

## CHAPTER 1: INTRODUCTION AND BACKGROUND

### BACKGROUND OF THE STUDY

According to Hargeaves and Molyes (1998), education, in its true sense, entails intrinsically important activities. The acts of teaching, which aim to provide useful knowledge, skills, and understanding, are acts of education. Education cannot be made more effective without effective teaching. There are so many devices for effective teaching and an effective technique can ensure effective learning. It is being felt that there should be new techniques of teaching and learning. We, like other developing counties, still use lecturing as a major teaching method which, however, needs blending with other methods and approaches.

Mathematical proficiency is essential for success at school and participation in society. The capacity to understand mathematical concepts, apply mathematical reasoning and use mathematical tools underlies study in many school subjects and further education. Moreover, the increasing dependence of everyday and professional life on science and technology also requires proficiency in these kinds of skills, particularly in the higher-paying scientific and technical professions. Because of its importance, the mathematical proficiency of young people is subject to rigorous scrutiny worldwide. Mathematics teachers are often challenged by their students to give the reasoning for why learning mathematics is necessary. An approach to address this question is to show students the value of learning mathematics by enlightening them on the connections that mathematics has with other disciplines and the real-world applications of mathematics. This study argues that Art Integrated Learning may help alleviate this challenge.

Researchers acknowledge that Art Integrated Learning (AIL) is an international pedagogical practice that makes learners active in the process of learning from preschool to tertiary level in different subject areas (AIL Guidelines). Furthermore, Art Integrated Learning is viewed as a well-structured teaching strategy that produces more positive performance than innovative curriculum textbooks or the use of technology in reading and mathematics. The use of curriculum textbooks for the process of teaching and learning has been the traditional method for teachers in classrooms. NCERT emphasizes that this

method has been improving learners' ability to explore their skills to solve mathematical problems conceptually through social interaction. An educator's utmost challenge in teaching mathematics is finding the most effective pedagogy for their students. Teachers must get assistance to design an effective curriculum and determine how best students learn by understanding and assessing students' involvement in learning Mathematics. Educators may hesitate using Art-Integrated Learning in a mathematical classroom because they have inadequate experience and knowledge of using art integrated learning as a teaching strategy.

The implementation of Art Integrated Learning (AIL) has required teachers to monitor student learning and growth by demographic and socioeconomic subgroup. Teachers have begun to accomplish this type of monitoring through collaborative means.

Vygotsky's (1992) theory of scaffolding supports social interaction, stating that learners can learn more information quickly than they could with traditional instruction. Furthermore, learners can solve mathematical problems art integrated learning before solving the same problem on their own. It is for this reason that this study investigated Art Integrated Learning as a way to improve student understanding of mathematics.

### **1.1 STATEMENT OF THE PROBLEM**

Mathematics in primary through to secondary school comprises several substantive domains (e.g., arithmetic, Mathematics, geometry, measurement, data analysis, probability) and requires the acquisition of conceptual, procedural, and factual knowledge. In addition, it requires particular thinking and reasoning skills, including the ability to understand and construct causal chains of facts or events, to handle mathematical abstractions, and to reason about relationships between mathematical objects.

Mathematics teachers are often challenged by their students to give the reasoning for why learning mathematics is necessary. Unfortunately, many secondary students see no value in learning mathematics and do not feel as

though it connects with their lives. One approach to combat this issue is to use Art Integrated Learning (AIL) to teach mathematics. Art Integrated Learning can give students insight as to how mathematics is useful in a variety of different fields. In addition to engaging students with a relevant curriculum, leading students to discover the connections between mathematics and science (among other fields) can help to show students why learning mathematics is valuable. Thus, studies involving the teaching of mathematics to enhance its conceptual understanding are needed to provide more clarity on how learners can learn mathematics for understanding.

## **1.2 PURPOSE OF THE STUDY**

The purpose of this study was to find the Effect of Art-integrated Learning on Academic Achievement in mathematics of Grade 10 students.

Art Integrated Learning into the teaching and learning of Mathematics to Grade 10 learners was expected:

- to offer alternative opportunities in using Art Integrated Learning to access quality mathematics education to learners
- to motivate learners to learn mathematics which is normally viewed as a difficult, abstract, and boring subject; and
- to assist learners' achievements in mathematics

## **1.3 OBJECTIVES AND HYPOTHESES**

The major purpose of this study was to investigate the effect of using art integrated learning in teaching secondary students in mathematics. Following were the main objectives of the study;

- To determine the Effect of Art Integrated Learning on Academic Achievement in Mathematics of 10th Grade Students at the secondary level.
- To provide joyful learning opportunities for students in mathematics.

For the achievement of the above objective following null hypotheses were tested.

Ho1: There was no significant mean difference between the pretest and posttest marks of the controlled group.

Ho2: There was no significant mean difference between the pretest and posttest marks of the experimental group.

Ho3: There is no significant difference between the achievement of the controlled and experimental groups.

#### **1.4 Research questions**

This study had the following research questions:

- What are the teacher views of Art Integrated Learning in the mathematics classroom?
- What is the Effect of Art Integrated Learning on Academic Achievement in Mathematics of 10th Grade Students?

#### **1.5 SIGNIFICANCE OF THE STUDY**

The study seeks to help educators with implementing art integrated learning in teaching mathematics successfully. This study needs to be conducted to inform teachers about the effective use of art integrated learning of mathematical concepts. This study argues that while traditional teaching methods empower learners with procedural fluency, strategies such as art integrated learning in a mathematical classroom can provide additional benefits by allowing learners to develop their mathematical reasoning and creative skills in preparation for more abstract mathematics in tertiary institutions.

Theoretically, the study contributes to the existing body of knowledge on the benefits of using art integrated learning as the prominent pedagogy to enhance conceptual understanding of mathematics. Using this experimental study improved the understanding of the problem, with the intent of contributing to the solution.

There is significant academic research that corroborates the importance of arts in the process of learning. Learning through the arts aims at the development of cognitive (thinking, recalling, and reflecting), affective (social and emotional), and psychomotor (use of body and movement) abilities of the learner.

## 1.6 LIMITATIONS OF THE STUDY

This study extracted a sample of students and a teacher. There was no random assignment in this study, every student in the class was in 10th grade and most of the students were considered to be “advanced” students. This means that it cannot be assumed that the group of students who participated in this study is representative of a larger population of secondary students. Although the sample was enough to answer the research questions posed herein, the findings from this study cannot be generalized to Grade 10 learners and teachers. The study used a quantitative research design and semi-structured open-ended qualitative interviews. The sample size for the data was only 30 students, which results in less power for the statistics. Thus, a worthwhile direction for future research would be using a quantitative research design or mixed methods with curriculum advisors, principals, and more teachers to provide a more in-depth understanding of the use of art integrated learning in learning mathematics.

## 1.7 DELIMITATION

The delimitation of this study was that the researcher only included written group tasks, structured questions, and observations rather than additional open-ended responses, which might have allowed some respondents to contribute in-depth information. The study exclusively focused on mathematics and did not consider other mathematical areas.

## 1.8 Definition of Key Terms

The following is a list of terms and definitions that will be used throughout this study:

**Constructivism:** is a theory that suggests that humans construct knowledge and meaning from their experiences.

**Academic achievement:** Academic achievement is the knowledge attained or skill developed in the school subjects usually designed by test scores are makes assigned by Teacher or both

**Curriculum:** describes the subjects comprising a course of study in a school or college.

**Pedagogy:** is the method and practice of teaching, especially as an academic subject

**Art education:** is the process that encourages sensory explorations. It provides a platform to work with ideas and materials to create expression, which might not be expressed by words alone.

**Arts integration:** is “an approach to teaching in which students construct and demonstrate understanding through an art form.

**Art integrated learning:** In AIL, we work with the arts at the centre of the curriculum. The abstract concepts of the subject will be explored using different art forms

**Arts as curriculum:** this is what happens in special area classes (music, art, band, drama)

**Arts Enhanced curriculum:** “When the arts are used as a device or strategy to support other curriculum areas, but no objectives in the art form are explicit, then the approach is called Arts-Enhanced Curriculum. For example, students sing the ABCs as a means to other ends—remembering the letters and sequence of the alphabet. However, students are not usually expected to learn about melody, song structure, or develop specific singing skills.” (Arts Edge).

**Arts Integrated Curriculum:** This is when the arts become the approach to teaching and learning is enhanced in the Arts and the Core subjects

## 1.9 ORGANISATION OF THE STUDY

**Chapter 1** provided an introduction to and background of the study. A problem statement and core research questions, the purpose of the study, and the significance of the study were outlined.

**Chapter 2** reviewed the literature relevant to the study. The section first introduced the conceptual understanding of mathematics, then explained the theoretical understandings of Art Integrated Learning. The history of Art Integrated Learning was outlined as well as some of the perceived benefits of Art Integrated Learning. Additionally, the chapter explained the perceived effects of applying Art Integrated Learning in teaching mathematics and concluded with a discussion of the theoretical framework that underpinned the study.

**Chapter 3** presented the research methodology, focusing on the research design, methodology choice, research strategy, research approach, research site, population, sampling, data collection method, and analysis.

**Chapter 4** discussed the analysis and presentation of the study results. The chapter included the themes that recurred in the analysis and summarised the findings.

**Chapter 5** featured the summary of findings, made recommendations, and concluded the discussion of the results. Literature findings, as well as the theoretical underpinnings of the study, were used to interpret and summarise the thematic findings from the study.

#### **1.10 CONCLUSION**

This chapter introduced the topic under which the study was investigated. A brief background to the study was provided and the statement of the problem was highlighted. The section further delineated the purpose of the study, the research questions, and the significance of the study. The next section reviews the literature relevant to the study.