

Fieldtrip: Alternative Learning Communication in Delivering Biological Material for Visual Impairment Students

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Abstract. Education for students with visual impairments requires different learning techniques from students who can see because the limited sense of sight causes blind students to experience some obstacles in identifying and understanding the subject matter, especially in the field of science, which requires the sense of sight and experience to understand the basic concepts. Therefore, the introduction of plant material in the study of Natural Sciences, especially Biology, requires efforts to provide direct experience to students with visual impairments regarding nature and plants through field trip activities. Therefore, this study aims to describe communication learning activities in introducing nature and plants to blind students through field trip activities. This study used a descriptive case study method that attempted to describe the stages of Field trip teaching and learning activities with the results including the cognitive phase implanted an understanding of the type and anatomy of plants through classroom learning with an aid in the form of audiobooks, while for the effective phase efforts were made to grow love, love, and interest in nature and plants, in field trip activities, and finally the psychomotor phase that helps students to be able to differentiate and benefit from plants through the activity of touching, holding, and kissing plants as the learning objects.

Keywords: Field Trip, Science, Plants

1. Introduction

Every human being needs education, both formal and informal education through certain institutions. Education is one of man's efforts to be able to learn about his environment, and take advantage of the environment for his survival. Education is a human effort to foster personality in accordance with the values in the community or as an effort to help students to develop and improve knowledge, skills, values, attitudes and behavioral patterns that are useful for life [1]. Furthermore, it is also hoped that humans will be able to maintain the sustainability of nature as the ecosystem they inhabit.

There is a special type of education for students with disabilities, including blind people known as extraordinary education. Special education is an effort where students with special needs get an education that is specifically designed to help them reach their full potential [2]. This is done considering that students with disabilities have unique conditions that are

different from most individuals, so that special education can be said to be learning specifically designed to meet the unique needs of children or students with disabilities [3], including people with visual impairments.

People with visual impairments are those who experience vision problems associated with the condition of the senses. The eye is a vital source of information for humans, most of the information is obtained through the sense of sight, namely the eye. Thus it can be understood when a person experiences visual impairments such as visual impairment, then the ability of his activity will also experience limitations [4]. With these conditions, the spells experience difficulties in the formation or acceptance of abstract ideas, so in providing educational services for the blind will depend on the condition of the severity of the abnormality [5], including the conditions at the time of visual impairment, from birth or at a certain age.

In the education curriculum in Indonesia, there are subjects of Natural Sciences including Biology. In Biology material as life science, students will be introduced to the knowledge of living things, including plants. The pattern of biology learning cannot be done effectively if it is merely lecturing and taking notes, or learning through text only, because there are certain materials that are difficult to understand if only relying on the text. Biology is more interesting to learn by utilizing technological advances [6], to provide an easier-to-understand picture, for example, to recognize plant stem tissue, a magnifying glass is used to see the detailed cross-section of the tissue more clearly so that the description of the stem tissue will be more easily understood. Having a good understanding of the nature of learning and the characteristics of biological material will help the success of curriculum implementation [7]. This means that in the Biology learning process, certain learning methods are needed that are adapted to the ultimate goal of learning.

But for students with visual impairment, several uses of tools such as the magnifying glass, microscopes, or other learning aids cannot be used because blind students experience visual impairments, so other learning techniques are needed that can be used to optimize students' understanding of blindness about plants in Biology subject matter. One of the learning activities carried out by the Special School of Negeri A Bandung to introduce plants to students is field trip activities. Field trip activities are sought to invite blind students to get to know and be closer to nature, one of which is plants. This is so that students have understanding, love as well as skills and life behaviors that are in harmony with plants as one of the important elements of nature. Therefore, this study intends to find out the learning communication activities to introduce the concept of plants as part of Biology subject matter to students who are visually impaired.

2. Method

There are a number of studies that attempt to study plant biology lessons for students, including the development of instructional media in the form of leaf preservation for the material of Plant Structure in Biology lessons, considering that the morphological characteristics of the leaves are so many which must be understood and accompanied by its Latin language, then through this leaf preservation media students will be easier to understand by obtaining concrete experiences so that learning is more meaningful [8], besides, there is research that tries to introduce plant diversity in the campus environment [9]. There are also studies on the structure and development of plants which discuss the structure of morphology and plant anatomy [10]. The point is that there has been a lot of research that attempts to examine the material of plant biology for students in public schools from various levels such as the junior high school to college.

As for learning for students with visual impairments, several researchers have conducted such studies that examine educational interventions for blind people [5], and regarding inclusive education policies [11]. This study uses a descriptive case study method, by observing the learning process in the field of Biology, on plant material carried out at the State A Special School at junior high school level students. Field trip activities are carried out in several trip areas.

3. Results and discussions

In the early stages of introducing plant material in Biology lessons, teaching and learning activities are carried out by way of tutorials in class using audiobook tools. The learning process of plant material in class through audiobooks is continued to the next stage, namely the introduction of plants directly through field trip activities. There are several materials presented in the teaching and learning process in the classroom regarding plant material, among others, regarding morphological structures that discuss the shape and structure of vegetative and generative organs [10].

In this teaching and learning process, if there is an image that is usually presented on a blackboard or other visual media, this will make it difficult for students with visual impairments. Therefore, to help students with visual impairments, the teacher states orally when they write or draw on the board [12]. In the teaching and learning process that involves students with special needs, it is hoped that the teacher tries to guide a group of students according to the class category and nature recognition material [13], in order to create conditions of adaptation and comfort, especially in delivering material using various assistive devices in the form of technology. Technology-based learning support tools used in the teaching and learning process of science materials should fulfill the accommodation category factor by modifying conventional facilities or equipment design to make it more accessible, for example, tools and facilities in the Biology Laboratory, which are expected to provide or adapt tools that there is to be adjusted to the conditions of students who experience visual impairments [14].

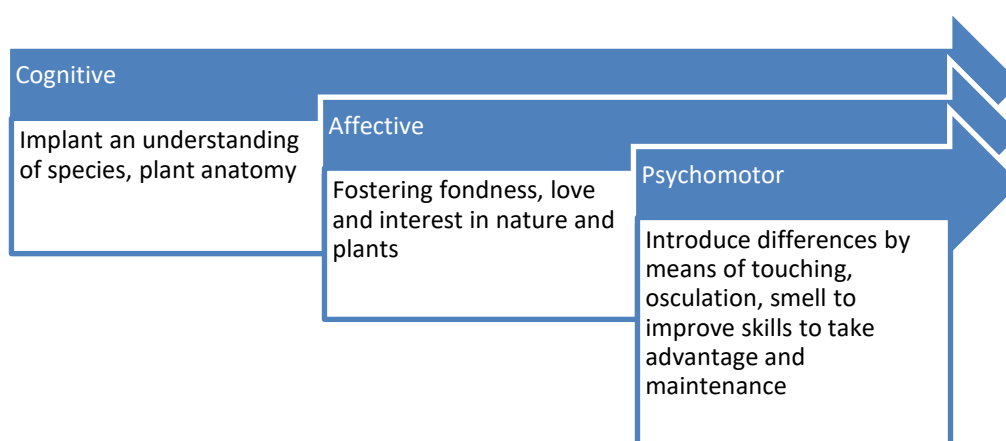
As for the process of giving material through this audiobook, it needs to be considered regarding the conversion of words spoken verbally, which students must understand and become written. There are words with complex meanings to be heard, understood, especially if they have to be rewritten correctly, usually in fields that include biology, psychology, physics, electronic engineering, chemistry, and computer science [15], which often have words or different terms between what is heard and what is written because it comes from a foreign language, as well as other factors.

3.1 Alternative Teaching and Learning Process Through Fieldtrip

After students get a basic understanding of the plants presented in the classroom, the next step is the introduction of plants to students through field trips activities by visiting a location that is known to have the material needed to be introduced to students. Learning through field trip activities is intended to provide a real experience that encourages the development of creative science, improves environmental literacy, and inculcates social responsibility for students [16]. That is, after being given an introduction in the form of material delivery to improve students' cognitive knowledge, the next step is to conduct the teaching and learning process with the intention of improving the affection aspect. This process requires social support. Social support acts as a fulfillment of the needs of affection, inspires, motivational

drivers and capacity-building [17]. Therefore, meeting the needs of affection is the first step in the effort to shape the capacity of students in the future.

One of the capacities that are expected to be formed within students is the ability to use thoughts, reason, and actions based on scientific processes. Thus, the Science Process Skills (KPS) need to be developed so that students are able to learn independently, develop themselves, and learn throughout life [18]. One of the skills that need to be possessed by blind students is to recognize the type of environment. There is an effort to introduce plant diversity by recognizing plant species in the learning environment [9]. In another study conducted at 11 special schools in South Africa, mentioned that in the teaching of life sciences (biology) for visual impairment students is carried out with special reference to the development of science process skills [19]. This shows the importance of direct environmental recognition to students, including students with special needs. The stages of the learning process can be seen in Figure 1, the following:



Picture 1 The Stages of Alternative Learning Communication In Conveying Plant Material to Visual Impairment Students Through Fieldtrip

The teaching and learning process that takes place outside the classroom is one of the innovative learning methods. Learning innovation can be done by modifying the educational structure that has been set by default so that although there is an innovation process, it does not deviate from the corridors of the education system adopted. In an effort to keep up with the times, awareness is needed to review the structure of education that is already underway to continue to be developed. The restructuring of the education system was not new, the restructuring of the education system was also carried out in Ireland in the 1990s, resulting in significant changes in education with special needs including efforts to bring inclusive education at the policy level [20]. One that needs to be considered in the evaluation of the education system for students with special needs can include elements of the curriculum, delivery method, and evaluation methodology that should be designed inclusively from the start. This will require the use of creative technology, such as posting material online or choosing software that is compatible with screen readers [21], so that it can be accessed by blind students, both in class and outside the classroom.

4. Conclusions

The field trip is a learning communication activity that can be used as an alternative method in introducing the environment, including material about plants to students who experience visual impairments. Through field trips, activities students can be invited to get to know and feel directly the sensations of nature through touching, and smell and also on the sound. In Natural Science subject matter, including Biology, to recognize plants, students can make a touch and touch directly on the texture and structure of plants, such as roots, stems, leaves, and flowers. Besides students can get to know the concept of plant anatomy, students can also understand the different types of plants through direct touch. In principle, field trip activities can be carried out together in a certain period, but the introduction of the material is adjusted to the discussion of classes according to class level, focusing on the aim of introducing the surrounding environment to students to be able to know, feel, recognize and understand and have experience about nature.

As a result, in addition to students being able to understand about plants that have only been known in an abstraction concept, they can also be invited to develop a sense of love for the environment and increase academic interest in plants, as well as providing basic knowledge and skills to be able to take and provide benefits to nature and the environment.

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