Effectiveness of Game-Based Pedagogical Approaches on Mathematics Achievement among Middle Stage Learners

Dissertation Submitted to

Barkatullah University, Bhopal

In Partial Fulfilment of the Requirement for the Degree of

Master of Education (M.Ed.)

Session: 2023-25

Supervisor

Dr. Jayant S. Borgaonkar

Assistant Professor

Department of Education

Regional Institute of Education

Bhopal, Madhya Pradesh

Research Scholar

Neeraj Bandewar

M.Ed. Sem- IV

Department of Education

Regional Institute of Education

Bhopal, Madhya Pradesh



Department of Education Regional Institute of Education

(National Council of Educational Research and Training)

NAAC Accredited A⁺⁺ Grade Institute Bhopal, Madhya Pradesh, 462002 **CERTIFICATE**

This is to certify that the dissertation entitled "Effectiveness of Game-Based

Pedagogical Approaches on Mathematics Achievement among Middle

Stage Learners" being submitted by NEERAJ BANDEWAR, student of

Master of Education (M.Ed.) bearing Roll number-2406600316 and

Enrollment number-R240660590003, Regional Institute of Education,

Bhopal for the partial fulfilment of the degree of Master of Education

(M.Ed.), is a Bonafide research carried out by him in the Department of

Education, Regional Institute of Education, Bhopal, Madhya Pradesh under

my supervision and guidance. The work is original and to the best of his

knowledge and it has not been submitted earlier in any form for degree at any

other university.

This is further certified that the dissertation in its present form is fit for the

submission to Barkatullah University for the award of the degree of Master of

Education.

Place: RIE, Bhopal

Date:

Dr. Jayant S. Borgaonkar

Assistant Professor

Department of Education

Regional Institute of Education

Bhopal

ii

DECLARATION

I hereby declare that this dissertation entitled "Effectiveness of Game-Based

Pedagogical Approaches on Mathematics Achievement among Middle

Stage Learners" has been carried out by me during the academic year 2023-

2025 in partial fulfilment of the requirement for the Degree of Two-Year

Master of Education (M.Ed.) from Barkatullah University, Bhopal, Madhya

Pradesh.

The study has been conducted under the guidance and supervision of Dr.

Jayant S. Borgaonkar, Assistant Professor, Department of Education,

Regional Institute of Education Bhopal, Madhya Pradesh.

I also declare that the research work done by me is original. This dissertation

has not been submitted by me for the award of any degree or diploma in any

other university.

Date:

Place: RIE, Bhopal

Neeraj Bandewar

M.Ed. Sem-IV

Roll No.-2406600316

iii

ACKNOWLEDGEMENT

I heartily feel it is a necessary task to express my sincere gratitude to all those who have been instrumental directly or indirectly in this research work. On the recollection of so many and great favours and blessings, I record my sincere gratitude to the Almighty for giving me the opportunity, potential and ability to complete lots of targets in my life including completion of this research work.

First of all, I would like to express my sincere respect and gratitude to my supervisor respected **Dr. Jayant S. Borgaonkar**, Assistant Professor, Department of Education, Regional Institute of Education, Bhopal (M.P.) for giving me complete freedom to exercise my discretion and creativity in accomplishment of my work and for his immense patience and encouragement at every step without any hesitation.

I would like to express my sincere respect and gratitude to **Dr. Shiv Kumar Gupta,** Principal, Regional Institute of Education, Bhopal for his kind support, cooperation and providing the institutional support.

1 convey my sincere regards and heartiest gratitude to **Prof. Ayushman Goswami**, Head, Department of Education, Regional Institute of Education, Bhopal and other faculty members for their valuable support and direct & indirect encouragement throughout the course helped me a lot during my research work.

I convey my sincere respect and gratitude to all the **Principal and staff of Demonstration Multipurpose School (DMS), Bhopal,** and other staff members, for their support during the field work and sharing of different information for smooth completion of my dissertation work.

Moreover, I extend my gratitude to thank librarian **Dr. P.K. Tripathy** and all the library staff for allowing the use of library resources and finding the required materials

Last but not the least, I would like to convey my special heartfelt thanks to my family members and classmates who always stood by me to make me move ahead in life. The continued blessings and regular encouragement by my loved ones have played a great role in my journey to dissertation work.

NEERAJ BANDEWAR
M.Ed. Sem- IV
Roll number-2406600316
RIE, Bhopal

TABLE OF CONTENTS

SR. NO	TITLE	PAGE
		NO.
1.	CHAPTER-1 INTRODUCTION	1-40
	1.1. Introduction	2-36
	1.2. Rationale of the Study	37-38
	1.3. Statement of the Problem	39
	1.4. Operational Definition	39
	1.5. Objectives of the Study	39-40
	1.6. Hypotheses	40
	1.7. Research Questions	40
	1.8. Delimitations of the Study	40
2.	CHAPTER-II REVIEW OF RELATED LITERATURE	41-46
	2.1. Introduction	42
	2.2. Review of Related Literature	42-46
3.	CHAPTER-III RESEARCH METHODOLOGY	47-53
	3.1. Introduction	48
	3.2. Research Design	48
	3.3. Variables of the Study	49
	3.4. Population and Sample	49
	3.5. Sample Size	50
	3.6. Data Collection Procedure	50-51
	3.7. Tools and Techniques	51-52
	3.8. Scoring Key	52
	3.9. Ethical Considerations	53
	3.10. Summary	53
4.	CHAPTER-IV DATA ANALYSIS AND INTERPRETATION	54-
	4.1. Introduction	55
	4.2. Organization of the Data	55

	4.3. Objective-wise Analysis	56
	4.3.1. OBJECTIVE-1 To statistically compare the mean	56
	scores of mathematics achievement between	
	students taught using game-based pedagogical	
	approaches and those taught using traditional	
	teaching methods.	
	4.3.2. OBJECTIVE-2 To assess the change in mathematics	56
	achievement of middle stage learners after receiving	
	instruction through game-based pedagogy.	
	4.3.3. OBJECTIVE-3 To assess the change in mathematics	56
	achievement of middle stage learners after receiving	
	instruction through traditional teaching methods.	
	4.4. Interpretation and Discussion of Results	57
5.	CHAPTER-V SUMMARY, FINDINGS AND CONCLUSION	58-62
	5.1. Introduction	59
	5.2. Summary of the Study	59
	5.3. Statement of the Problem	59
	5.4. Objectives of the Study	59
	5.5. Hypotheses of the Study	60
	5.6. Research Questions	60
	5.7. Variables of the Study	60
	5.8. Sample	61
	5.9. Research Tools Used	61
	5.10.Research Methodology	61
	5.11. Major Findings of the Study	61
	5.12.Educational implications	62
	5.13. Suggestions for Further Study	62
	5.14.Conclusion	62
6.	REFERENCES	63-65
7.	APPENDIX	65-67