



## Learning of Science Concepts among Visually Impaired Students at Middle School Level

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**Abstract** - The nature of Science Experiments teaching and learning is based on vision, which is mostly not accessible at all by visually impaired students. Hence it needs adapted materials and instructional methods to understand and perform science experiments by visually impaired. The present study aims to find out the Learning of Science Concepts among Visually Impaired Students at Middle School Level.

**Key Words:** Visually Impaired, Science Concepts, Middle School

### I. INTRODUCTION

Today's scenario is more of Inclusion of, students with Visual Impairment in general education classrooms. Students with visual impairment are required to complete the same curriculum and examinations on par with their sighted peers. However, the nature of Science Experiments teaching and learning is based on vision, which is mostly not accessible at all by visually impaired students. Hence it needs adapted materials and instructional methods.

Visually Impaired students are not motivated from learning science, technology, engineering, and mathematics subjects. Visually impaired students are with misconceptions embedded in mind, from either themselves or their teachers, that science is difficult and not accessible for them. In order to overcome this misconception, there is a trend in the world that all classrooms have to be barrier-free. There is a need for adaptation in the science experiment materials and methods for the needs of individuals with visual impairment.

In this present study the researcher aims to find out the Learning of Science Concepts among Visually Impaired students at Middle School level.

### Objectives

To assess the Learning of Science concepts among Visually Impaired.

To analyze the Learning of Science Concepts namely i) Temperature Concept, ii) Electricity Concept, iii) Acid and Base Concept

### II. METHODOLOGY

The study was conducted in Middle Schools of Coimbatore and Madurai Districts of Tamilnadu, India. The sample includes Visually Impaired students from Grade VI to VIII. Both Totally Blind and Low Vision students were taken for the study.

A Questionnaire consists of 15 questions based on Science concepts was prepared. The questionnaire covered three science concepts namely Temperature, Electricity and Acid & Base. Five questions in each concept were framed. Two choices was given and the scoring for correct answer is "1" and incorrect answer is "0"

The tool was administered to Visually Impaired students from Grade VI to VIII. Direct interview was held.

### III. RESULTS

#### Level of Learning Science Concepts Among Visually Impaired Students

Level	No.	Percent
Low( $\leq 7$ )	18	60
Moderate(7-9)	8	27
High( $> 9$ )	4	13
<b>Total</b>	30	100

A qualitative analysis was done to find out the level of Learning of Science Concepts in terms of low, moderate and high considering the total score of 15. The results revealed nearly 60% were at low level in their Learning of Science Concepts, whereas 27% were at moderate level and 13% at high level in Learning of Science Concepts.

#### Level of Learning Temperature Concept Among Visually Impaired Students

Level	No.	Percent
Low( $\leq 3$ )	15	50
Moderate(3)	10	33
High( $> 3$ )	5	17
<b>Total</b>	30	100

A qualitative analysis was done to find out the level of Learning of Science Temperature Concept in terms of low, moderate and high considering the total score of 5. The results revealed nearly 50% were at low level in their Learning of Science Temperature Concept, whereas 33% were at moderate level and 17% at high level in Learning of Science Temperature Concepts.

#### Level of Learning Science Electricity Concept Among Visually Impaired Students

Level	No.	Percent
Low( $\leq 3$ )	20	67
Moderate(3)	8	27
High( $> 3$ )	2	7
<b>Total</b>	30	100

A qualitative analysis was done to find out the level of Learning of Science Electricity Concept in terms of low, moderate and high considering the total score of 5. The results revealed nearly 67% were at low level in their Learning of Science Electricity Concept, whereas 27% were at moderate level and 7% at high level in Learning of Science Electricity Concept.

#### Level of Learning Science Acid and Base Concept Among Visually Impaired Students

Level	No.	Percent
Low( $\leq 3$ )	23	77
Moderate(3)	2	6
High( $> 3$ )	5	17
<b>Total</b>	30	100

A qualitative analysis was done to find out the level of Learning of Science Acid and Base Concept in terms of low, moderate and high considering the total score of 5. The results revealed nearly 77% were at low level in their Learning of Science Acid and Base Concept, whereas 6% were at moderate level and 17% at high level in Learning of Science Acid and Base Concept.

#### IV. CONCLUSION

Students with visual impairment are required to complete the same curriculum and examinations as sighted students. However, due to the nature of science and mathematics, the majority of the education resources and instructional methods are based on vision, which is partly or not accessible at all by visually impaired students.

This study results also revealed that majority of the students are at low level in learning of Science concepts namely Temperature, Electricity and Acid & Base.

There is a need for adaptation in the educational resources and methods for the needs of individuals with visual impairment. Although there are some guidelines (i.e. Dion, Hoffman, & Matter, 2000) how to adapt educational resources to the needs of visually impaired students, there is still a huge gap in how to adapt educational resources and instructional methods to the needs of them as they are a heterogeneous group. Students with visual impairments differ in intellectual ability, development rate, social competence, and other factors.

In addition, they differ in terms of their impairments, the extent of their visual acuity, and their ability in using the whatever vision they have too. Even if they have the same identical acuities and fields of vision, this does not mean that they use the vision they have in the same way and capacity.

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