

## **Problems Associated in Teaching Science in an Inclusive Classroom.**

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### **1. Introduction**

The fourth Sustainable development goal emphasizes equal and equitable education without limitations. Inclusive classrooms ensure the right to equal education access, engagement and achieving goals. Science is taught in the junior secondary level as a core subject and as stream in senior secondary level. As Science a systematic subject and emphasizes the scientific method to solve problems that arise in day-to-day life. Deaf students as an Isolated team lose their right for the gaining of scientific educational background with the impact of sensory defect. Teaching and learning science for deaf students presents unique challenges, Teachers subject Matter knowledge(SK), Pedagogical knowledge (PK) Technological Knowledge (TK) influence on learning teaching process of a subject. However, with the right approach and resources, it is possible to create an inclusive and effective learning environment. Numbers of attempts have been introduced for the ensuring inclusive education as National policies, reforms in schools, professional development, changes in curriculum, assessment, collaborations with stakeholders, promotion of research, awareness rising. Roald & Mikalsen (2000) showed that younger deaf children have conceptions of scientific facts similar to those of their hearing peers, those differences follow, at least in part, from deaf students' lack of experience with scientific reasoning and the mental models necessary for understanding and integrating new scientific facts (Hammer, 1996). processing strategies in classroom settings, interpreter training programs do not teach their students about the developmental or academic characteristics of deaf learners (Ramsey, 1997). However insufficient researches have done in Sri Lanka regarding teaching science in a deaf classroom. To fill the literature gap regarding teaching science in an inclusive classroom of Sri Lankan junior secondary level, providing guidance for educational reforms, modify in-service and pre service Teacher education programmes Studies should be done for the ensuring fourth sustainable development goal of education for all.

### **2. Material and Methods**

This research is based on case study methodology specialty on study on social units. Qualitative approach was selected as qualitative data were collected. focusing on a school that was founded to protect the educational rights of children who are blind or deaf. This study based on only deaf students of the school A non-probabilistic sampling method was applied, a purposive sample of all 4 students were observed. Four deaf pupils from formal operational phases (over 12 years old) and a teacher were chosen as the sample. Data were collected with an interview with the science teacher and observing 7 lessons. Data were analyzed with thematic analysis of primary data and represented with tables, bars and graphs. Three objectives were considered.

#### *Objectives of The Study:*

- Identifying the nature of the learning teaching process in a deaf classroom.
- Studying the teachers' skills regarding the overcoming issues associated with the teaching in a deaf classroom
- Investigating problems faced by teachers while teaching science in a deaf classroom.

### 3. Results and Discussion

Non expert in science, diploma holder for sign language female teacher was responsible for the learning teaching process. Teacher faced several challenges with sharing knowledge, skills and attitudes with deaf students. Principal obstacles associated with communication between deaf pupils and non-deaf teachers. Sign language, verbal language, visual aids, video clips were used for the communication. Through trial-and-error methods students were able to recognize a few words from lip motions. Due to the abstract nature, the majority of the physics and chemistry concepts were challenging to teach with sign language. Based on observations, male students who are completely deaf and slow learners show interest in biological concepts specifically locomotion of animals. They demonstrate their enthusiasm by making loud noises to convey their satisfaction and by showing horses moving quickly. Excessive time is needed for the formation of concepts with different approaches. Classroom is totally diversified and teacher should have different strategies for ensuring equal education.

Table 1: Nature of Students

Defect	Total deaf and slow learner	Partial deaf	Only deaf	Deaf and slow learner
No of students	1	0	2	1
Percentage	25%	0	50%	25%

Students of 75% were deaf and 25% total deaf a huge variation can be identified. The percentage of slow learners is 50% physical and mental issues that disturb the formation of scientific method. Out of 50% of the total participants were male and 50% female. Half of the sample consists of slow learners. (Table 1).

Table 2: Gender

Gender	Female	Male
Number	2	2
Percentage	50%	50%

Table 3: Problem Faced by Students

Problem	Students' cognitive obstacles	Students' obstacles to abstract thought	Poor glossary regarding concepts.
Number of students	3	4	4
Percentage	75%	75%	100%

Three themes were identified as cognitive obstacles, obstacles to abstract thought, poor glossary. Seventy-five percent of students have trouble in writing ordinary Sinhala nouns like “ant,” “bear,” “bat” and so Students were unable write names for animals on the blackboard. A poor glossary was established regarding the animal’s world. Vocabulary associated with Chemistry and Physics in Comparatively lower than Biology themes. Students of 90% gained proficiency in handling laboratory equipment. Pupils lack awareness for the necessary skills to think abstractly about ideas like mass, reproduction, qualities of energy, and so on.

Table 4: Problems Faced by Teacher

Problem /no of observation	Lack of physical resources for remedying deafness	Indicate experience of teachers for teaching science	Teachers' Insufficient skills related to the broad content
Observation 1	30		
Observation 2	20	50	30
Observation 3	15	50	35
Observation 4	35	55	10
Observation 5	15	65	20
Observation 6	5	40	55
Observation 7	15	50	35
Avg	135/700=19.8%	360/700=50%	205/700*100=29.9%

Three themes were identified by analyzing observations as Inadequate experience of teachers, lack of physical resources for reading deafness, teachers Insufficient skills related to the broad content. Inadequate experience regarding teaching Science was 50% and students' insufficient skills related to the broad concepts make barriers on formation of concepts was 30%. Insufficient physical resources influence on learning teaching process by 20%.

#### **4. Conclusion.**

- Due to poor communication insufficient glossary is developed associated with science.
- Students' foveation can be seen for biology themes than others.
- Teachers' knowledge, attitudes, skills regarding both science and sign language is not in up to the level.
- Video clips, hands on activities, group works done.
- A technology integration was seen for the formation of concepts.
- Formation of concepts regarding physics and chemistry themes were comparatively difficult.
- Teachers' subject matters, pedagogical, technological knowledge were not up to the level.

#### **5. Acknowledgement.**

I would like to thank Teachers and students of Deaf for providing the necessary resources and facilities. Special thanks to the principal of the institute for their insightful guidance and encouragement throughout the work. Lastly, we appreciate the feedback and suggestions provided by our peers during the development of this abstract.

#### **6. Keywords**

Biology, Deaf, Inclusive classroom, Science, Slow learners

#### **7. References**

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