



**CLUSTER INNOVATION CENTRE**  
(UNIVERSITY OF DELHI)  
M.Sc. (Mathematics Education)  
A Joint Degree under the Meta University Concept by  
University of Delhi & Jamia Millia Islamia



**AN EMPIRICAL STUDY OF THE EFFECTIVENESS OF EXISTING DIGITAL  
RESOURCES ON PYTHAGOREAN THEOREM IN PROMOTING DISCOVERY  
LEARNING AMONG SECONDARY SCHOOL STUDENTS**

*(A research dissertation submitted at Cluster Innovation Centre, University of Delhi )*

**Abstract**

*The teaching and learning of Pythagoras' theorem has been a fundamental part of mathematics education for centuries. However, despite its importance, many students continue to struggle with understanding and applying this theorem. To address this issue, researchers have explored various teaching approaches, including discovery learning, which emphasizes active learning through exploration and inquiry. Digital resources have been increasingly used in discovery-based teaching, with the potential to enhance student engagement and motivation. This study investigates the impact of the GeoGebra digital resource compared to the traditional method of promoting discovery learning among secondary school students in the context of understanding and applying the Pythagoras theorem. The assessment of student performance was done using a comprehensive rubric encompassing exploration and activity, hypothesis generation and testing, conceptual understanding and application, and overall engagement and participation. The results indicate that GeoGebra facilitated higher levels of engagement and participation, as reflected in the higher ratings for exploration and activity, hypothesis generation and testing, and overall engagement and participation compared to the traditional method. The findings highlight the potential of digital resources like GeoGebra in promoting active learning and enhancing student performance in mathematics. The study also identifies the limitations faced by teachers in developing effective assessment tools and provides insights for improving teaching strategies and designing appropriate rubrics to assess mathematical concepts. embracing innovative approaches and addressing the challenges faced in mathematics education.*

by

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