

## Learning for Students with Hearing Impairment in Inclusive Class on Sensorimotor Development Course

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**Abstract:** Hearing impairment has implications in learning due to the difficulty to hear and understand conversations. The purpose of this study was to describe learning for students with hearing impairments in inclusive class on Sensorimotor Development Course. This research was a qualitative research with a single case study research design. The study was conducted at Universitas Negeri Surabaya. Research subjects were student with hearing impairment, lecturer, volunteer, and classmate in inclusive class on Sensorimotor Development Course. Data collection techniques were in-depth interviews and observation. Data validity technique was triangulation. Data were analyzed based on the Miles & Huberman Flow Model which included three processes, namely data reduction, data display, and conclusions. The results showed that learning for students with hearing impairments in inclusive class on Sensorimotor Development Course needs to consider the following: (1) seating placement, (2) optimization of visual information, (3) modification of teaching, (4) volunteer support, and (5) teamwork.

**Keywords:** learning; hearing impairment; inclusive class; Sensorimotor Development Course

## INTRODUCTION

Inclusive education has been one of the main topics in education for the past two decades (Avramidis et al, 2000). Lindsay believes that inclusive education is the main goal for the education of individual with special needs (in Safder et al, 2012). Inclusive education refers to students with special needs who are part of the mainstream education class, receive a meaningful curriculum with the support needed, and with effective learning strategies (Smith, 2004). The basic theory of the inclusive education movement is to promote the principles of anti-discrimination, equality, social justice, and human rights so that it is important that individual with disabilities should enjoy equal access with all other students in the regular school environment and in the curriculum balanced and relevant (Knight, 1999).

With the existence of inclusive education which is starting to touch higher education, demanding higher education institutions to make adjustments both in terms of curriculum, educational infrastructure, and learning systems that are tailored to the individual needs of students. Optimization of individual potential is one of the learning objectives, bearing in mind that this involves many aspects, interference with one aspect of the potential can result in suboptimal developments in other aspects. Although other aspects are actually in good condition, as experienced by individuals with hearing impairment. Impaired hearing function results in delayed language development that can interfere with the communication process.

Quality learning is an interaction of all components involved effectively and efficiently in achieving goals. And the activeness of students is very important and needs to be considered by the teacher so that the learning process undertaken really gets optimal results. Rosseau (in Sardiman, 2006) states that in learning, all knowledge must be obtained by one's own observations, own experiences, independently, with self-created facilities, both spiritually and technically. This shows that everyone who studies must be active. Without activities, learning is not possible.

The challenges faced by students with hearing loss in class, namely: (1) communication barriers, (2) physical environment, including the auditory and visual environment, and seating arrangements, (3) interactions and activities in class, and (4) teaching processes and materials (Minister of Human Resource Development Government of India). Research results of Safder et al (2012) show that students with hearing impairment face many difficulties regarding the teaching methods used by teachers in the classroom, lack of sign interpreters, and the inability of teachers to use sign language during teaching. Safder suggested that students' problems with hearing loss could be reduced by making appropriate arrangements to meet their needs in inclusive classes. Determining the most appropriate method for educational attainment for individuals with hearing impairments is a very important problem (Gargiulo, 2012). Therefore it is important to know the learning strategies for students with hearing impairments in inclusive classes so that they can follow the learning well.

Sensorimotor Development Course are course that provide students with understanding and experience through studies and discussions on sensorimotor principles, sensorimotor characteristics of children with special needs and strategies for developing sensorimotor of children with special needs. Sensorimotor Development Course also require students to make decisions in determining the right strategy for each individual with special needs, as well as the practice of developing programs and implementing a sensorimotor development program for children with special needs. Knowledge and handling practices competence make this course quite challenging for students with hearing impairments. The right learning strategy must be able to be applied so that students with hearing impairments can achieve the expected competencies.

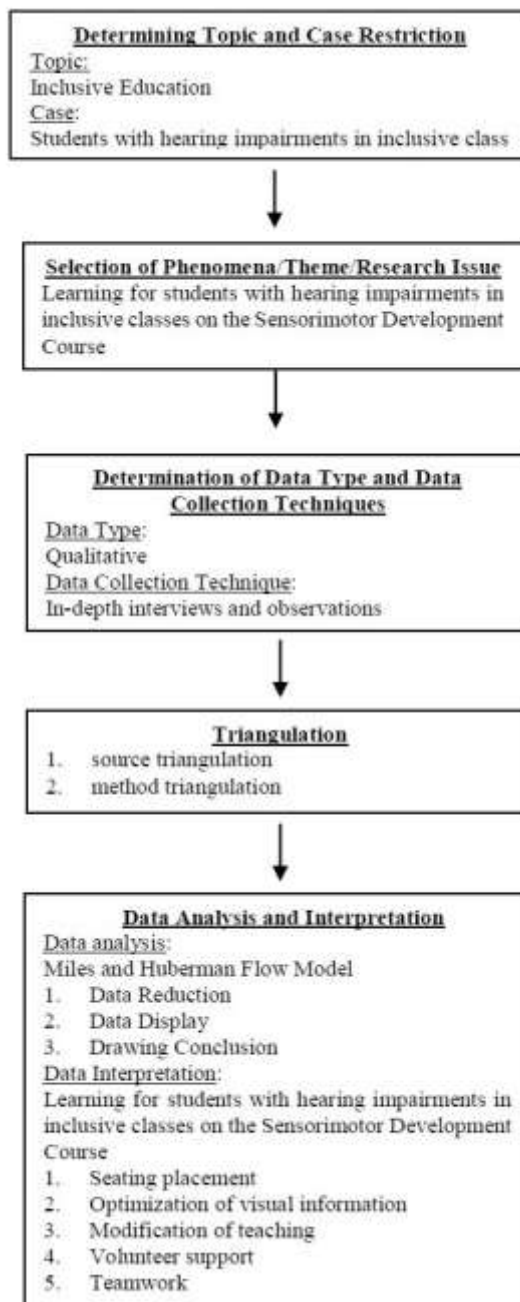
The research problem is how learning for students with hearing impairment in inclusion class on Sensorimotor Development Course?

## METHOD

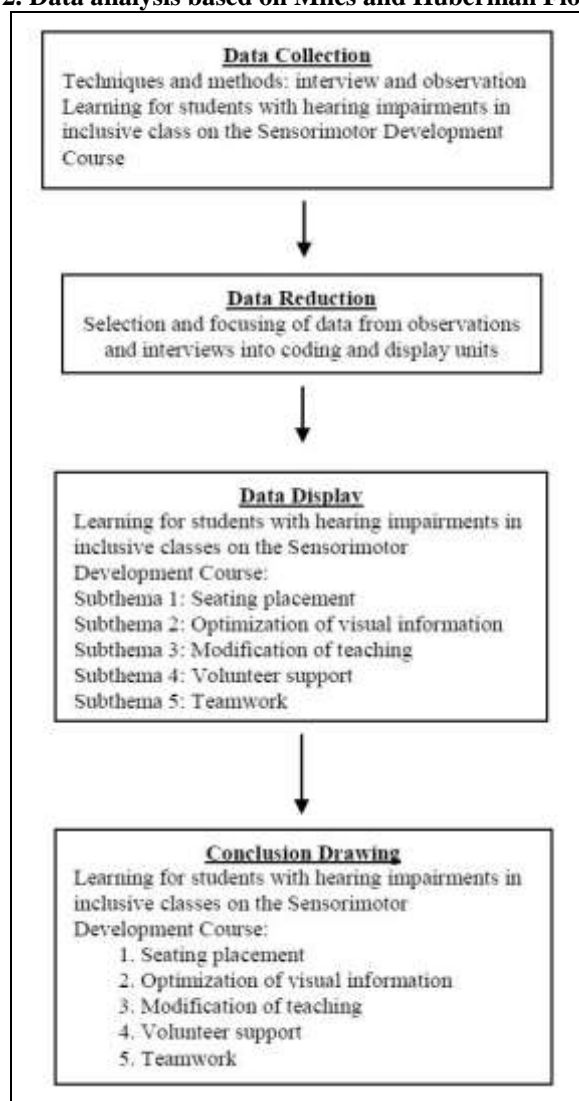
The qualitative-descriptive research approach was chosen to be applied in this study because it intends to explore in depth the phenomena and facts about learning for students with hearing impairments in the inclusion class on the Sensorimotor Development Course. This research was descriptive because it tried to describe the state of the object according to the actual conditions. The chosen research design was a single case study. The single case study design procedures in this study were (1) determining the topic and limitation of the case, (2) choosing the phenomenon/theme/research issue, (3) determining the type of data and data collection techniques, (4) conducting triangulation, (5) analyzing and interpreting data. The research design can be seen in Fig. 1.

The study was conducted at Universitas Negeri Surabaya, East Java Province, Indonesia. One of the superiority of the Universitas Negeri Surabaya is in the field of disability, especially in the field of inclusive education, with the appreciation of an inclusive campus by the Minister of Education and Culture on August 29, 2012. Followed by the achievements of "INCLUSIVE AWARD" in 2014. This is the condition that leads Unesa as a friendly campus for all diversities. And every year there are always new students with hearing impairments.

Data collection techniques carried out by in-depth interviews and observations. The interview subjects were one hearing impaired student who programmed a Sensorimotor Development Course, one lecturer in the sensorimotor development course, one volunteer who usually helped the student with hearing impairment, and one classmate. The interview with the hearing impaired student was accompanied by one volunteer who used to work with the student to help translate the intent of his speech and occasionally assisted with written language. While the observation of learning the subject of sensorimotor development was carried out for four times, those were twice the provision of material in the classroom, and twice the practice of handling sensorimotor development for children with special needs. Data source triangulation and method triangulation are applied to test the validity of the data.

**Figure 1. Single case study flowchart**

The data analysis technique used the flow model of Miles & Huberman (2012) through three processes, those were data reduction, data presentation, and drawing conclusions. The analysis started from collecting data about learning for students with hearing impairments in the inclusion class on the Sensorimotor Development Course. Data reduction was done after data collection. Reduced data is then presented. Presentation of data from data that had been collected according to the needs. After that a conclusion was drawn. The data analysis technique can be seen in Fig. 2.

**Figure 2. Data analysis based on Miles and Huberman Flow Model**

## FINDING AND DISCUSSION

### Findings

Student with hearing impairment has the following characteristics: use cochlear implants, difficult to speech, has lipreading capability, expressive communication is mainly done by writing, gestures, and sign, easier to receive visual information/material and can operate a computer.

### Seating Placement

Based on observations, there were two seating settings in the learning of Sensorimotor Development Course, classical and U-shape. In the classical setting, student with hearing impairments sat in the front position facing the lecturer, whiteboard, and projector screen. Whereas in the U-shape setting student sat on the front left wing back to the window and close to the whiteboard. This was confirmed based on the results of interviews with hearing impaired student who said

*"I sat in the front, near the lecturer and whiteboard."*

*"So that I could see the lips of the lecturer, and could see the writing on the whiteboard".*

*"But sometimes the lecturer forget, speaking not facing me, but then repeated again by facing me".*

In the U-shape setting, the student never sat on the right wing facing the window. The reason given was

*"Glare, lecturer lips were not clear".*

### **Optimization of Visual Information**

Lecturers used visual learning media and many provide pictures/diagrams to support the material. The lecturer had no difficulty regarding the provision of visuals for the material. As from the results of the interview, the lecturer said

*"Images or animations are now very easy to access from the internet. I just need to choose what I want".*

Lecturers had also provided electronic material to student with hearing impairments so that those could be accessed anytime, anywhere. In addition, from observations, it appeared that lecturers also provide material with demonstration/modeling methods so that it was easily understood by student with hearing impairments.

### **Modification of Teaching**

Modifications of teaching applied in learning Sensorimotor Development Course were the lecturer speaking not too fast and with a clear articulation, accompanied by signaling or gestures. In addition, lecturer also occasionally gave questions or asked student with hearing impairments to repeat information that had been submitted by lecturer in written form to ensure they could follow the material well. The signaling used is not an official sign language, but in the form of gestures that could be understood. The lecturer delivered

*"I don't know sign language. When communicating with him, I use any gestures or body language. The important thing is he understands. As well as with clear articulation because he is a lipreader".*

Another teaching strategy was to create small groups so that friends who were in a group could help student with hearing impairments to better understand the material. In practice materials, lecturer always divided into small groups, which division of roles were according to the group's agreement. As seen in observations, student with hearing impairments were given a role as a model in the activity of sensorimotor assessment of children with special needs, as a recorder for the results of sensorimotor assessment of children with special needs, as a model in sensorimotor intervention for children with special needs, and as a recorder for observations of sensorimotor intervention for children with special needs.

A little challenge was providing material related to the nervous system of sensory and motor organs because it needed more and more intensive repetition than other material. Even the lecturer said

*"Sometimes, even though he didn't understand yet, I still advanced to the next material. Usually volunteers would later help repeat material that he didn't understand yet."*

### **Volunteer Support**

Another learning strategy implemented in the inclusion class of Sensorimotor Development Course for student with hearing impairments was the provision of volunteer support. The main role of the volunteers is to convey to students what is said in the classroom using communication processes such as repetition, sign language, finger language, body language, and verbal expression. The volunteer was provided by a study and disability services center at Universitas Negeri Surabaya and had participated in selection and training. Volunteer delivered,

*"The selection is done by the study and disability services center Universitas Negeri Surabaya. After graduating, the selection is continued with volunteer training".*

In connection with the Course of Sensorimotor Development, the volunteer added that there were obstacles encountered. There was material related to the nervous system of sensory and motor organs, which was quite difficult to understand for student with hearing impairment. The solution carried out by the volunteer was to add hours of meeting with student outside of class hours to repeat the material. As stated by volunteer

*"Sometimes it is necessary to repeat the material that has been delivered by the lecturer. Usually in the afternoon after completion of all lectures, or on another day according to the agreement."*

### **Teamwork**

What is meant by teamwork here is the support of classmates. One of the friends of the hearing impaired student who was sitting next to him would help if needed. In addition, in group activities, friends who were in the same group would automatically help student with hearing impairments.

Based on observations, it appeared that his friends were consciously helping the student with hearing impairment. As stated by classmates,

*"Yes, often help him. Help by asking if he understood, if he didn't understand yet, me or the volunteer would help explain again. Occasionally, also reminded to focus on lecturer. If there was a group work practice, we usually divided the tasks based on what his capability, for example as a model or as a note-taker."*

The challenge was, not all classmates of student with hearing impairments could use sign language. There were only a few that could apply sign language. But there were a sign language training class in the Special Education Department of Universitas Negeri Surabaya for those who were interested in attending.

### **Discussions**

Sheeya (2018) states that some of the strategies used by schools to improve the welfare of students with hearing impairment in inclusive schools include teacher support, the use of competent translators, collaboration, classroom management such as seating arrangements and the use of visual teaching aids. The strategies are in line with the strategies applied for students with hearing impairment in the inclusive class of Sensorimotor Development Course, those are (1) seating placement, (2) optimization of visual support, (3) modification of teaching, (4) volunteer support, and (5) teamwork.

#### **Seating Placement**

The research findings show that students with hearing impairment are placed in front, facing the lecturer and can see the lecturer's lips clearly and can see the material on the whiteboard or projector well. In line with the opinion of Gargiulo (2012) that students with hearing impairments are placed sitting in the front close to the lecturer and facing the lecturer's face with the intention that it is easy to read the lips of the lecturer (Gargiulo, 2012). Winarsih (2014) also has a similar opinion that learning must be in accordance with the characteristics of deaf individuals, such as paying attention to the direction of the face and the direction of sound. The thing that needs to be considered according to Bamu et al (2017) is the placement of seats for students with hearing impairments not to be too separate from other students so as not to create distance and not lose the opportunity to work cooperatively.

#### **Optimization of Visual Information**

The research findings show that the material is delivered with graphics, drawings or animations, as well as with demonstrations and practice. Winarsih (2014) suggested that the use of visual media can help the deaf learning process in the providers of inclusive education. The use of visual media such as interactive devices, multimedia and other graphics/visual aids, the provision of handouts/outlines of topics can overcome communication barriers for students with hearing impairments (Minister of Human Resource Development Government of India). Safder et al (2012) also conveyed the same thing that lecturers should provide previous handouts and course content and reference lists to students with hearing impairments so that they can pass the material well during learning. In addition, demonstrating lecture material is very helpful in understanding information for students with hearing impairments (Gargiulo, 2012).

#### **Modification of Teaching**

This research resulted in findings that related to teaching for students with hearing impairment in the inclusion class on the Sensorimotor Development Course, the lecturer spoke with sufficient tempo, clear lip movements, accompanied by signals and gestures. The lecturer also needs to clarify whether students with hearing impairments understand the explanation, and repeat if it is not clear. The lecturer divides into small groups for discussion or practice activities. Small groups are very helpful especially in practice where students with hearing impairments can act as model or note-takers during the sensorimotor assessment activities and sensorimotor development intervention activities for children with special needs.

Modifications applied in the inclusion class for students with hearing impairment on the Course of Sensorimotor Development are in accordance with the opinion of Gargiulo (2012), that is the teacher should speak with a tempo that is not too fast and with clear lip movements accompanied by signaling or gesturing. In line with what was stated by Winarsih (2014) that the articulation of teachers must be clear and not turn the back on students when speaking.

Academic support is also done through providing further details or additional explanations and visual clarification during teaching, providing opportunities for students with hearing impairment to get extra explanation when lacking understanding of the material, lecturers reducing the tempo of speech (Bamu et al, 2017). Also of concern in the modification of teaching according to Bamu et al (2017) is the need for engagement of students with hearing impairments during the lecture.

### ***Volunteer Support***

This research shows that volunteer support is necessary for students with hearing impairments in inclusive class learning on Sensorimotor Development Course. Volunteers have a role to convey to students with hearing impairments about what is being said in class using communication processes such as repetition, sign language, finger language, body language, and verbal expressions. Suggestions Safder et al (2012) that volunteers should be allowed to access the course content beforehand so that the volunteers during learning can follow the lecturer and explain well to students with hearing impairments. Volunteer support can be carried out during class hours or outside class hours. If there is still lack of support during lecture hours, it can be added outside of class hours.

Volunteers can also be sign interpreters. The role of the interpreter in addition to helping translate the words of the lecturer, can also facilitate interaction between students with hearing impairments and students hearing in small group activities (Alasim, 2018). Although sign language interpreters have a very vital role, it turns out that the existence of sign language translators can create delays in the teaching tempo because occasionally teachers must wait for the process before continuing the material (Bamu et al, 2017).

### ***Teamwork***

The research findings show that teamwork is needed in learning for students with hearing impairments in inclusive class on Sensorimotor Development Course. Teamwork includes support from classmates. Both individual support during classical learning and support in small groups during discussion or practice. This is in accordance with the opinion of Gargiulo (2012) which states that lecturers can empower a student friend to remind students of hearing impairments to pay attention and ensure that students with hearing impairment understand all information.

McMillan (2008) said that when students with hearing impairments become part of inclusive classes, they will tend to be more socially accepted by their peers. The collectivity or togetherness of students with hearing loss shows strength in their identities; representations of themselves or who and what they are (Nikolaraizi & Hadjikakou, 2006).

However, teamwork is not only between students with hearing impairments with students hearing alone but also collaborative staff can be applied to develop appropriate learning strategies and provide support that is possible for students with hearing impairments (Alasim, 2018). Bamu et al (2017) also have a similar opinion that team collaboration involves between lecturers, interpreters and expertise in order to ensure that students receive appropriate and meaningful educational services (Giangreco, 2000).

## **CONCLUSION**

Learning for students with hearing impairments in inclusive classes on Sensorimotor Development Course can be implemented in the following aspects: (1) Seating placement; Students with hearing impairments are placed in front class, facing the lecturer and can see the lecturer's lips clearly and can see the material on the whiteboard or projector properly. (2) Optimization of visual information; Material is delivered with graphic/drawings/ animations, as well as with demonstrations and practice. (3) Modification of teaching; Lecturer spoke with sufficient tempo, clear articulation, accompanied by gestures. Lecturer also needs to clarify whether students with hearing impairments understand the explanation, and repeat if it is not clear. Divide into small groups for discussion or practice activities. (4) Volunteer support; University provides trained volunteers to help students with hearing impairments during class hours, and if necessary increase outside of class hours. Volunteers can also act as interpreters of sign language. (5) Teamwork; Lecturers facilitate teamwork, between students with hearing impairments and classmates, both individual support during classical learning and support in small groups during discussion or practice. University facilitates teamwork between lecturers and expertise.

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