CHAPTER- 5

SUMMARY, FINDINGS, AND SUGGESTIONS

5. SUMMARY, FINDINGS, AND SUGGESTIONS

5.1. INTRODUCTION

This chapter presents a comprehensive summary of the study, discusses its major findings, and offers practical suggestions based on the results. It also includes the statement of the problem, research objectives, hypotheses, research questions, variables, sample details, research tools, methodology, educational implications, and concluding remarks. The study was conducted to explore the effectiveness of game-based pedagogical approaches in enhancing mathematics achievement among middle stage learners (Class 8 students).

5.2. SUMMARY OF THE STUDY

The present research investigates the impact of game-based pedagogy on the academic achievement of middle stage students in mathematics. In today's educational scenario, traditional teaching approaches often fail to engage learners effectively in abstract subjects like mathematics. This study explores how incorporating games and playful strategies can improve students' conceptual understanding and performance.

A quasi-experimental pre-test/post-test design was employed, with one experimental group taught using game-based methods and one control group taught using traditional methods. The performance of both groups was assessed before and after the intervention using a standardized mathematics achievement test.

5.3. STATEMENT OF THE PROBLEM

"A Study on the Effectiveness of Game-Based Pedagogical Approaches on Mathematics Achievement among Middle Stage Learners."

5.4. OBJECTIVES OF THE STUDY

- To statistically compare the mean scores of mathematics achievement between students taught using game-based pedagogical approaches and those taught using traditional teaching methods.
- To assess the change in mathematics achievement of middle stage learners after receiving instruction through game-based pedagogy.
- To assess the change in mathematics achievement of middle stage learners after receiving instruction through traditional teaching methods.

5.5. HYPOTHESES OF THE STUDY

- **H_{01}**: There is no significant difference in the mean scores of mathematics achievement between students taught using game-based pedagogy and those taught using traditional methods.
- **H_{02}**: There is no significant difference between the pre-test and post-test mathematics scores of students taught through traditional teaching methods.
- **H_{03}**: There is no significant difference between the pre-test and post-test mathematics scores of students taught through game-based pedagogical approaches.
- **H_1**: There is a significant difference in the mean scores of mathematics achievement between students taught using game-based pedagogy and those taught using traditional methods.

5.6. RESEARCH QUESTIONS

- What are the differences in mathematics achievement between students taught using game-based pedagogical approaches and those taught using traditional teaching methods?
- What changes are observed in mathematics achievement among middle stage learners after being taught using game-based pedagogy?
- What changes are observed in mathematics achievement among middle stage learners after being taught using traditional pedagogy?
- How effective is game-based pedagogy in enhancing mathematics achievement compared to traditional teaching methods?

5.7. VARIABLES OF THE STUDY

- **Independent Variable**: Teaching Method (Game-Based Pedagogy / Traditional Teaching Method)
- **Dependent Variable**: Mathematics Achievement Score
- **Control Variables**: Class level (Grade 8), topic content, instructional time, duration of intervention

5.8. SAMPLE

The sample consisted of **60 students** from Class 8, selected from **DMS Bhopal**, divided into:

- **Experimental Group** (30 students): Taught using game-based pedagogical strategies
- **Control Group** (30 students): Taught using traditional lecture-based methods

5.9. RESEARCH TOOLS USED

- **Mathematics Achievement Test** (30 multiple-choice questions) developed and validated by the researcher to assess conceptual understanding and problem-solving skills.
- **Lesson Plans**: Tailored for game-based instruction and traditional instruction respectively.

5.10. RESEARCH METHODOLOGY

- **Type of Study**: Quantitative, quasi-experimental
- **Design**: Pre-test and post-test design with a control group
- **Statistical Techniques**:
    - Mean and Standard Deviation for descriptive analysis
    - Paired sample **t-test** for within-group comparisons
    - Independent sample **t-test** for between-group comparisons

5.11. MAJOR FINDINGS OF THE STUDY

- A significant difference was found in the **post-test mathematics achievement scores** of students taught through game-based pedagogy compared to those taught using traditional methods. *(Reject H_{01}, accept H_1)*
- Students in the **experimental group** (game-based pedagogy) showed a **statistically significant improvement** in their post-test scores compared to pre-test scores. *(Reject H_{03})*
- Students in the **control group** (traditional method) also showed improvement in post-test scores, but the **extent of improvement was less significant** than that of the experimental group. *(Reject H_{02})*

- The results confirm that **game-based teaching strategies were more effective** in enhancing engagement, motivation, and understanding of mathematical concepts.

5.12. EDUCATIONAL IMPLICATIONS

- Game-based pedagogy can be a powerful tool to **address learning gaps** and enhance achievement in mathematics.
- It promotes **active learning**, collaboration, and critical thinking, which are essential components of 21st-century skills.
- The approach may help reduce **math anxiety** and increase **student motivation**.
- Teachers need to be trained in designing and integrating appropriate games aligned with learning objectives.

5.13. SUGGESTIONS FOR FURTHER STUDY

- Similar studies can be conducted across **different subjects** (e.g., science or language) and **educational stages** (primary or senior secondary).
- A **larger and more diverse sample** could be used to enhance generalizability.
- The **long-term impact** of game-based pedagogy on retention and application of mathematical concepts should be investigated.
- A **qualitative component** (like interviews or classroom observation) may provide deeper insights into student perceptions and engagement.

5.14. CONCLUSION

The study concludes that **game-based pedagogical approaches are significantly more effective** than traditional methods in enhancing mathematics achievement among middle stage learners. Integrating educational games into classroom instruction helps make abstract concepts more accessible and engaging for learners. With proper planning and support, game-based strategies can transform mathematics education into an enjoyable and impactful learning experience.