International Journal of Teaching and Learning (INJOTEL) e-ISSN: 3025-8308
Vol. 2 No. 8 2025, pages: 2916~2925

# THE EFFECT OF INTERACTIVE POWERPOINT (PPT) WITH THE ICEBERG APPROACH ON UNDERSTANDING MATHEMATICAL CONCEPTS IN THE TOPIC OF SURFACE AREA OF A CYLINDER

**Nadya Ramadhani ***
Medan State University
nadyaramadhani1999@gmail.com

**Nur Hidayah Br Karo**
Medan State University
nurhidayahbrkaro@gmail.com

**Hamidah Nasution**
Medan State University
hamidah_mat67@yahoo.com

***Abstract***

This study aims to analyze the effect of using interactive PowerPoint (PPT) with the Iceberg approach on students' understanding of mathematical concepts, specifically in the area of cylinder surface area. Students' difficulties in comprehending abstract geometrical concepts necessitate a more effective learning approach. The research employed a quasi-experimental design with pre-test and post-test on two groups: an experimental group using interactive PPT with the Iceberg approach, and a control group using conventional teaching methods. The sample consisted of 60 eighth-grade junior high school students. Results showed a significant improvement in concept understanding for the experimental group compared to the control group, with normalized gain values of 0.78 and 0.37, respectively. T-test analysis revealed a significant difference between the two groups ($t = 5.05$, $p < 0.05$). A student perception questionnaire indicated that 83% of students found learning more engaging with interactive PPT. In conclusion, the use of interactive PowerPoint with the Iceberg approach effectively enhances students' understanding of mathematical concepts related to cylinder surface area and increases their learning motivation.

**Keywords**: Interactive PowerPoint (PPT); Iceberg Approach; Mathematical Concept Understanding; Cylinder Surface Area

## INTRODUCTION

Mathematics education has an important role in shaping the ability to think critically, logically, and systematically in students. However, mathematics is often considered a difficult and challenging subject for many students, especially when it comes to abstract concepts such as geometry. One of the materials in geometry that is often a challenge for students is the surface area of the tube. Many students have difficulty understanding the relationship between the tube-forming elements (base, blanket, and height) and their surface area formula. According to research conducted