information literacy instruction (Atoy et al., 2020; Issa et al., 2019). These findings collectively suggest that mere exposure to digital technologies is insufficient for developing effective information seeking behavior among primary school children. Therefore, there is a growing need for innovative instructional approaches that can support the development of these skills from an early stage. One such approach is the integration of educational games, which provide interactive, engaging, and scaffolded learning environments that can help children develop structured strategies for searching, evaluating, and using information effectively.

Educational games have emerged as a promising pedagogical approach to address this challenge. Educational games, also referred to as game-based learning tools, integrate instructional content with game elements such as rewards, challenges, rules, and feedback to promote active learning. According to Prensky (2001), digital game-based learning aligns with the natural learning styles of children, who are often more responsive to interactive and engaging environments. Similarly, Gee (2003) argues that games support deep learning by encouraging exploration, problem-solving, and critical thinking, which are essential components of information seeking behavior. Gamification, which involves the application of game design elements in non-game contexts, further enhances the effectiveness of educational games. Features such as points, levels, leaderboards, and immediate feedback have been found to increase learners' motivation and engagement (Deterding et al., 2011; Nand et al., 2019). These elements can be strategically applied to guide pupils through different stages of information seeking, including recognizing information needs, selecting appropriate search tools, and evaluating retrieved information.

Empirical evidence supports the effectiveness of educational games in improving learning outcomes among primary school children. For instance, Chen et al. (2021) found that digital educational games significantly improved vocabulary acquisition among primary school pupils. Similarly, Letina (2021) reported that game-based learning enhances pupils' understanding of science and social studies concepts. These improvements are largely attributed to increased engagement and active participation, which are critical for developing information literacy skills. Furthermore, educational games have been shown to foster higher-order thinking skills such as critical thinking, problem-solving, and decision-making (Videnovik et al., 2023; Romero, 2020). These skills are closely related to effective information seeking behavior, as learners

must analyze, interpret, and synthesize information from multiple sources. Yang et al. (2022) also observed that learners in game-based environments tend to exhibit self-directed learning behaviors, including independent exploration and persistence in solving problems, which are essential for successful information seeking.

In addition to cognitive benefits, educational games promote social and collaborative learning. Many game-based activities require teamwork, communication, and shared problem-solving, which can enhance learners' ability to seek and share information collaboratively (Kahila et al., 2021). This aligns with the view that information seeking is not only an individual activity but also a social process that involves interaction with peers, teachers, and other information sources (Marchionini, 1995). Moreover, educational games can significantly influence learners' motivation and interest in learning activities. According to Malone and Lepper (1987), intrinsic motivation is enhanced when learning activities are enjoyable and challenging. Games provide such environments by combining entertainment with educational content. Chen et al. (2020) further noted that different types of games can shape students' learning interests, thereby influencing their willingness to engage in information-seeking activities.

Despite the growing body of literature on educational games, there is limited research focusing specifically on their impact on information seeking behavior, particularly among primary school children in developing countries. Most studies have concentrated on academic achievement, motivation, or subject-specific outcomes, leaving a gap in understanding how game-based learning influences pupils' ability to locate, evaluate, and use information effectively (Istiq'faroh et al., 2024; Bottino & Ott, 2007). In Nigerian, especially within the Nsukka Education Authority, primary school pupils face several challenges related to information access and literacy. These include limited availability of functional school libraries, inadequate digital resources, and traditional teaching methods that emphasize rote learning rather than inquiry-based learning (Aina, 2004; Issa et al., 2012). Such conditions hinder the development of effective information seeking behavior among pupils.

Integrating educational games into primary school instruction offers a potential solution to these challenges. Educational games create interactive and learner-centered environments that encourage exploration, curiosity, and critical thinking. From a constructivist perspective, learning occurs when learners actively construct knowledge through experience and interaction (Piaget, 1972; Vygotsky, 1978). Educational games support this process by allowing pupils to engage with content dynamically and receive immediate feedback on their actions. Additionally, educational games can serve as tools for developing digital literacy skills, which are closely linked to information seeking behavior. As children interact with game-based platforms, they learn how to navigate digital environments, interpret multimedia content, and apply search strategies effectively (Zaina et al., 2019). These skills are essential in the 21st-century information landscape, where the ability to access and use information efficiently is critical for academic success and lifelong learning. However, there is a need for empirical investigation into their effectiveness within specific local contexts, such as the Nsukka Education Authority. This study, therefore, seeks to bridge this gap by examining the role of educational games in improving information seeking behavior among primary school pupils.

Purpose of the Study

The study was designed to determine the effectiveness of educational games in enhancing information seeking behavior among primary school children in Nsukka Education Authority. Specifically, the study sought to determine the;

1. types of educational games that are often use in teaching primary school children in Nsukka Education Authority;
2. extent of information seeking behavior among primary school children after exposure to educational games;
3. extent to which educational games improve pupils' ability to identify their information needs;
4. extent to which educational games enhance pupils' ability to locate relevant information sources;
5. extent to which educational games improve pupils' ability to evaluate information critically;

Research Questions

The following research questions were posed to guide the study;

1. What types of educational games are often used in teaching primary school children in Nsukka Education Authority?
2. What is the extent of information seeking behavior among primary school children after exposure to educational games?
3. To what extent do educational games improve pupils' ability to identify their information needs?
4. To what extent do educational games enhance pupils' ability to locate relevant information sources?
5. To what extent do educational games improve pupils' ability to evaluate information critically?

Methodology

This study adopted a descriptive survey research design to investigate the effectiveness of educational games in enhancing information seeking behavior among primary school children in Nsukka Education Authority. The design was considered appropriate because it enabled the researchers to collect data from a representative sample and describe the existing conditions without manipulating any variables. The study was carried out in Nsukka Education Authority in Enugu State, Nigeria. The population of the study comprised all primary school children in public primary schools within the Education Authority. A sample size of 325 respondents was selected from the population using a simple random sampling technique to ensure that each member of the population had an equal chance of being selected.

The instrument used for data collection was a structured questionnaire developed by the researchers titled "Educational Games and Information Seeking Behavior Questionnaire (EGISBQ)." The questionnaire was divided into sections to capture relevant data: Section A focused on demographic information, while Sections B addressed the research variables, including types of educational games used, extent of information seeking behavior, and the extent to which educational games improve pupils' ability to identify information needs, locate relevant information sources, and evaluate information critically. To ensure the validity of the instrument, it was subjected to face validation by three experts in Library and Information Science, Educational Technology and Measurement and Evaluation. Their suggestions and corrections were incorporated into the final version of the instrument. The reliability of the instrument was established using the Cronbach Alpha method, which yielded a reliability coefficient of .93 considered adequate for the study, indicating that the instrument was internally consistent.

Data collection was carried out by the researchers. Copies of the questionnaire were administered directly to the respondents and retrieved after completion to ensure a high response rate. In many cases, the classroom teachers were asked to read and explain to the respondents before responding to the instrument. Data collected were analyzed using mean and standard deviation to answer the research questions. A decision rule of 2.50 was adopted as the benchmark for acceptance or rejection of items in research question one, whereas, real limit of number was used for interpretation for research questions 2-5.

Presentation of Result

Research Question One

What types of educational games are often used in teaching primary school children in Nsukka Education Authority?

Table 1: Mean and standard deviation of respondents on the types of educational games that are often used in teaching primary school children in Nsukka Education Authority

S/N	Item Statement	Mean	SD	Remark
1	Computer-based educational games such as starfall, ABCmouse, Prodigy Math Game, BrainPOP, Kahoot are used during lessons	2.12	.86	Disagree
2	Mobile or tablet educational games are used for learning	2.89	.95	Agree
3	Online educational games (internet-based) are used in class	2.31	.85	Disagree

4	Interactive multimedia games (videos, animations, simulations) are used	2.34	.95	Disagree
5	Board games (e.g., word games, number games) are used in teaching	3.25	.84	Agree
6	Card games are used for learning activities	3.37	.84	Agree
7	Puzzle games (e.g., jigsaw, crossword) are used in class	3.04	.94	Agree
8	Role-playing or drama-based games are used in lessons	3.08	.98	Agree
9	Teachers use quiz competitions as part of lessons	3.11	.84	Agree
10	Points, rewards, or badges are used to encourage learning	3.29	.92	Agree
11	Group-based competitive games are used in class	2.81	.88	Agree
12	Game-like activities are used to assess pupils' learning	2.98	.83	Agree

Table 1 presents the mean and standard deviation of respondents on the types of educational games often used in teaching primary school children in Nsukka Education Authority. The decision rule indicates that a mean score of 2.50 and above represents agreement (used), while below 2.50 represents disagreement (not commonly used). The results show a mixed level of usage of different types of educational games in primary schools. The cluster pattern reveals that while traditional and simple game forms are widely used, more advanced digital game-based tools are less frequently utilized.

Item analysis indicates that card games (Mean = 3.37, SD = 0.84) and board games (Mean = 3.25, SD = 0.84) are the most commonly used educational games. This suggests that teachers in Nsukka Education Authority rely more on traditional, low-technology game formats for instructional purposes. Similarly, points, rewards, or badges used to encourage learning (Mean = 3.29, SD = 0.92) and quiz competitions (Mean = 3.11, SD = 0.84) are also frequently used, indicating that gamified teaching strategies are relatively common in classroom instruction. Furthermore, respondents agreed that role-playing or drama-based games (Mean = 3.08, SD = 0.98), puzzle games such as jigsaw and crossword (Mean = 3.04, SD = 0.94), and game-like assessment activities (Mean = 2.98, SD = 0.83) are used in teaching. This shows that teachers also incorporate interactive and participatory game forms to engage pupils in learning.

In contrast, respondents disagreed that computer-based educational games such as Starfall, ABCmouse, Prodigy Math Game, BrainPOP, and Kahoot are used during lessons (Mean = 2.12, SD = 0.86). Similarly, they disagreed that online educational games (Mean = 2.31, SD = 0.85) and interactive multimedia games such as videos, animations, and simulations (Mean = 2.34, SD = 0.95) are commonly used. This indicates that digital and technology-driven educational games are not widely integrated into classroom teaching, likely due to limited ICT infrastructure, poor internet access, or lack of teacher training. However, mobile or tablet-based educational games (Mean = 2.89, SD = 0.95) and group-based competitive games (Mean = 2.81, SD = 0.88) were agreed upon by respondents, suggesting that where mobile devices are available, they are occasionally used for instructional purposes. The standard deviation values, ranging from 0.83 to 0.98, indicating that the respondents were homogenous in their response.

Research Question Two

What is the extent of information seeking behavior among primary school children after exposure to educational games?

Table 2: Mean and standard deviation of respondents on the extent of information seeking behavior among primary school children after exposure to educational games

S/N	Item Statement	Mean	SD	Remark
1	I can ask questions when I need information	3.09	.83	HE
2	I can find information using books, computers, or phones	2.99	1.06	HE
3	I can use simple keywords to search for information	2.98	.99	HE
4	I can find information from different sources (teacher, books, internet)	3.17	.98	HE
5	I can tell if information is correct or not	2.66	.78	HE
6	I can choose the most useful information from many sources	3.22	.92	HE

7	I check information before using it for my assignment	3.23	.89	HE
8	I can use information to complete my school work	3.01	.98	HE
9	I can explain information in my own words	2.56	.74	HE
10	I can share information with my classmates	3.01	.98	HE
11	I feel confident when searching for information	3.06	.98	HE
12	I enjoy looking for new information	3.17	1.00	HE
	Cluster Mean	**3.01**	**.35**	**HE**

Result in Table 2 presents the mean and standard deviation of respondents' views on the extent of information seeking behavior among primary school children after exposure to educational games in Nsukka Education Authority. The cluster mean of 3.01 (SD = 0.35) shows that, overall, respondents agree that educational games have enhanced pupils' information seeking behavior to a high extent. The decision was based on the real limit of number, since the obtained mean value and the cluster mean were within the real limit of 2.50-3.49. This implies that exposure to educational games positively influenced pupils' ability to identify, locate, evaluate, and use information effectively. Item by item analysis shows that pupils reported the highest extent of improvement in their ability to check information before using it for assignments (Mean = 3.23, SD = 0.89), choose the most useful information from multiple sources (Mean = 3.22, SD = 0.92), and find information from different sources such as teachers, books, and the internet (Mean = 3.17, SD = 0.98). This indicates that educational games strongly support critical engagement with information and encourage pupils to actively verify and select relevant content.

Similarly, respondents agreed that they can ask questions when they need information (Mean = 3.09, SD = 0.83), use information to complete school work (Mean = 3.01, SD = 0.98), and share information with classmates (Mean = 3.01, SD = 0.98). These results suggest that educational games promote collaborative learning and strengthen communication in information seeking processes. Furthermore, pupils indicated improved confidence in searching for information (Mean = 3.06, SD = 0.98) and enjoyment in seeking new information (Mean = 3.17, SD = 1.00). This reflects increased motivation and positive attitude toward information seeking, which are important components of effective learning behavior. Generally, the standard deviation values range from 0.74 to 1.06, with a cluster standard deviation of 0.35. This indicates that the responses are relatively close to the mean scores, showing a moderate to low level of dispersion among respondents. In other words, there is a reasonable level of agreement among the respondents that educational games influence pupils' information seeking behavior.

Research Question Three

To what extent do educational games improve pupils' ability to identify their information needs?

Table 3: Mean and standard deviation of respondents on the extent to which educational games improve pupils' ability to identify their information needs

S/N	Item Statement	Mean	SD	Remark
	Educational games help me:			
1	know what information I need before starting a task	3.04	.97	HE
2	understand questions given in class	3.19	.83	HE
3	think about what I want to learn	2.92	.71	HE
4	ask questions when I do not understand something	3.10	.99	HE
5	focus on the main idea of my assignment	3.25	.92	HE
6	recognize when I need more information	3.27	.80	HE
7	decide what kind of information to look for	3.15	.72	HE
8	break tasks into smaller questions	3.33	.74	HE
9	become curious about new topics	3.37	.69	HE
10	understand my learning goals clearly	3.13	.80	HE
	Cluster Mean	**3.18**	**.38**	**HE**

Table 3 presents the mean and standard deviation of respondents on the extent to which educational games improve pupils' ability to identify their information needs in Nsukka Education Authority. The cluster

mean of 3.18 (SD = 0.38) shows that respondents agreed that educational games improve pupils' ability to identify their information needs to a high extent. The decision was based on the real limit of number, since the obtained mean value and the cluster mean were within the real limit of 2.50-3.49. This implies that educational games are effective in helping pupils recognize what information they require before, during, and after learning activities.

Item-by-item analysis reveals that the highest-rated item is "becoming curious about new topics" with a mean score of 3.37 (SD = 0.69). This indicates that educational games strongly stimulate curiosity among pupils, which is a key driver of information need identification. This is closely followed by "breaking tasks into smaller questions" (Mean = 3.33, SD = 0.74) and "recognizing when I need more information" (Mean = 3.27, SD = 0.80), showing that educational games help pupils develop structured thinking and awareness of information gaps. Similarly, respondents agreed that educational games help them focus on the main idea of their assignments (Mean = 3.25, SD = 0.92), understand questions given in class (Mean = 3.19, SD = 0.83), and decide what kind of information to look for (Mean = 3.15, SD = 0.72). These results suggest that educational games support pupils in clarifying tasks and understanding learning requirements, which are essential for identifying information needs.

Furthermore, pupils indicated that educational games help them understand their learning goals clearly (Mean = 3.13, SD = 0.80), ask questions when they do not understand something (Mean = 3.10, SD = 0.99), and know what information they need before starting a task (Mean = 3.04, SD = 0.97). The lowest-rated item, although still within the high extent range, is "thinking about what I want to learn" (Mean = 2.92, SD = 0.71), suggesting a slightly weaker but still positive influence in this area. The standard deviation values, ranging from 0.69 to 0.99, indicate a moderate level of variation in responses. This suggests that while pupils generally agree that educational games improve their ability to identify information needs, there are slight differences in individual experiences. The cluster standard deviation of 0.38 further confirms that responses are closely clustered around the mean, showing consistency among respondents.

Research Question Four

To what extent do educational games enhance pupils' ability to locate relevant information sources?

Table 4: Mean and standard deviation of respondents on the extent to which educational games enhance pupils' ability to locate relevant information sources

S/N	Item Statement	Mean	SD	Remark
	Educational games help me:			
1	know where to find information	3.15	0.92	HE
2	use books, computers, or phones to find information	3.19	0.85	HE
3	choose the right place to look for information (books, internet, teacher)	3.52	0.7	HE
4	use simple keywords when searching for information	3.26	0.98	HE
5	find information from different sources	3.24	0.96	HE
6	search for information quickly	3.35	0.79	HE
7	use search tools (e.g., library, computer, phone) better	3.1	0.71	HE
8	follow steps when looking for information	3.33	0.71	HE
9	find the exact information I need	3.31	0.69	HE
10	become more confident in finding information	3.17	0.79	HE
	Cluster Mean	**3.262**	**0.31**	**HE**

Result in Table 4 presents the mean and standard deviation of respondents' views on the extent to which educational games enhance pupils' ability to locate relevant information sources in Nsukka Education Authority. The cluster mean of 3.262 (SD = 0.31) shows that respondents agreed that educational games enhance pupils' ability to locate relevant information sources to a high extent. The decision was based on the real limit of number, since the obtained mean value and the cluster mean were within the real limit of 2.50-3.49. This implies that educational games are effective in improving pupils' skills in identifying where and how to access information needed for learning tasks. Item by item analysis shows that the highest-rated

item is "choosing the right place to look for information (books, internet, teacher)" with a mean of 3.52 (SD = 0.70). This indicates that educational games strongly support pupils in making appropriate decisions about information sources. Other highly rated items include "searching for information quickly" (Mean = 3.35, SD = 0.79), "following steps when looking for information" (Mean = 3.33, SD = 0.71), and "finding the exact information needed" (Mean = 3.31, SD = 0.69). These results suggest that educational games help pupils develop structured and efficient search strategies.

Similarly, respondents agreed that educational games help them use simple keywords when searching for information (Mean = 3.26, SD = 0.98), find information from different sources (Mean = 3.24, SD = 0.96), and use books, computers, or phones to find information (Mean = 3.19, SD = 0.85). This shows that educational games expose pupils to multiple search techniques and sources of information, thereby improving their information retrieval skills. Furthermore, pupils agreed that educational games help them know where to find information (Mean = 3.15, SD = 0.92), become more confident in finding information (Mean = 3.17, SD = 0.79), and use search tools such as libraries, computers, and phones more effectively (Mean = 3.10, SD = 0.71). This indicates that educational games not only improve technical searching skills but also build confidence in information seeking. The standard deviation values, which range from 0.69 to 0.98, show a relatively low level of variation in responses. This suggests that there is general agreement among respondents regarding the positive impact of educational games on pupils' ability to locate information sources. The cluster standard deviation of 0.31 further confirms that responses are closely clustered around the mean, indicating consistency in opinions.

Research Question Five

To what extent do educational games improve pupils' ability to evaluate information critically?

Table 5: Mean and standard deviation on the extent to which educational games improve pupils' ability to evaluate information critically

S/N	Item Statement	Mean	SD	Remark
	Educational games help me:			
1	know if information is correct or wrong	2.98	1.01	HE
2	think before using information I find	3.18	0.81	HE
3	compare information from different sources	3.35	0.72	HE
4	choose the best answer from different options	2.99	0.98	HE
5	check if information is useful for my school work	3.26	0.89	HE
6	avoid using false or incorrect information	3.21	0.81	HE
7	understand which information is trustworthy	3.2	0.73	HE
8	ask questions about information I do not understand	3.33	0.75	HE
9	decide if information is important or not	3.42	0.69	HE
10	become careful when using information from the internet or books	3.1	0.81	HE
	Cluster Mean	**3.20**	**.41**	**HE**

Result in Table 5 presents the mean and standard deviation of respondents' views on the extent to which educational games improve pupils' ability to evaluate information critically in Nsukka Education Authority. The cluster mean of 3.20 (SD = 0.41) shows that respondents agreed that educational games improve pupils' ability to evaluate information critically to a high extent. The decision was based on the real limit of number, since the obtained mean value and the cluster mean were within the real limit of 2.50-3.49. This implies that educational games play a positive role in developing pupils' critical thinking skills in relation to information use, such as judging accuracy, relevance, and reliability of information sources. Item-by-item analysis reveals that the highest-rated item is "deciding if information is important or not" with a mean score of 3.42 (SD = 0.69). This indicates that educational games strongly support pupils in prioritizing and judging the relevance of information. Other highly rated items include "comparing information from different sources" (Mean = 3.35, SD = 0.72) and "asking questions about information I do not understand" (Mean = 3.33, SD = 0.75). These findings suggest that educational games encourage analytical thinking and active engagement with information.

Similarly, respondents agreed that educational games help them check if information is useful for school work (Mean = 3.26, SD = 0.89), avoid using false or incorrect information (Mean = 3.21, SD = 0.81), and understand which information is trustworthy (Mean = 3.20, SD = 0.73). This shows that educational games contribute to developing pupils' ability to assess credibility and usefulness of information, which are key components of critical evaluation. Furthermore, pupils indicated that educational games help them think before using information (Mean = 3.18, SD = 0.81), become careful when using information from the internet or books (Mean = 3.10, SD = 0.81), and choose the best answer from different options (Mean = 2.99, SD = 0.98). These results suggest that educational games promote reflective thinking and caution in information use. The standard deviation values, which range from 0.69 to 1.01, indicate a moderate level of variation in responses. This suggests that while there is general agreement among respondents on the positive influence of educational games, there are slight differences in individual experiences. The cluster standard deviation of 0.41 further confirms that responses are relatively consistent around the mean.

Discussion of Findings

Types of educational games that are often use in teaching primary school children in Nsukka Education Authority

The finding of this study revealed that the types of educational games often used in teaching primary school children in Nsukka Education Authority include card games, board games, points, rewards or badges used to encourage learning, quiz competitions, role-playing or drama-based games, puzzle games such as jigsaw and crossword, and game-like assessment activities. This indicates that teachers in the area predominantly use traditional and non-digital game-based instructional strategies rather than advanced computer-based educational games. This result is not surprising, as it reflects the reality of many primary schools in developing country where instructional resources are often limited. The dominance of card and board games suggests that teachers prefer simple, affordable, and easily accessible instructional strategies that do not require electricity, internet access, or specialized equipment. This finding aligns with the view that in resource-constrained educational environments, teachers tend to adopt instructional methods that are practical and sustainable within available infrastructure (UNESCO, 2019).

The use of quiz competitions and reward-based systems such as points, badges, and incentives indicates that teachers also apply elements of gamification in classroom instruction. This supports the idea that even without advanced digital tools, game mechanics can still be effectively integrated into teaching to motivate learners and enhance participation. According to Hamari et al. (2014), gamification strategies such as rewards and competition improve student engagement and motivation, which are critical for learning at the primary school level. This finding agrees with earlier studies which reported that in many African and developing educational contexts, teachers rely more on low-cost and easily accessible instructional games due to limited ICT infrastructure and inadequate digital resources. For instance, Olanrewaju, Omotayo and Adeyeye (2020) observed that analogue and locally designed educational games are commonly used in Nigerian classrooms to improve numeracy and literacy skills, especially where digital tools are not readily available. Similarly, Abanum, Falade and Aina (2024) found that board games significantly enhance pupils' academic performance and are widely accepted in primary school classrooms in Lagos State as an effective teaching strategy.

The dominance of card and board games in this study also aligns with the view that indigenous and traditional games remain relevant educational tools in African classrooms. Bayeck (2017) emphasized that African board games possess strong educational potential and can be integrated into curriculum delivery to support learning outcomes, particularly in environments where digital technologies are limited. The inclusion of role-playing, drama-based games, and puzzle activities suggests that teachers also adopt interactive and experiential learning approaches. This is consistent with constructivist learning theory, which emphasizes that children learn best through active participation, exploration, and social interaction (Piaget, 1972; Vygotsky, 1978). In addition, Kwabe et al. (2024) found that puzzle and simulation games significantly improve pupils' academic achievement compared to traditional lecture methods, reinforcing the effectiveness of such game-based strategies in primary education. However, the limited use of

computer-based and online educational games suggests a persistent digital gap in primary education within Nsukka Education Authority. This finding is consistent with studies showing that many Nigerian schools face challenges such as inadequate ICT facilities, limited teacher training in digital pedagogy, and poor internet access, which hinder the adoption of digital game-based learning tools (Mlumun et al., 2021).

Extent of information seeking behavior among primary school children after exposure to educational games

The finding of the study revealed that the extent of information seeking behavior among primary school children after exposure to educational games is high. This suggests that educational games play a significant role in enhancing pupils' ability to identify, locate, evaluate, and use information effectively. The high level of information seeking behavior observed indicates that pupils become more active, engaged, and confident in searching for information if game-based learning environment is activated. Furthermore, the high level of information seeking behavior observed in this study may be attributed to the motivational and interactive nature of educational games. According to Hamari et al. (2014), gamification elements such as rewards, feedback, and challenges increase learners' motivation and engagement, which in turn encourages active information seeking. When pupils are motivated, they are more likely to explore, ask questions, and seek out additional information to achieve game objectives. In addition, this finding supports the constructivist perspective of learning, which posits that learners actively construct knowledge through interaction and experience (Piaget, 1972; Vygotsky, 1978). Educational games create opportunities for such interaction, enabling pupils to engage with information in meaningful ways. Through gameplay, pupils are required to make decisions, solve problems, and reflect on outcomes, all of which contribute to improved information seeking behavior.

This finding is consistent with previous studies which have shown that educational games improve learners' engagement and cognitive skills, including information processing and problem-solving abilities. For instance, Videnovik et al. (2023) reported that game-based learning environments promote active participation and enhance learners' ability to explore and retrieve information independently. Similarly, Yang, Rahimi, and Fulwider (2022) found that learners exposed to educational games demonstrate improved self-directed learning behaviors, including persistence in searching for information and willingness to explore multiple sources. The finding also aligns with the work of Kuhlthau, Maniotes, and Caspari (2015), who emphasized that engaging and interactive learning environments support the development of effective information seeking processes. Educational games provide such environments by guiding learners through structured tasks that require them to identify information needs, search for relevant content, and evaluate outcomes. This process helps pupils develop essential information literacy skills. The result is also in agreement with studies conducted in similar contexts. For example, Atoy et al. (2020) found that increased exposure to digital and interactive learning tools enhances students' online information searching strategies and overall information literacy. Likewise, Neumann (2020) reported that children who engage with digital learning tools develop better skills in navigating information and using digital resources effectively.

Extent to which educational games improve pupils' ability to identify their information needs

The finding of the study revealed that the extent to which educational games improve pupils' ability to identify their information needs is high. This suggests that exposure to educational games enhances pupils' capacity to recognize what they need to know before engaging in learning tasks. Identifying information needs is a foundational aspect of information seeking behavior, and the high extent recorded implies that educational games effectively support this early stage of the information process. One possible reason for the finding may be due to the fact that educational games are goal-oriented. Most games present learners with clear tasks, missions, or problems to solve. To complete these tasks, pupils must first understand what is required, which naturally leads them to identify the information they need. This repeated process strengthens their ability to recognize information gaps.

This finding is in agreement with previous studies which have shown that game-based learning environments promote inquiry, curiosity, and goal-oriented thinking among learners. For instance,

Kuhlthau, Maniotes, and Caspari (2015) emphasized that structured and engaging learning environments help learners recognize gaps in their knowledge and define their information needs clearly. Educational games, by presenting tasks, challenges, and problems, naturally require pupils to think about what information is needed to achieve specific objectives. Similarly, research by Yang, Rahimi, and Fulwider (2022) found that learners exposed to educational games demonstrate improved self-directed learning behaviors, including the ability to ask questions and identify what they need to learn. This aligns with the present finding, as pupils who engage with games are often required to set goals, interpret instructions, and determine the information necessary to progress within the game. The finding also supports the position of Malone and Lepper (1987), who noted that intrinsically motivating learning environments enhance learners' curiosity and desire to explore new knowledge. Educational games, through elements such as challenges, rewards, and progression levels, stimulate curiosity and encourage pupils to actively think about what they want to learn, thereby improving their ability to identify information needs.

Furthermore, this result is consistent with constructivist learning theory, which posits that learners actively construct knowledge through interaction and experience (Piaget, 1972; Vygotsky, 1978). Educational games create opportunities for such interaction by engaging pupils in problem-solving situations where they must determine what information is required to complete tasks. This process helps them develop awareness of their knowledge gaps and the need for additional information. In addition, studies such as Atoy et al. (2020) have shown that interactive learning tools enhance students' information literacy skills, particularly in recognizing when more information is needed and how to approach information tasks. Educational games, by providing immediate feedback and progressive challenges, reinforce this skill by prompting pupils to reflect on their understanding and identify missing information.

Extent to which educational games enhance pupils' ability to locate relevant information sources

The finding of the study revealed that the extent to which educational games enhance pupils' ability to locate relevant information sources is high. This indicates that exposure to educational games improves pupils' skills in identifying where and how to obtain the information needed for their academic tasks. Locating relevant information sources is a critical component of information seeking behavior, and the high extent recorded suggests that educational games effectively support the development of this skill among primary school children. The result can also be explained from a constructivist perspective, which emphasizes active learning and knowledge construction through experience (Piaget, 1972; Vygotsky, 1978). Educational games provide interactive environments where pupils learn by doing, experimenting, and exploring. Through repeated exposure to such environments, pupils become more skilled in identifying and accessing relevant information sources. Moreover, the high extent observed may be attributed to the practical and hands-on nature of educational games, which often simulate real-life information seeking scenarios. Pupils are guided to use different tools such as books, digital devices, and peer collaboration, thereby broadening their understanding of available information sources.

This finding is consistent with previous studies which have shown that game-based learning environments promote active exploration and information retrieval skills. For instance, Kuiper, Volman, and Terwel (2019) reported that learners who engage in interactive digital environments demonstrate improved ability to search for and locate information using different sources. Similarly, Atoy et al. (2020) found that exposure to digital and interactive learning tools enhances students' online information searching strategies, including the ability to identify appropriate sources for specific tasks. The result also aligns with the findings of Bilal and Beheshti (2017), who noted that structured and guided learning environments, such as those provided by educational games, help children develop better search strategies and improve their ability to navigate information systems. Educational games often require learners to use multiple sources of information; such as in-game hints, external resources, or teacher guidance which strengthens their ability to identify and utilize relevant information sources.

Furthermore, this finding supports the view of Marchionini (1995), who emphasized that information seeking is an active and iterative process that involves selecting appropriate sources and refining search strategies. Educational games simulate this process by presenting learners with challenges that require them to explore different options, evaluate sources, and retrieve relevant information to achieve specific goals.

In addition, the finding is in line with studies on gamification which suggest that game elements such as tasks, levels, and feedback encourage learners to engage more deeply with learning materials. Hamari et al. (2014) argued that such elements increase motivation and persistence, leading learners to explore various sources of information in order to succeed in game-based tasks. This continuous engagement helps pupils develop confidence and competence in locating information.

Extent to which educational games improve pupils' ability to evaluate information critically

The finding of the study revealed that the extent to which educational games improve pupils' ability to evaluate information critically is high. The finding indicates that educational games contribute to the development of pupils' critical thinking skills, particularly in assessing the accuracy, relevance, and usefulness of information. Critical evaluation is a higher-order component of information seeking behavior, and the high extent observed suggests that educational games effectively support this advanced cognitive skill among primary school children. The motivational aspects of educational games may contribute to this outcome. According to Hamari et al. (2014), gamified learning environments increase learners' engagement and persistence, encouraging them to spend more time analyzing and understanding information. As pupils interact with game content, they are more likely to question, verify, and compare information, leading to improved critical evaluation skills. Moreover, the immediate feedback provided in educational games plays a crucial role in enhancing evaluation skills. When pupils receive instant responses to their choices, they can quickly identify errors and learn to differentiate between accurate and inaccurate information. This reinforces their ability to critically assess information in future tasks.

This finding is consistent with previous studies which have shown that game-based learning enhances learners' analytical and evaluative abilities. For instance, Connolly et al. (2012) reported that digital games have positive effects on cognitive outcomes, including critical thinking and problem-solving skills. Similarly, Qian and Clark (2016) found that game-based learning environments promote higher-order thinking skills, enabling learners to analyze information, compare alternatives, and make informed decisions. The result also aligns with the findings of Gee (2007), who emphasized that well-designed educational games engage learners in complex problem-solving processes that require them to test ideas, evaluate outcomes, and refine their understanding. Through these processes, pupils learn to question information, assess its credibility, and determine its relevance to specific tasks. This supports the present finding that educational games enhance pupils' ability to evaluate information critically.

Furthermore, this finding agrees with studies on information literacy which suggest that interactive and engaging learning environments improve learners' ability to judge the quality of information. For example, Julien and Barker (2009) noted that active learning strategies, including game-based approaches, help learners develop skills in evaluating sources and identifying reliable information. Educational games often incorporate scenarios where pupils must distinguish between correct and incorrect options, thereby strengthening their evaluative skills. In addition, the finding is supported by constructivist learning theory, which posits that learners develop knowledge through active engagement and reflection (Piaget, 1972; Vygotsky, 1978). Educational games provide opportunities for such engagement by presenting challenges that require pupils to think critically, make decisions, and reflect on feedback. This iterative process helps pupils refine their ability to evaluate information effectively.

Conclusion

This study examined the effectiveness of educational games in enhancing information seeking behavior among primary school children in Nsukka Education Authority. The findings revealed that educational games are actively used in teaching, although predominantly in traditional and non-digital forms such as board games, card games, quizzes, role-playing, and reward-based activities. Despite the limited use of computer-based and online games, these instructional strategies have proven to be effective in supporting pupils' learning. The study further established that the level of information seeking behavior among pupils after exposure to educational games is high. This indicates that educational games significantly contribute to improving pupils' ability to engage actively in the process of identifying, locating, evaluating, and using information. Specifically, the findings showed that educational games enhance pupils' ability to identify

their information needs, locate relevant information sources, and evaluate information critically to a high extent.

These results suggest that educational games create interactive, engaging, and learner-centered environments that promote curiosity, motivation, and critical thinking among pupils. Through structured tasks, feedback mechanisms, and problem-solving activities, pupils are encouraged to actively participate in their learning and develop essential information literacy skills. In conclusion therefore, educational games are effective tools for enhancing information seeking behavior among primary school children. However, there is a need to improve the integration of digital educational games in classrooms through better ICT infrastructure, teacher training, and access to learning technologies. This will further strengthen pupils' competencies and prepare them for information-rich learning environments in the modern world.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Teachers should increase the use of educational games in classroom instruction, as they have been shown to significantly enhance pupils' information seeking behavior, including their ability to identify, locate, and evaluate information.
2. School administrators should encourage the integration of both traditional and digital educational games into the curriculum to create more engaging and interactive learning environments for pupils.
3. Government and educational stakeholders should provide adequate ICT infrastructure such as computers, tablets, and internet access in primary schools to support the use of computer-based and online educational games.
4. Training and professional development programmes should be organized for teachers to equip them with the necessary skills to effectively design and use educational games, especially digital and technology-driven ones.
5. Curriculum planners should incorporate game-based learning strategies into the primary school curriculum to promote active learning and the development of information literacy skills among pupils.
6. Teachers should adopt gamification techniques such as rewards, points, badges, and competitions to motivate pupils and sustain their interest in learning activities.
7. Schools should promote collaborative learning through group-based educational games, which can enhance peer interaction and improve pupils' ability to share and seek information.
8. Parents should be encouraged to support the use of educational games at home by providing access to appropriate learning games that can further reinforce pupils' information seeking skills.

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