

Gamification, Reading Comprehension and Vocabulary Acquisition among Young Learners of Developing Nations: Nigeria in Focus

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ABSTRACT

There are a number of learning inadequacies among young learners that can be addressed using gamification. These include poor reading comprehension and vocabulary acquisition, lack of reinforcement, insufficient reading resources, and incompetent teachers. This study considers gamification as being capable of addressing learning inadequacies among young learners in Nigeria and other developing nations. It explores the impact of gamification on reading and vocabulary acquisition among young learners. Gackenbach's Game-Based Learning Theory and Guskey's Teacher Professional Development Theory are adopted, because they both justify the thematic concerns of the study. Correlational survey design and exploratory mixed-methods are employed. Online questionnaire and observation were relied on for primary data. Statistical and descriptive tools like figures, simple percentage, Likert 5-scale coding, interpretive devices and analytic description are used. Three major results are established. First, gamification has the capacity to address learning inadequacies and improve learning among pupils. Next, its effectiveness in addressing learning issues obtains at a high extent. And, gamification exerts significant positive impact on learning among pupils. The study concludes that gamification is a technology-based strategy for addressing pressing learning challenges, increasing learning outcomes, and rousing pupils' interests and performance in reading, vocabulary acquisition and learning as whole. It charges teachers to leverage gamification and other allied technological mechanisms for teaching. The needed resources and expertise for effective use

of gamification should be provided by government and other concerned stakeholders. Interdisciplinary and stakeholder collaboration, community engagement, and increased awareness campaign are also recommended.

Keywords : Gamification, Reading comprehension, Vocabulary acquisition, Young learners, Developing Nations

Introduction

Learning inadequacies among pupils and students continue to raise concerns among stakeholders of various nations. Poor reading comprehension and vocabulary acquisition are perennial problems threatening students' academic performance and limiting their ideal contributions to national development (UNESCO, 2019). As the Organization for Economic Co-operation and Development (OECD) (2019) notes, reading comprehension is a critical skill for success in school and beyond. The World Bank (2018) indicates that Nigerian students struggle to read and comprehend complex texts, leading to poor academic outcomes and limited opportunities. Also, research has shown that students with poor vocabulary skills often struggle to comprehend texts, leading to a vicious cycle of poor reading habits and limited academic success (Nwode, 2022; Gotau & Robert, 2015). The effects of poor reading comprehension and vocabulary acquisition extend beyond the classroom, hindering national development and economic growth (Gotau, 2015; Gotau & Robert, 2015).

In developing nations like Nigeria, low literacy rates and poor reading skills have been linked to poverty, inequality, and social exclusion (Robert & Besong, 2023). It follows that poor skills and performance in reading comprehension obviously affects learners in and outside the school setting. The decried situations imply that a lot has to be done to improve Nigerian students' reading and comprehension capabilities and increase their academic outcomes. Learning technologies can be leveraged for the attainment of improved learning and performance, effective teaching and school management, and automated, optimized and data-driven school systems (Oluwamayomikun & Oparaku, 2022; Okpeseyi, 2022; Shawana, 2022). Gamification is an innovative technology-based approach to teaching and learning. It is one of the viable means of addressing the decried situations confronting learners in Nigeria and other developing nations.

Gamification is one of the ways through which the inadequacies can be addressed significantly. The act of using game design elements in non-game contexts is regarded as gamification (Deterding et al., 2011). It is increasingly recognized as a promising approach to improving learning outcomes (Godwin-Jones, 2014; Kapp, 2012; Gee, 2007 & 2003). This study proposes the significant deployment of gamification to address the decried issues across Nigerian schools, particularly those of the lower level(s) of education. This study is motivated by the desire to increase awareness about benefits of gamification, which include increasing engagement, motivation, and enjoyment in learning reading comprehension and vocabulary acquisition (TeachHub, 2021; TeachThought, 2021; Chou, 2015; Burke, 2014; Muntean, 2011). It is also intended to propel increased adoption of gamification for teaching.

Problem Statement

The problems of insufficient reading gadgets, incompetent teachers, lack of reinforcement and poor reading comprehension and vocabulary acquisition, which adversely affect young learners in Nigeria and other developing nations, require more significant attention and solutions. The aforementioned problems informed this study. The research seeks to contribute to addressing the stated problems confronting young learners of developing nations like Nigeria. As the study proves gamification to be a viable mechanism for improving reading comprehension and vocabulary acquisition among young learners, improved learning and innovations would be attained in the education sector of developing as well as developed nations. Also, by so doing, learners would become more interested in reading and knowledge acquisition, and get equipped with the skills needed for using technologies for practical learning purposes and for the maintenance good health. These would enable them contribute significantly to national development and duly fit into the contemporary society of digitalization and globalization within and outside their nations.

Aim and Objectives

The aim of this study is to examine the impact of gamification on young learners' reading comprehension and vocabulary acquisition. Its specific objectives are to:

- (i) Establish the capacity of gamification to address issues of poor reading comprehension and vocabulary acquisition among young learners of developing nations, as in Nigeria;
- (ii) Determine the effectiveness of gamification in addressing the challenges of reading comprehension and vocabulary acquisition among young learners;
- (iii) Explore the impact of gamification on young learners' reading comprehension and vocabulary acquisition.

Hypotheses

The following alternative hypotheses are designed to guide the study:

Ha1: Gamification has the capacity to address issues of reading comprehension and vocabulary acquisition among young learners of developing nations, as in Nigeria.

Ha2: The effectiveness of gamification in addressing the challenges of reading comprehension and vocabulary acquisition among young learners obtains at a high extent.

Ha3: Gamification can positively impact young learners' reading comprehension and vocabulary acquisition at a significant extent.

Novelty and Contributions

The impact of this study cannot be overemphasized. This is in view of its educational, social and technological benefits that are of national and international interest in general and national relevance in particular. The study is a promising one that presents several innovations, interdisciplinary opportunities, and pedagogic, technological and policy implications. By introducing young learners of Nigeria and other developing nations to gamification, the study is remarkable for advancing the exposure of children to technological innovations that offer intellectual and physiological benefits to the pupils. With gamification, improved learning and easy teaching are attained. Reading culture gets cultivated. The study exerts significant impact on physical and health education. This serves as a pathway to good health among the young learners.

Apart from the above, the study is innovative and contributive, because it offers stakeholders valuable insights into the pragmatic means of attaining improved and quality learning, and result-oriented practical teaching approach. It also presents new ways of engaging in and understanding child education, and upholds

sustainability that would help address the issues at stake. Innovations arising from the sustainable adoption of gamification would impact on both pupils and teachers socially, technologically and economically. And, the technical skills gained would become avenues for economic exploits.

Conceptual Spadework

Gamification refers to the use of game and mechanics for teaching and learning purposes, with a view to enhancing engagement, motivation, and learning in a non-game context (OECD, 2020; UNESCO, 2020; Hamari et al., 2014). This definition highlights the point that gamification is a mechanism for making learners become more engaged in or committed to learning. As their interest is roused by the game, they get motivated and committed to learning. Thus, learning outcomes increase, or are realized as expected. The overall goal of gamification is to increase learners' interest in learning activities and their comprehension of pedagogic contents through physical engagement and systematic motivation.

It is important to describe reading before moving on to reading comprehension. Reading is variously described, though seemingly alike. Only several of the many definitions are presented. Mafarja et al. (2023) describes reading as an interactive process in which readers engage with the text while drawing on their existing knowledge. They aver that this definition of reading, which they consider new, most closely matches with reciprocal teaching. By drawing on prior knowledge, readers can discover new facts, fundamental concepts, and points of contention. Most importantly, readers create meaning from the text by paralleling, contrasting, or affirming what the author suggests. This is a structure that all excellent readers employ. Otherwise, the text would just be a bunch of random letters on the page. Learning cannot take place if meaning is not constructed.

For Ukpai (2022), reading is a life-long activity, which offers pleasure and satisfaction to those who read print or textual information resources of any kind. She adds that reading is the ability to recognize and comprehend graphic codes and symbols occurring individually or in groups. Also, Richards and Schmidt (2010) see reading as the process by which the meaning of a written text is understood. The process includes discovering meaning from written text in a social atmosphere through bottom-up (text-driven) processing and top-down (conceptually-driven) processing using strategies and skills (Gebhard, 2006). Reading can also be described as the process of recognizing printed or written symbols and comprehending the meanings of what the writer had encoded in the course of communicating in written form. The past experiences of readers influence as well as determine their comprehension of the writer's conveyed message(s). In the course of reading, alphabetical symbols are translated into a form of language from which the native speaker has already derived meaning.

Reading comprehension refers to the process of constructing meaning from written texts (Grabe, 2017). As one reads, comprehension is the determinant of what is read. If learners do not understand the pedagogic contents they read, they cannot give any meaningful feedback. When they are to give the feedback in test or examination context, their academic performance is bound to be low. The definition tallies with those of many other sources. UNESCO (2019) and The World Bank (2018) are two of the many sources offering a similar definition of the concept of reading comprehension. For UNESCO (2019), reading comprehension is the process of making out meaning from written materials having linguistic, cognitive, and socio-cultural knowledge that the reader has to co-ordinate accordingly. To the World Bank (2018), reading comprehension refers to the capacity to understand and interpret the contents or embodied messages of textual materials, such that the writer's intentions or encoded messages are recognized, understood and interpreted. Clearly, the two definitions tally and reflect that of Grabe (2017) above.

In the process of learning, vocabulary acquisition takes place. The concept of vocabulary acquisition describes the process of learning and acquiring new words, along with their meanings and uses, which aid comprehension (OECD, 2020; UNESCO, 2019; Nation, 2013). This definition underscores the need for gamification, since young learners are bound to learn and acquire new words when they engage in gamification. Since there are learners or students of different tiers of education, this study focuses on those of primary and nursery tiers of education. They are called pupils, while those of the other tiers are called students. Young learners of nursery and primary schools are children of between 6 and 11 years of age or above, who are enrolled in the primary school education (Oluwamayomikun & Oparaku, 2022; UNICEF, 2020; Federal Ministry of Education, 2019). At the primary school, these young learners are prepared academically for the future (The World Bank, 2018). This is where foundational skills and knowledge are acquired.

Theoretical Framework

The study is anchored on Gackenbach's (2008) Game-Based Learning Theory (GBLT) and Guskey's (2002) Teacher Professional Development Theory (TPDT). GBLT postulates that games can enhance learning and engagement. By its postulation, GBLT justifies both the objectives and the claims of this study. It is in view of the realization of the theorized views of GBLT that this study advocates the adoption of gamification for a more meaningful and practical learning among pupils of developing nations, particularly those in Nigeria. Next, the study considers the Guskey's (2002) Teacher Professional Development Theory (TPDT) as a supplement to the GBLT, because of its postulations. TPDT postulates that effective teacher development enhances teaching practices and student learning. Also, the teacher is significantly involved significantly in gamification as a pathway to effective teaching and learning, the TPDT is adopted to supplement the GBLT.

For this study, gamification is beneficial to both the teacher and the learner. As teachers teach learners gamification, they harness the benefits of gamification, just as the learners do. In the course of engaging in gamification, the teacher attains professional development in that regard, while the learner also harnesses the prospects of gamification. Basically, TPDT teaches that teachers have to get developed professionally in order to be capable of carrying out their professional responsibilities as supposed. As such, for gamification to be a significant feat in the teaching of young learners, teachers need to be well trained and developed in the practice.

Related Studies

Related studies on gamification in education abound in the literature, which affirm the potential of gamification to enhance learning outcomes, engagement and motivation. The particularized direction of the current study is the exploration of the impact of gamification on reading comprehension and vocabulary acquisition. These three activities are explored using integrative and interdisciplinary approaches. Accordingly, Gee (2003) has shown that gamification has the potential of enhancing learning outcomes and increasing engagement and motivation. Being result-oriented, it is necessary to adopt it for teaching and learning in Nigerian and other developing nations' schools, nursery and primary schools in particular. Prensky (2001) demonstrates that gamification is an innovative digital means of pursuing and attaining improved learning as well as teaching, especially at the elementary level of education. As such, there is need to exploit gamification in order to attain the innovations it offers or has in vogue.

Nation (2013) rightly indicates that school teachers need professional trainings for the requisite skills needed to attain effective gamification. This point highlights the need for training and retraining of teachers to be able to experiment with gamification in the classroom. Studies confirm the potential of gamification to improve

reading comprehension and vocabulary acquisition (Dindar et al., 2021; Edutopia, 2020). Thus, the need for this study cannot be over-emphasized, as it is of great benefit to both teachers and pupils in several regards. Recent studies have reinforced these findings, demonstrating the effectiveness of gamification in language learning (Azar & Tan, 2020; Garcia-Sanchez et al., 2020; ELT Learning Journeys, 2019; Abrams & Walsh, 2014), mathematics (Alvarez et al., 2020) and many other areas of sciences. On their part, Wang and Chen (2019) and Al-Mohammadi (2020) share the view that gamification is an inclusive education approach that can cater for diverse linguistic backgrounds and learning needs.

When teachers deploy gamification to teaching, (young) learners benefit greatly from it. They become more interested in the academic tasks involving gamification, including reading comprehension and vocabulary acquisition. They get familiarized with various aspects of the learning processes, including putting to practical realization the meanings of concepts and theoretical postulations typified by gamification resources. These could be aspects of cultural dynamism, language, communication, information, technology, media, entertainment, knowledge and literature (Miller, 2014). To make pupils become interested in reading, there should be: opportunities for choice, social interactions; a bookish environment; reading sensitization; incentives for reading; motivation programs; availability of many books; and using clear reading approach like critical literacy and critical pedagogy. One of the ways of achieving the foregoing is by reviewing the curriculum and making it comprehensive, innovative, inclusive, technology-driven, and problem-solving (Oluwamayomikun & Oparaku, 2023).

There are different approaches to teaching literacy, which include social construction of language and literacy; basic skills approach; whole language approach; text multimodality, and multiliteracies approach; and a balanced approach (Ukpai, 2022). Literacy provides individuals with clear knowledge of happenings in society and how they can contribute to the growth and sustainable development of the society. The different categories of literacy are information literacy, critical literacy, civic literacy, digital literacy, media literacy, cultural literacy, financial literacy, scientific literacy and technological literacy (Nwode & Danjuma, 2023). The interest of pupils in literacy can be roused through reading of novels, short stories, magazines, watching of films, and so on. In undertaking these activities, they have to be guided by teachers

Similarly, Mafarja et al. (2023) investigate the impact of reciprocal teaching on learners' academic performance and demonstrate that reciprocal teaching improves learners' reading, comprehension and academic achievement; develops a positive impact in learners' understanding; and enhances cooperative learning, communication, meta-cognition, teaching skills. In the context of the present study, the overall implication of the findings gamification and other reciprocal teaching strategies are effective, result-oriented and problem-solving. The study by Charles et al. (2023) empirically examines effect of reciprocal peer tutoring on primary school pupils' reading comprehension achievement in Awka South Local Government Area, Anambra State, Nigeria. The results show higher academic achievement among pupils taught using reciprocity strategies, but there was no significant difference in the reading comprehension levels of male and female pupils. Thus, there is need to leverage gamification and other productive teaching strategies that promote reciprocal teaching practices.

In their empirical study English Studies S1 students' awareness of reading comprehension strategies and performance, El Malihi and Brigui (2023) reveal that comprehension in English Studies is difficult for Moroccan students, because of low or non-awareness of reading comprehension strategies that could help them to understand English texts efficiently. The study concludes that students' level of awareness of reading comprehension strategies determines their scores in reading comprehension tasks. It charges teachers to teach

and familiarize students with result-oriented strategies for surmounting the challenges faced in reading comprehension. The study tallies significantly with the present study in terms of its engagement with reading comprehension.

Clearly, the above literatures, among others, lend credence to the stance of this study. They differ significantly in their thematic engagements. Only a few of them engage with gamification, though from different angles other than of the present study. The present study takes an integrative approach to engaging with gamification, focusing the impact of gamification on reading comprehension and vocabulary acquisition among young learners in Nigeria and other developing nations. Therefore, the present study is novel by virtue of its specific objectives and preoccupations.

Research Methodology

In line with the nature and the preoccupation of the study, correlational survey design and mixed-methods are employed. Both primary and secondary data sources were relied on. Semi-structured questionnaire and participant and non-participant observation are the primary data sources relied on. The online questionnaire was posted on 2 social media groups, 1 each of WhatsApp and Facebook. From each of the 2 large groups, 200 responses were obtained. Thus, a total of 400 responses were obtained and used for the data presentation and analysis.

Stratified and representative sampling and pragmatic strategies for context-based communication were used in the data collection procedures. The gathered data were subjected to content and thematic analyses, using interpretive devices, figures, frequency, simple percentage, analytic description, and Likert 5-scale coding. The scale entails 5-reponse options to the questionnaire questions that are based on the research objectives and hypotheses. These are Strongly Agreed (SA), Agreed (A), Neutral (N), Strongly Disagreed (SD), and Agreed (A).

Data Presentation and Analysis

Table 1 : Gamification has the capacity to address issues of reading comprehension and vocabulary acquisition among young learners of developing nations, as in Nigeria.

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agreed	104	26.0	26.0	26.0
Agreed	91	22.8	22.8	48.8
Neutral	74	18.5	18.5	67.3
Strongly Disagreed	96	24.0	24.0	91.3
Agreed	35	8.8	8.8	100.0
Total	400	100.0	100.0	

Source: Authors’ Field Survey, 2023

The Table 1 above shows that 104 (26.0%) respondents strongly agreed; 91 (22.8%) agreed; 74 (18.5%) of them ticked the ‘neutral’ option; 96 (24.0) respondents strongly disagreed; and 35 (8.8%) disagreed. This implies that most of the respondents confirmed that gamification has the capacity to address issues of reading comprehension and vocabulary acquisition among young learners of developing nations, as in Nigeria. This finding is affirmed by Arufe Giráldez’s et al. (2022) study, which confirms that gamification can influence learners’ academic performance.

Table 2 : The effectiveness of gamification in addressing the challenges of reading comprehension and vocabulary acquisition among young learners obtains at a high extent.

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agreed	84	21.0	21.0	21.0
Agreed	167	41.8	41.8	62.7
Neutral	68	17.0	17.0	79.8
Strongly Disagreed	69	17.3	17.3	97.0
Disagreed	12	3.0	3.0	100.0
Total	400	100.0	100.0	

Source: Authors’ Field Survey, 2023

As evident in Table 2, 84 (21.0%) respondents strongly agreed; 167 (41.8%) agreed; 69 (17.0%) indicated neutral; 69 (17.3%) respondents strongly disagreed; and 12 (3.0) disagreed. Clearly, a larger number of the respondents confirmed that the effectiveness of gamification in addressing the challenges of reading comprehension and vocabulary acquisition among young learners obtains at a high extent. As such, gamification should be leveraged for tangible solutions to learning inadequacies and issues of reading comprehension and vocabulary acquisition among young learners of Nigeria and other developing nations. The above established finding reflects that of Aljraiwi (2019), which confirms the effectiveness of gamification in improving learners’ academic engagement, performance, creative thinking and academic achievements.

Table 3 : Gamification can positively impact young learners’ reading comprehension and vocabulary acquisition at a significant extent.

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agreed	141	35.3	35.3	96.0
Agreed	110	27.5	27.5	40.3
Neutral	82	20.5	20.5	60.8
Strongly Disagreed	51	12.8	12.8	12.8
Disagreed	16	4.0	4.0	100.0
Total	400	100.0	100.0	

Source: Authors’ Field Survey, 2023

The data presented in the Table 3 show that gamification can positively impact young learners’ reading comprehension and vocabulary acquisition at a significant extent. The confirmation is obtained from 141 (35.3%) respondents strongly agreed; 110 (27.5%) agreed; 82 (20.5%) indicated neutral; 51 (12.8%) of them strongly disagreed; and 16 (4.0) disagreed. The results align with those of Razali’s et al. (202) study, which uphold the impact of gamification on student’s intrinsic and extrinsic motivation.

Conclusion

In a bid to offer some solutions to the rising learning inadequacies among young learners in Nigeria and other developing nations by extension, the study identifies and engages with gamification as a mechanism for proffering tangible solutions to the inadequacies. The lingering problems include poor reading comprehension and vocabulary acquisition, lack of reinforcement, lack of reading resources, and incompetent teachers. These

problems motivated the study. The study has evidently shown that gamification has the capacity and the high-level effectiveness to address learning inadequacies, improve learning among pupils, and to exert significant positive impact on learning among pupils.

Indeed, gamification is a technology-based strategy for addressing learning inadequacies among young learners in Nigeria and other developing nations. On the whole, the prospects of gamification include lessening and mitigating learning challenges; increasing learning outcomes; rousing pupils' interests and performance in reading, vocabulary acquisition; and fostering technology integration into childhood education for appreciable pedagogic and physiological benefits.

Recommendations

The recommendations are made:

- ❖ Teachers should leverage gamification and other allied technological mechanisms for effective teaching, which produce high results and solutions.
- ❖ The needed resources and expertise (training for technical-know-how) for effective use of gamification should be provided by government and other concerned stakeholders.
- ❖ Interdisciplinary and stakeholder collaboration, community engagement, and increased awareness campaign are also the panacea.

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