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Research Article

Effect of Game-Based Learning on Reading Comprehension in Language among Preparatory Stage Learners

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Abstract

The present study investigates the effect of the Game-based learning on Reading Comprehension in Language among Preparatory Stage learners. Students were selected randomly through a simple random sampling technique. There were two groups in the Experimental research design: the experimental group and the control group. The sample included of 90 students in 3rd grade who were taken from two separate CBSE schools of Gurdaspur City. 45 students were assigned to the experimental group, while 45 were assigned to the control group. This study used pre and post-test designs to assess the Reading Comprehension in the English language. The collected data was statistically examined using Mean, SD, T-test, and ANOVA. The results of this study demonstrated a positive and significant difference between students who were taught game-based learning and those who were taught the conventional way, which helps to develop the student's reading comprehension very effectively.

KEYWORDS: Game-based learning, English Language, Reading Comprehension & Preparatory stage learners

1. INTRODUCTION

Children are the community's future, and the school is a unique social space where they can get education, training, and personality development. Various teaching strategies, suitable physical space, and a positive psychological environment all assist these children's growth. To improve their performance during the socializing process, students need a healthy environment and role models. The physical layout of schools is one of the key components of education and learning since they are the first institutions to influence students' personalities. Every expert in education and educational psychology of teaching and learning agrees that having a goal, the appropriateness of the physical and social environment of the classroom, the motivation of both teachers and students for teaching and learning, the cognitive, emotional, and motor preparation of the students, the teachers' effective classroom management, their subject-matter expertise, and their enthusiasm for their work and the student's progress are all necessary for effective education. To prevent the development of behavior and nuisance elements, the teacher works to create the ideal learning environment. United Nations Educational, Scientific and Cultural Organization [9] observed that in today's world, education systems must constantly evolve

in order to effectively respond to the rapidly changing demands of the societies they serve. Learning is a continuous process that is frequently connected to education. However, it also results from the interplay between people and the environment in which they work. As a result, it is a continuous, dynamic process that occurs throughout life. The environment in which learning occurs can be defined as a combination of the sociocultural contexts in which an individual lives, as well as the natural conditions, circumstances, and influences. The learning environment consists of all those physical-sensory elements such as lighting, colour, sound, space, furniture and so on that characterise the place in which a student is expected to learn. This surrounding should be designed so that learning may proceed with maximum stress and maximum effectiveness. Thus, it should promote sensory comfort and high auditor and visual acuity; and its dimensions and physical layout should accommodate scheduled activities, allow for people's sense of personal space and promote desirable patterns of social interactions and communications. In addition to supporting human functioning, the learning environment must accommodate the equipment, tools and materials that are used in education and [17]. The atmosphere is unavoidably changed by the introduction of various media, whether it be a computer terminal, chalkboard, or video or film display. Media may be used successfully in ways that are in harmony with fundamental human sensory processes when it is carefully incorporated into the educational setting. However, when media technology adds glare, noise or excessive heat to the learning situation, it vitiates the design of that environment and interferes with those same processes. Learning environment thus depends upon physical facilities and human functioning. The components that make up the learning environment have an impact on the learning curve of the student. These components according to [20] include; people; teaching materials, technical tools, and learning resources; curriculum, training, and instruction, and physical environment/learning space [22].

Learning Environment and Reading Skills

Scholars in the field of English have talked a lot about the importance of the learning environment in helping students succeed. It is known that a learner's degree of language proficiency is significantly influenced by their learning environment. As part of the learning environment, for instance, the contact between students and teachers in a classroom is thought to be crucial in fostering students' success. Building effective learning environments seems to have great impact on students' language development**.** Research showed that many aspects of learning environment can affect motivation, involvement of students in the class, the development of basic life skills and literacy skills [2]. The ability to read, understand, interpret, and decode written language and texts is referred to as reading skills. Reading skills can also include several important components that contribute to the development of general literacy abilities, such as vocabulary, comprehension, fluency, and methods that aid readers in deciphering and understanding texts. Reading is not just an important tool for learning but it is

the basis for all aspects of learning [20]. Without the ability to read, academic success is extremely difficult to attain. Therefore, in order to succeed academically, students must learn to read. This demonstrates the strong correlation between reading proficiency and academic success as well as the vital role that reading plays as a tool for students to live successfully and operate in the complex world of today. Starting reading instruction is a crucial step in the teaching and reading process (learning to read), given the importance of reading and the activities involved. The initial strategy to teaching reading and the content of a beginning reading program are crucial. When a student is first exposed to what the teacher refers to as "reading," it will set the tone for all other reading-related activities. In order to accomplish this, educators should be familiar with the fundamentals of reading for beginning readers as well as the methods they can employ to teach comprehension (reading to learn) and beginning reading (learn to read). In addition, teachers need to understand the nature of the reading process because instructional activities are usually influenced by the nature of what is taught [25]. There are the various components of Reading skills, which helps in effective reading skills. The following areas are:

➢ **Oral Language Comprehension:** Listening to 5 different texts (Comprising 1 sentence, 2 sentences and 3 sentences) and matching the content of each of the texts with the given pictures.

➢ **Phonological Awareness:** The task is based on identifying the initial and final sounds in 12 grade level words

➢ **Decoding Letters:** Reading aloud 100 individual (but repeated) letters and syllables of a particular language presented in the form of a grid.

➢ **Decoding Words:** Reading aloud 50 distinct grade-level words

➢ **Decoding Non-Words:** Reading aloud 50 distinct grade level words

➢ **Picture Matching:** Reading 5 different texts (Comprising 1 sentence, 2 sentences and 3 sentences) and matching the content of each of the texts with the given pictures.

➢ **Oral Reading Fluency (ORF) and Comprehension:** Reading aloud two grade-appropriate short stories and answering questions related to retrieval and inferences.

Game Based Learning and Reading Comprehension

Using both digital and non-digital games to acquire new ideas and abilities is known as game-based learning [8]. Learning and educational outcomes can be significantly enhanced by the use of games in the classroom [1]. "A physical or mental competition conducted according to rules with the participants in direct opposition to each other" is the definition of a game. [26] Games are fun and engaging, and have an intrinsic component that keeps people coming back to play. Game play has been on the increase for both boys and girls, and recent estimates say 99% of boys and 94% of girls engage in interactive gameplay. With such universal 38 background knowledge of gaming, students can relate their gaming experiences to game-based learning activities in the classroom. A method of teaching that uses a form of game play

with predetermined learning objectives is known as game-based learning; it is "designed to balance subject matter with gameplay and the ability of the player to retain and apply said subject matter to the real world." In order to effectively acquire, practice, and apply new knowledge, it integrates a number of learning methodologies. Additionally, it facilitates collaborative learning, fosters engagement and communication, and supports active learning. One of the most distinctive characteristics of game-based learning environments is their tendency to offer efficient and captivating learning experiences [3]. It provides an environment in which students are engaged affectively, cognitively, behavioral and socially [5]. Reading is a key skill in language learning. Reading is one of the most fundamental competencies in modern-day society, and reading proficiency among foundational and preparatory stage learners. "Reading is the cornerstone of all educational systems," according to [16]. At the postsecondary level, reading comprehension is regarded as a significant difficulty that students must overcome, despite its significance in educational contexts. Unfortunately, traditional methods of teaching reading comprehension-such as memorizing the reading passages or translating texts into the learners' local tongue-are still used in many educational settings.

However, higher-order skills, such as analysing and synthesizing reading passages, have not been paid sufficient attention in educational settings [24]. Similarly, it [4] argues that successful reading comprehension demands complex cognitive skills, and, consequently, motivation to make meaning from text. Furthermore, Elleman and Oslund [7] consider that reading comprehension is one of the most complex cognitive activities in which humans engage, making it difficult to teach, measure, and research. To solve this problem, some scholars have proposed the use of 'games' as an effective experimental intervention in developing learners' reading comprehension. Kapp *et al.* [11] stated that the gamification1 of learning is an educational approach that increases learners' interest in English using video games in the classroom. In language classrooms, learners more often than not feel anxious because of peer pressure and affective factors. Additionally, when students make mistakes, they get extremely nervous about receiving criticism and punishment from their teachers. As a result, games help language learners by lowering stress, boosting emotions, and boosting confidence [15][21]. Additionally, games aid in the subconscious development of the target language in learners. Similar to how they learn their first language, students learn the target language indirectly when teachers fully focus on a game as an instructional exercise. Because students actively learn and track their progress in interactive games, this is likely to occur. Games make a unique contribution by providing a meaningful context for learners to apply what they have learned [15][19]. So, games help the learners in reading skills activities like reading comprehension very affectively and precise manner. Then we will discuss the review of related literature.

2. REVIEW OF LITERATURE

An in-depth survey of the related literature is an integral part of any research as it covers all past research done on the selected variables of present research and sets the stage for research. It helps the researcher to get insight into the prior work done and provides the conditions and context for the research problem. It enables the individual not only to get knowledge of the past performance and developments in the concerned area but also enhances the ability of the individual to do contribute in the previous stock of knowledge either by adding something altogether new or developing the old one with a new vision. This part deals with the review of related literature wherein the research studies related to Game based learning and the variables of this study Reading skills like reading comprehension have been presented.

Firstly, study of Karadag [11] to examine pre-service teachers' perceptions on the use of game-based learning in a Primary Reading and Writing Instruction Course. Mixed method research was used in the study. 189 pre-service teachers enrolled in the Primary Reading and Writing Instruction course during the autumn semester of the 2013–2014 school year made up the participants. Following a 12-week training period, semi-structured interviews and a questionnaire were used to gather information about the opinions of preservice teachers. Pre-service teachers had favorable attitudes toward the use of game-based learning scenarios in Primary Reading and Writing Instruction courses, according to the findings of both the qualitative and quantitative data. Then another study of Ismaizam *et al.* [11] to investigated the two research elements: the instruments used and disciplines done by 21 researchers on the game-based learning approach. The results demonstrate that the majority of studies have produced impressive outcomes in the development of the game-based learning approach. In general, game-based learning in education achieves the ideal balance between the student's ability to remember and apply the knowledge in real-world situations and the subject matter and gameplay. Benoit [5] investigated that English language learners (ELLs) in America face huge challenges in middle school. Despite their rapid social language development and cultural assimilation, many English Language Learners nevertheless face academic challenges. Lack of academic vocabulary is one of the reasons ELLs lag behind their counterparts who speak English as their first language. It is possible to acquire vocabulary explicitly through focused and direct instruction as well as implicitly through extensive reading. Effective explicit learning procedures are needed, as research has demonstrated that ELLs do not absorb implicit vocabulary as well. When a game-based curriculum was implemented instead of traditional workbook instruction, this study found no statistically significant difference in academic vocabulary results. Given how common games are among teenagers in today's culture, educators ought to think about incorporating this love of gaming into the classroom to improve student learning and achievement. Another contributive work of Liao *et al.* [16] to study the effects of the game-based writing environment on improving students' participation, performance, and interest in reading. An experiment was conducted to compare the effectiveness of reading skills in language arts at an elementary school. The empirical results show that the game-based reading environment can effectively

promote students' reading participation, reading performance, interest in reading, as well as their perceptions of the use of educational self-management games. Chansanam *et al.* [7] conducted a study on a game-based language learning web application, ELA-TIGA, developed for junior high school students to support their English language self-learning. A waterfall approach, the System Development Life Cycle (SDLC) on the Moodle platform, and a database management system (DBMS) were used in the design of this web application. The Task-Input-Genre-Assessment teaching approach for language acquisition served as the framework for the games and content in the ELA-TIGA app. The findings reveal the teachers' positive feedback about the application's content and instructional design, user interface, and game and interaction design. Additionally, the teachers asserted that a range of games are user-friendly and suitable for the level of English proficiency of their pupils. Another study of Sabbagh, Ghany & Amany [25] investigates the effectiveness of gamification strategies in enhancing English language skills among first-year students in the College of Business Administration at Umm Al Quwain University, United Arab Emirates. The study encompasses a comprehensive assessment of language learning, including speaking, listening, reading, and writing skills, and adopts a dual perspective by considering both teacher and student feedback. The results of the study show that gamification significantly improves English language acquisition. A competitive gaming environment drove a 93% boost in student motivation following the use of gamification. Speaking skills improved by 100%, breaking down barriers to speaking English in public. Listening skills advanced by 86.7% due to diverse daily media within the game, while writing skills improved by 73.3% through daily writing assignments. Additionally, reading skills saw an 80% enhancement, attributed to the inclusion of various articles within the game. Additionally, the gamification strategy made it easier to absorb more vocabulary and material, demonstrating how well it works to create interesting and productive learning environments. The study suggests educating course creators on the advantages of gamification in the classroom through seminars and workshops. Namaghi, Moghaddam & Elahe Rad [20] investigate the effect of interactive games on improving reading comprehension skills and attitudes toward games among Iranian learners of English as a foreign language. In this quantitative study, participants in the experimental group improved their reading skills by playing interactive games, whereas those in the control group got reading comprehension instruction using conventional reading teaching methods. The post-test consisted of a reading comprehension assessment. According to the study's findings, interactive games can significantly enhance student motivation, engagement, and learning outcomes in the classroom. Additionally, the report offers some useful recommendations for additional research.

After reviewing all of the literature, the researcher found that very few studies of Karadag (2015), Ismaiz0am (2016), Benoit (2017), Liao *et al.* (2018), Chansanam (2021), Sabbagh, Ghany & Amany (2023), and Namaghi, Moghaddam & Elahe Rad (2024) have been done on reading skills related to Game-based learning. According to the various studies, after all this literature, we found that the research gaps. Firstly, very few studies were done on reading skills through game-based learning in Indian perspective. Most studies were conducted in foreign perspectives through digital game-based learning. Secondly, most studies were conducted on the secondary and university level not on the foundational and preparatory stage. National Education Policy (2020) places more emphasis on reading and writing skills for Foundational and Preparatory stage learners, which helps to decrease the dropout rates of students.

Statement of the Problem
Effect of Game-Based Learning on Reading Comprehension in Language Among Preparatory Stage Learners

Delimitations of the Study
1. The study was delimited to the Gurdaspur city only.
2. The study was delimited to Urban and Rural (CBSE) schools of Gurdaspur city only.
3. The study was delimited to Preparatory Stage students of 3rd grade only.
4. This study was confined to Reading comprehension in the English language only.

3. OBJECTIVES OF THE STUDY
1. To prepare the Game-Based Learning Lesson Plan for Reading Comprehension in English Language.
2. To study the effect of Game-based learning on Reading Comprehension of 3rd-grade students.
3. To study the difference of Reading Comprehension among 3rd grade students taught through Game-based learning concerning locale.
4. To study the interaction effect of treatment and locale on the gain scores of Reading Comprehension among 3rd-grade students.

Hypotheses of the Study
1. There was no significant difference in the mean gain scores of Reading Comprehension among 3rd-grade students taught through Game-based learning and Conventional learning methods.
2. There was no significant difference in the mean gain scores of Reading Comprehension among 3rd grade students taught through Game-based learning concerning locale.
3. There was no interaction effect of treatment and locale on the mean gain scores of Reading Comprehension among 3rd-grade students.

Tools to be used in the Study
The following tool to be used in the study
- Game-based learning lesson plan was prepared by the investigator
- Reading Comprehension test was prepared by the investigator

Sample
The sample size for this study of 90 students approximately, which were taken from two CBSE schools of Gurdaspur City (45 students from urban and 45 students from rural school) of 3rd grade. The investigator used the Random Sampling technique to select a sample of students for this purpose.

Statistical Analysis
The data was evaluated using the relevant statistical techniques such as Mean, SD, T-test, and ANOVA (Analysis of Variance).

4. RESULTS & DISCUSSIONS

Hypothesis 1: There was no significant difference in the mean gain scores of Reading Comprehension among 3rd-grade students taught through Game-based learning and Conventional learning methods.

Table 1.1*: Showing Mean Gain Score, SD, and t- Value of Experimental and Control Group Concerning Reading Comprehension in the English Language

Group/Method	N	Mean Gain Score	S. D	df	t-Value	Remarks
Experimental Group	45	8.11	2.33			Significant at 0.05 level
Control Group	45	2.24	1.76	88	4.66	

It is evident from Table 1.1 shows that the mean gain scores in Reading Comprehension skills in the English language of the Experimental and Control Group were 8.11 and 2.24 and the value of SD for the two groups was 2.33 and 1.76 respectively. It's further indicated that the t-value of the two groups was 4.66, which was higher than the table value (1.97) at a 0.05 level of confidence. Hence, there was a significant difference between the Experimental group (taught through Game-based learning) and the Control Group (taught through conventional learning method) on their Reading Comprehension skill in the English language. Thus, our Null Hypothesis "There was no significant difference in the mean gain scores of Reading Comprehension among 3rd-grade students taught through Game-based learning and Conventional learning method" was rejected.

Hypothesis 2: There was no significant difference in the mean gain scores of Reading Comprehension among 3rd-grade students taught through Game-based learning with respect to locale.

Table 1.2: Showing Mean Gain Score, SD, And t- t-Value of Experimental And Control Group Of Reading Comprehension With Respect To Locale

Variable	Gender	N	Mean Gain Score	SD	t-value	Remarks
Reading Comprehension Skill	Urban	48	5.29	3.78	2.56	Significant at 0.05 level
	Rural	42	5.71	3.09		

From Table 1.2, it is found that the mean gain score of urban school students 5.29 and the rural school students were 5.71. It

was found that the t-value was 2.56, which was greater than the table value (1.97) at a 0.05 level of confidence. So, our Null Hypothesis *"There was no significant difference in the mean gain scores of Reading Comprehension among 3rd-grade students taught through Game-based learning with respect to locale" was rejected*." As a result, there was a considerable variation in the Reading Comprehension Skill of urban and rural school students. Because the mean gain scores of rural school students were higher than the urban school students, which was taught through Game-based learning. It can be concluded that rural students performed better through Game-based learning. According to Kumar & Kaur (2015), a study exposed that rural students performed better through innovative pedagogical methods rather than urban students. The main reason is that rural students have sharp minds and they enjoy everything, which helps to learn easily through environmental and innovative pedagogical methods very effectively.

Hypothesis 3: There was no interaction effect of treatment and locale on the mean gain scores of Reading Comprehension among 3rd-grade students.

Table 1.3: Showing Summary Table of Two-Way Anova of Treatment and Locale on Reading Comprehension in English Language

	Sum of Squares	df	Mean Sun of Squares	F	Significance
Locale (A)	405.28	1	202.28	3.87	.000
Treatment (B)	102.206	1	169.565	654.660	.000
Locale * Treatment (AxB)	15.12	1	43.111	4.280	.002
Error	1946.464	87	22.231		
Total	2469.041	90			

From table 1.3 also reveals that f-value for the interaction effect of Locale and Treatment on Reading Comprehension skill of students were .002, which was significant at 0.05 level of confidence. The strong interaction effect suggests that locale and treatment (taught through Game based learning) have major impact on the Reading comprehension Skill of students. Thus, our Null Hypothesis, *"There was no interaction effect of treatment and locale on the mean gain scores of Reading Comprehension among 3rd-grade students" was rejected.*

5. DISCUSSION OF FINDINGS
The study's findings indicate a positive and significant difference between students exposed to Game-based learning and those exposed to conventional learning methods. So, game-based learning has a positive and significant effect on the Reading Comprehension skill of preparatory-stage students. In this study, results show that rural school students gained higher reading comprehension skills than urban school students, which was taught through the Game based learning. According to Kumar & Kaur [15] study exposed that rural students performed better through innovative pedagogical methods rather than urban

students. The main reason is that rural students have sharp minded and they enjoyed everything, which helps to learn easily through environmental and innovative pedagogical methods very effectively. Games help teachers and students think beyond what is taught in textbooks, develop new concepts, strengthen social skills, and lay the groundwork for automatic learning. They allow for increasing involvement of students. They help overcome significant deficits and challenges of traditional teaching methods.

Educational Implications of the Study
The following are some of the educational implications of the study:

(1) The well-scheduled material of the reading activities that were based on gamification is one of the potential key reasons, and it is aimed at boosting learners' success in reading comprehension. The core curriculum had a particular step that guided the instructor as well as the learners through the processes of completing each particular lesson's processes and achieving the lesson's results. Therefore, the well-planned exercises of gamification had a favourable impact on learners' ability to comprehend what they read.

(2) In addition, gamification played a significant part in the process of shaping learners' behaviors by motivating them to participate in the class with a higher passion and desperate desire and concentrate on beneficial educational activities. Because of the advantages offered by gamification, the learners were motivated to take charge of their own education and, as a result, achieved greater performance and productivity.

(3) In addition, the teaching approach was largely responsible for the significant improvement in the students' levels of reading comprehension. It was created to take into account both the learners' skill level and the degree of difficulty presented by the activities themselves to motivate participants to engage in these gamified assignments. To clarify, the educational program consisted of a variety of various exercises and tasks. The difficulty of these tasks ranged from simple (literal level) to moderate (inferential level) to difficult (critical level), beginning with the easiest (literal level) and working its way up to the most difficult (critical level). The variety of questions used in reading comprehension sessions was encouraged by the differences in reading comprehension levels of difficulty. Because of this feature, kids from different grade levels were able to actively participate in the gamified exercises.

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