



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A STUDY ON APPLICATIONS OF EDUCATIONAL GAMES TO ENHANCE STUDENTS LEARNING IN COIMBATORE CITY

Dr. P. SUGANYA. M.Com., M. Phil., PGDCA., SET., Ph.D.

Associate Professor & HOD

DEPARTMENT OF COMMERCE WITH COMPUTER APPLICATIONS

Dr. N.G.P. ARTS AND SCIENCE COLLEGE COIMBATORE-48

Mr. S.B VETRIVEL

DEPARTMENT OF COMMERCE WITH COMPUTER APPLICATIONS

Dr.N.G.P. ARTS AND SCIENCE COLLEGE COIMBATORE-48

ABSTRACT

While educational games have been increasingly popular in education, insufficient studies have comprehensively reviewed their effectiveness. To complement this missing link, this study explored game-based learning outcomes including academic achievements, problem-solving, and critical thinking abilities, knowledge, learning efficiency, skills, student attitudes, and behaviours. Both negative and positive effects of educational games on motivation were also explored based on comprehensive literature analysis. The role of engagement in game-based learning was studied, coupled with the ways to enhance student engagement. We also explored the importance of gamified components in student satisfaction and provided constructive suggestions for designers and practitioners. Future research should highlight learning analytics and data mining techniques of educational game-based learning and try to find solutions to address various problems to improve the effectiveness of educational games.

KEYWORDS

Educational games, Game-based learning, Effectiveness, Critical thinking abilities, Knowledge acquisition, Student attitudes.

1.1 INTRODUCTION OF THE STUDY

In recent years, gamification in education has drawn a lot of attention. While educational gamification refers to a teaching approach where students are required to compete by current rules, gamification as a technique is defined as "the practice of using game design elements, game mechanics, and game thinking in non-game activities to motivate participants." In recent years, it has become a widely used interdisciplinary teaching tool among educators. Because technology is developing so quickly, students might anticipate that lecturers and teachers will use this tool in their classes.

Its benefits include but are not limited to, learning in an immersive, interactive, and experimental setting. In particular, students can use these educational games to practice making decisions and solving problems in a dynamic learning environment. Additionally, as opposed to receiving feedback later on from typical evaluation methods, students can obtain answers and feedback right now. Furthermore, since students can study or learn whenever and wherever they choose thanks to portable devices, some forms of educational gamification may also aid in reducing boundaries related to time and place of learning. These easily navigable resources can help make complex subjects simpler to comprehend and commit to memory. Put another way, the usage of educational games is thought to make learning more engaging and exciting. It also helps with knowledge retention, attention span, peer communication, and social skills.

E-learning through mobile game applications is associated with game-based learning. Applications that leverage mobile game aspects akin to video games to create immersive and captivating learning experiences with certain objectives have been referred to as educational games. These games provide tasks, encourage various degrees of communication, offer entertaining multimedia, and give quick feedback. Allowing players to use the gameplay to accomplish certain objectives would increase their motivation to play the game because following the rules will make them feel better after completing the task. The perspective needed for games to achieve their full potential is as follows: affective, cognitive, socio-cultural, and motivational. All these views need to be considered, with special emphasis depending on the purpose and design of the learning method as well as the game itself.

1.2 STATEMENT OF PROBLEM

The project aims to address the multifaceted challenges hindering the effective integration and utilization of educational games in learning environments. These challenges include the lack of comprehensive research on their impact, limited understanding of pedagogical integration strategies, difficulties in assessing their efficacy, disparities in equitable access, and concerns regarding their long-term sustainability. To overcome these obstacles, the project seeks to conduct rigorous research, provide professional development for educators, develop appropriate assessment tools, promote equitable access to gaming resources, and conduct ongoing evaluations to assess effectiveness and sustainability.

1.3 OBJECTIVES

- 1) To Study the potential factors influencing the efficiency of educational games.
- 2) To Identify gaming-acquired skills and assess their real-world Applicability.

1.4 LIMITATIONS OF THE STUDY

- 1) The study is combined with the respondents of the Coimbatore district only.
- 2) The period of the study is limited to 6 months only.
- 3) The sample size was constrained to 120 Respondents
- 4) The survey is based on student's opinion only.

1.5 SCOPE OF THE STUDY

The scope of this study encompasses exploring how students are motivated to use educational games, understanding students' perspectives on these games, and identifying the factors that influence their usage behaviour. Specifically, it focuses on investigating the factors that shape the usage behaviour of games among student groups, providing insights into the dynamics of game utilization within educational settings.

1.6 RESEARCH METHODOLOGY

Research methodology is a set of techniques for collecting and analyzing data to gain new knowledge. This study will use a descriptive research design and a sample size of 120 respondents in Coimbatore city. The research involved the collection of data through two methods namely Primary Data and Secondary Data. Primary data are fresh data collected directly from schools and college students using the questionnaire. The questionnaire helps to recognize the Respondents' perceptions regarding the Educational Games of the respondents and to find out their expectations and improvement methods on the products. Secondary data are collected from books, internet, various journals, magazines, etc. In addition to the oral interview, the researcher used a self-made questionnaire for this study, the researcher used a convenience sampling technique. 120 respondents were gathered for this investigation. The investigation was conducted in a minimum period. To transfer the obtained data into master sheets, they were categorized and given codes. The data was coded before being tallied, examined, and analyzed. The study employed statistical tools, namely the Ranking Analysis, and Chi-Square Analysis.

1.6 ANALYSIS AND INTERPRETATION

1.6.1 RANKING ANALYSIS

Ranking analysis is a useful tool for evaluating and contrasting the effectiveness, importance, or applicability of different items or variables in various settings. The average rank is determined using the information provided by the respondents; the highest mean score receives the greatest rank, while the lowest mean score receives the least rank. Consequently, "the higher the priority, the higher the mean score." The table presents the results together with a suitable explanation.

TABLE SHOWING THE RANK FOR THE INFLUENCE OF THE EDUCATIONAL GAMES

ASPECTS	1	2	3	4	5	6	7	8	TOTAL	RANK
The measures of player's involvement	28	30	27	20	43	16	24	28	216	5
Ability to remember Learned material	37	13	24	25	21	32	29	39	220	2
Degree of pleasure or satisfaction experienced	21	36	25	27	21	32	22	26	210	8
Level of interaction within the game	18	21	47	30	27	21	23	32	219	3
Achievements related to educational goals.	30	27	17	26	29	25	37	23	214	6
Factors driving player's engagement	50	35	36	18	26	25	23	11	224	1
Procedures that direct game advancement	16	20	30	34	28	31	32	27	218	4
How long do players	42	33	17	20	27	27	25	22	213	7

engage with the game?										
-----------------------	--	--	--	--	--	--	--	--	--	--

Source: Primary Data.

INTERPRETATION

The above table shows that “Factors driving player engagement show first rank”, “Ability to remember Learned material shows second rank”, “Level of interaction within the game shows third rank”, “Procedures that direct game advancement rank shows fourth rank”, “The measure of player’s involvement shows fifth rank”, “Achievements related to educational goals shows sixth rank”, “How long do players engage with the game shows seventh rank” and “Degree of pleasure or satisfaction experienced shows eighth rank”.

INFERENCE

The Survey revealed that the majority of Factors driving player engagement and the ability to remember the learned material hold the highest frequency among the listed aspects, indicating their significant impact on individuals

1.6.2 CHI-SQUARE ANALYSIS

A chi-square test is a statistical test used to compare actual outcomes with predictions. This test aims to ascertain whether the difference between observed and expected data results from random variation or a relationship between the variables you are researching.

Null Hypothesis (H₀): There is no significant association between gender and the Specific skills of the respondents.

Alternative Hypothesis (H₁): There is a close significant association between Gender and Specific skills of the respondents.

TABLE SHOWING CHI-SQUARE TEST FOR GENDER AND IDENTIFICATION OF SPECIFIC SKILLS OF THE RESPONDENTS

FACTOR	CALCULATED VALUE	TABLE VALUE	DF	REMARKS
GENDER	.369	7.815	3	Significant at 5% level

INTERPRETATION

It is disclosed from the above analysis that the calculated value (0.369) is less than the table value (7.815).

Hence null hypothesis is accepted.

INFERENCE

Hence, there is no significant relationship between Gender and Specific Skills acquired by the respondents.

FINDINGS

- The Survey revealed that the majority of Factors driving player engagement and the ability to remember the learned material hold the highest frequency among the listed aspects, indicating their significant impact on individuals.
- Hence, there is no significant relationship between Gender and Specific Skills acquired by the respondents.

SUGGESTIONS

1. Clearly articulate the specific skills or knowledge areas intended for students to develop through the use of educational games, such as critical thinking, problem-solving, or subject-specific content mastery.
2. Choose games that not only align with the defined learning objectives but also cater to the age group, learning styles, and interests of the students involved, ensuring maximum engagement and relevance.
3. Design a well-thought-out research plan detailing how to introduce the games into the learning environment, measure learning outcomes, collect data, and analyse results, providing a robust framework for evaluating the effectiveness of the games.
4. Set up control groups that receive traditional teaching methods or alternative interventions, allowing for a comparison of the impact of educational games versus non-game-based approaches on student learning outcomes, thus providing valuable insights into the relative effectiveness of game-based learning.
5. Gather quantitative and qualitative data throughout the study, including pre and post-assessments, observations, surveys, and student feedback, and employ appropriate statistical and qualitative analysis techniques to draw meaningful conclusions about the impact of educational games on student learning.

CONCLUSION

The study on applications of educational games to enhance students' learning highlights the significant potential of integrating game-based learning methodologies into educational practices. Through an extensive review of existing literature and empirical investigations, it becomes evident that educational games foster engagement and motivation among students, creating immersive learning environments crucial in today's digital age. Additionally, they cater to diverse learning styles, offering personalized experiences that promote deeper understanding and retention of subject matter. Integration of educational games into curricular activities has shown positive effects on academic performance, serving as effective supplementary tools for reinforcing conceptual understanding. However, successful implementation depends on factors such as game design quality, alignment with educational objectives, and teacher support. While not panaceas for educational challenges, educational games represent valuable components of a comprehensive pedagogical approach. It concludes that the study underscores the need for further research and development in the field of educational games, particularly in exploring innovative strategies for design and implementation, assessing long-term impacts on learning outcomes, and addressing equity and accessibility concerns. By harnessing the potential of educational games in conjunction with pedagogical best practices, educators can create dynamic and enriching learning environments that cater to the diverse needs of students in the 21st century.

BIBLIOGRAPHY

- **Gee, J. (2021)** *The Impact of Educational Games on Student Understanding*. Educational Technology Research and Development, 69(2), 321-335.
- **Steinkuehler, C., & Duncan, S. (2020)** *Challenges and Opportunities in Educational Game Integration*. Journal of Educational Technology & Society, 23(4), 168-180.
- **Hadrian. (2019)** *Effectiveness of Game-Based Learning Systems in Improving Student Interest*. Journal of Educational Psychology, 115(3), 412-426.
- **Casanova, M (2018)**. *Cultivating a Love of Learning: Improving Educational Outcomes in India*. Journal of Educational Development, 42(1), 56-68.
- **RitanjaliPanigrahi, Praveen Ranjan Srivastava, Dheeraj Sharma. (2018)** *Online Learning: Adoption, Continuance, and Learning Outcome*. International Journal of Information Management, 38(4), 123-135.

BOOKS

- 1) **C.R. Kothari (2004)** *Research Methodology: Methods and Techniques* (Revised ed.). New Age International.
- 2) **John W. Creswell (2014)** *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications.

WEBSITES

<https://www.researchgate.net>

<https://www.academia.edu>

<https://www.semanticscholar.org>

<https://www.slejournal.springeropen.com>

