



Implementation of Presentation Activity in Training Science Literacy Skills of Grade XI Students on The Topic of Plant Tissues

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Abstract

Background: In general education, literacy skills are a must for students. The capacity to recognize problems, reach conclusions, and use scientific information in daily situations is known as scientific literacy. Students who are scientifically literate in Christian education will have a deeper understanding of God and His creation as they recognize the order found in all living things. The goal of this final project is to clarify how presentation activities might be used to help students in class XI develop their scientific literacy. **Methods:** A descriptive qualitative approach to analysis is applied. Finally, incorporate presenting exercises into the classroom and prepare extra notes for the presentation. Answering, explaining, identifying, and analyzing questions are examples of scientific literacy indicators demonstrating how well the presentation activity went, searching for relevant literature, and locating it. **Results:** All students looked confused and could not answer the teacher's questions. Six out of 10 students could not explain what was known about plant tissue. Eight out of 10 students could not analyze and identify the location characteristics. **Conclusions:** Implementing presentation activities in the classroom has proven to train students' scientific literacy skills. The stages of presentation activities include determining the presentation topic, knowing the audience's needs, determining the purpose of the presentation, determining the core information to be conveyed, creating the presentation content, determining the opening and closing of the presentation, and making special notes for the presentation, are considered to be able to train the scientific literacy skills of grade XI students.

Keywords: Audience requirements; Living things; Plant tissue; Qualitative description; Scientific literacy



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Introduction

In general, education is the most essential thing in human life (Yayan, 2019). Humans will experience self-development in various aspects, such as intellectual and spiritual (Haderani, 2018). Education is undoubtedly closely related to science. The existence of science in this world does not just happen; someone initiates and underlies the knowledge. The Christian perspective explains that science is based on the word of God (Lase & Purba, 2020). Knowledge of this science's basics differentiates general education from Christian education.

In general educational practice, students are required to have literacy skills. According to Luna et al. (2018), literacy is the ability to identify, understand, interpret, create, communicate, calculate, and use materials related to various contexts.

Science learning also requires literacy skills. Science literacy is the ability to identify questions, draw conclusions, and apply knowledge about science in everyday life. Science literacy is not just an activity of reading about science but can help students develop their scientific experiences and give meaning to an event (Sufinasa et al., 2023).

According to Rusilowati (2018), indicators of scientific literacy include: (1) being able to explain facts, concepts, principles, and laws; (2) presenting hypotheses, theories, and models; (3) answering questions related to scientific knowledge or information. Other indicators of scientific literacy explained by Rahmadani et al. (2018), among others, can identify valid scientific opinions, conduct effective literature searches, understand the elements of research design and their impacts, create accurate graphs from data, be able to solve problems with quantitative skills including basic statistics, understand and interpret basic statistics, and be able to make inferences, predictions, and draw conclusions based on data. In line with the indicators of scientific literacy mentioned in the previous sentence, Winata, Anggun dan Cacik (2016) argue that indicators of scientific literacy include (1) identifying valid scientific opinions; (2) conducting effective literature searches; (3) understanding elements in research design; (4) making graphs appropriately from data; (5) solving problems using quantitative skills; (6) understanding and interpreting basic statistics; and (7) making inferences, predictions, and drawing conclusions based on quantitative data.

Through the three expert opinions in the previous paragraph that discuss indicators of scientific literacy, it can be synthesized that in ideal conditions, students who have scientific literacy skills are characterized by five indicators, including: (1) students can answer questions related to knowledge or information about science; (2) students can explain facts, concepts, principles, and laws regarding science; (3) students can analyze information from each representation; (4) students can identify valid scientific opinions, and (5) students can conduct effective literature searches (Rusilowati, 2018; Rahmadani et al., 2018; Winata, Anggun dan Cacik, 2016).

According to Ajhuri (2019), children at school age can think more complexly and solve problems. In the age range of 16 years and above, children experience transformation in various aspects, including cognitive aspects. Children will think more abstractly and conceptually. Their mental abilities will greatly influence every experience experienced by children (Ibda, 2015). Cognitive skills are closely related to scientific literacy, which requires students to apply scientific concepts to everyday life. Scientific literacy is also essential for every student because it will greatly help students live their lives in the future (Lamada, Mustari, Rahman, 2015).

Science literacy in education is also closely related to Christian education. Science literacy in Christian education will help students get to know God and His creations by seeing God's order in every living creature. A Christian teacher in Christian education generally consistently links knowledge with the existence of God as actual knowledge. Knowledge of science that studies living things will help students glorify God. Research conducted at one of the schools in South Lampung, specifically in class XI IPA, shows that students' science literacy skills are still relatively low. This can be seen from the lack of students' ability to answer questions the subject teacher raises. The indicators of science literacy, namely explaining, analyzing, and identifying, have also not been achieved by students.

The problem of science literacy in students can be overcome by conducting presentation activities. Presentation is an activity carried out verbally to convey information to listeners so that listeners can absorb the info conveyed easily (Mailoa, 2008). Another definition of the Ministry of Finance of the Republic of Indonesia (2021) states that presentation activities communicate in front of many people to convey arguments, ideas, ideas, information, and specific materials. The stages of presentation activities are (1) the planning stage, (2) the delivery stage, (3) the evidence stage, (4) the supervision stage (handling), and (5) the closing stage (Trimastuti et al., 2021). It is hoped that presentation activities can train the scientific literacy skills of grade XI

students. This study aims to explain the application of presentation activities to train the scientific literacy skills of grade XI students.

Methods

The method of writing this final project is descriptive qualitative, with a focus on the study of scientific literacy, scientific literacy, presentation activity, the relationship between scientific literacy and presentation activity, the relationship between scientific literacy and presentation activity, the scientific literacy skills of grade XI students on the topic of plant tissue, and the implementation of presentation activities in training students' scientific literacy skills. The data used are the results of observations, teaching reflections, lesson plans, feedback from mentor teachers, quiz questions, student presentation results, and presentation assessment rubrics. The questions designed and given to students have previously been validated by the mentor teacher and integrated with Biblical Christian insight. In the lesson plan, a lifelong understanding is made so students can understand God's order in all His creations through plant tissue material. Not only that, during teaching, the teacher also integrates plant tissue material with Biblical Christian insight so that it can train students' scientific literacy skills through presentation activities carried out in learning.

Sample or Participant

The sample used in this study were students at a school in South Lampung, specifically in class XI IPA with 10 students.

Instrument

The instruments used to obtain classroom action assessment data are observation results, teaching reflections, lesson plans, feedback from mentor teachers, quiz questions, student presentation results, and assessment rubrics. Observation results are obtained when teachers observe the class. Teaching reflections are written by teachers based on the learning plan, learning process, and after-learning. Then, the quiz questions have also been validated by the mentor teacher before being given to students. Student presentation results are assessed using a presentation assessment rubric created based on the presentation activity steps.

Data collection

The research data were collected using observation results, teaching reflections, lesson plans, feedback from mentor teachers, quiz questions, student presentation results, and assessment rubrics. The research was conducted for five weeks. The method applied in the classroom was the presentation method. This presentation method was used twice in the same class with the same number of students. In addition, additional data was obtained through the results of working on quiz questions at the first and last meetings.

Result

Science literacy in science education is currently widely discussed (Ahmad, 2016). Science literacy focuses on knowledge of scientific concepts and phenomena so that this knowledge can be applied to everyday life (Kumala et al., 2020). Furthermore, according to Danlodi (2018), science literacy skills are essential because students can make decisions based on facts, research, and knowledge that has been discovered. The existence of knowledge in this world cannot be separated from the word of God, which is an absolute source of knowledge (Knight, 2009). God's word will help humans have the correct view of knowledge. If associated with the field of education, of course this will have a very good impact on students' lives.

Most students have explored their respective worlds according to their needs and desires, so a correct understanding is needed from the correct primary source, namely the word of God (Graham, 2016). In applying science literacy in the classroom, teachers

have a vital role, namely, providing a comprehensive picture of science (Rusilowati & Sulhadi, 2017). In reality, many Christian teachers or educators still reflect a worldview in understanding the fields of study being taught (Edlin, 2008). The knowledge teachers have should be based on the word of God so that every knowledge teachers convey to students follows the truth of the Bible (Christofer & Irawati, 2022). The Christian epistemological view will influence someone, including teachers, to view, apply, and evaluate the learning strategies used in the classroom (Simanjuntak, 2009). A Christian teacher is essential in guiding students in Christ-centered teaching and learning (Budiman, 2022). In science literacy, a Christian teacher creates a fun learning environment, actively involving students in the teaching and learning process and using interactive learning methods (Nurhanifah & Diah, 2023). However, it is still found that many teachers have not been able to create interactive teaching and learning activities. Coupled with students' science literacy skills which are still relatively low.

Based on OECD (2019), more than 400,000 Indonesian students aged 15 years and over participated in PISA in 2018, ranked 70th out of 79 countries with an average score of only 396 out of 489. This shows that students' scientific literacy skills in Indonesia are still relatively low. Also, based on data taken during the Field Experience Program (PPL) implementation at a Christian high school in South Lampung, the scientific literacy skills of grade XI students are still relatively low (Table 1). In the teaching reflection data on the introduction of plant tissue, students were given quiz questions at the beginning of learning. Giving quiz questions aims to discover students' initial knowledge of the material being taught (Magdalena et al., 2021). Based on research conducted by Hidayat et al. (2020), the minimum completion value standard for student learning outcomes is 70, while the standard for obtaining high-category student learning outcomes is 91. Based on the results of the quizzes that students did, it can be seen that eight out of 10 students scored below the KKM (Minimum Completion Criteria). Table 2 displays the quiz questions for grade XI students on plant tissue.

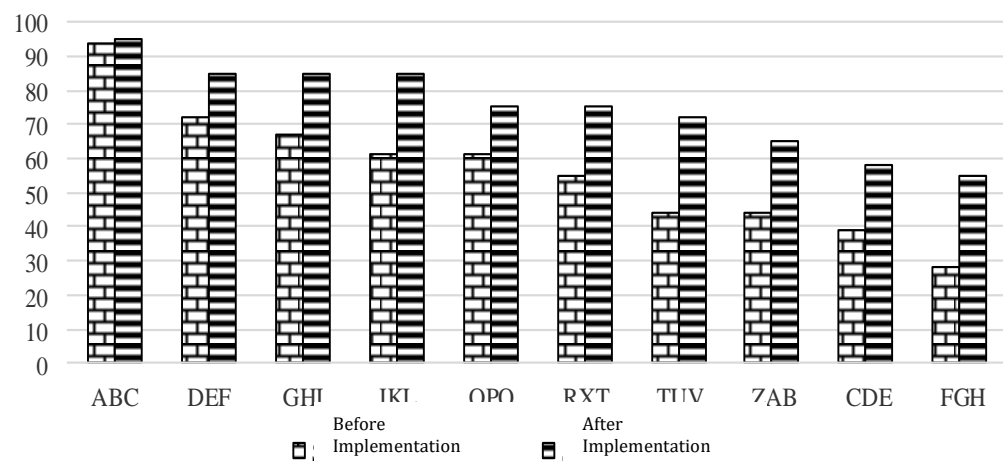
Based on the table analysis, Table 1 shows that all quiz questions are made to measure students' scientific literacy skills in answering questions about plant tissue. Not only through quizzes, teachers also ask students direct questions about plant tissue during learning. Table 1 also shows that grade XI students cannot identify and analyze questions about plant tissue. The type of questions given are statements that are "True" or "False" or true/false choices. True/false choice type questions aim to determine students' initial knowledge about the study material. However, not only to measure students' prior knowledge, true/false questions are also used to measure students' ability to understand certain concepts (Camosun College, 2023). In Table 1, one of the indicators of scientific literacy, namely explaining (C2), has not been achieved by students. Five out of 10 students in the class can only achieve this indicator.

Presentation activity is a method used to help students train their scientific literacy skills. Before implementing the presentation activity, students work on quiz questions to measure their' scientific literacy skills. During the implementation of the presentation activity, the teacher assesses students twice. Then, the second quiz was given at the fourth meeting after the presentation activity had been implemented. Table 4 describes students' learning outcomes before, during, and after the implementation of the presentation activity.

Based on the data on student learning outcomes presented in Figures 1 and 2 it shows that students' scientific literacy skills have increased quite significantly. The data in Figure 1 shows that the quiz scores increased before and after the implementation of the presentation activity. This indicates that students' scientific literacy skills have increased due to the implementation of the presentation activity method. The following data is in Figure 2, which shows an increase in students' presentation scores in the implementation of the first presentation activity and the implementation of the second presentation activity.

Table 1. Scientific Literacy Indicators

No.	Science Literasi Indicators	Question	Question Types
1.	Answering (A1)	All quiz questions are designed to measure students' scientific literacy indicators when answering questions related to plant tissue.	Description
2.	Explaining (C2)	<ul style="list-style-type: none"> What do you know about plant tissue? Based on the cell division activity that occurs during growth and development, the types of plant tissue are grouped into two types, namely meristem tissue and permanent tissue. Explain two differences in the characteristics of meristem tissue and permanent tissue! 	Description
3.	Identifying (C4)	All quiz questions were designed to measure students' scientific literacy indicators in identifying questions related to plant tissue.	Description and choice of "TRUE" or "FALSE" statements.
4.	Analyzing (C4)	All "TRUE" and "FALSE" questions measure students' scientific literacy in analyzing information about plant tissues.	The statement choices are "TRUE" or "FALSE."
5.	Doing (P2)	At the meeting before the quiz was held, the teacher asked students to read the material about plant tissue.	Description and choice of "TRUE" or "FALSE" statements.

Quiz Scores Before and After Implementing Presentation Activity

Figure 1. Quiz Scores Before and After Implementing Presentation Activity

Based on the data on student learning outcomes presented in Figures 1 and 2, it shows that students' scientific literacy skills have increased significantly. The data in Figure 1 shows that the quiz scores increased before and after the implementation of the presentation activity. This indicates that students' scientific literacy skills have increased due to the implementation of the presentation activity method.

Based on the results of observations that have been carried out, grade XI students are considered not to have met the indicators of scientific literacy. All students looked confused and were unable to answer the teacher's questions. Six out of 10 students could not explain what was known about plant tissue. Eight out of 10 students could not analyze and identify plant tissue's characteristics, location, and function, and three out of 10 students could not apply the material in everyday life (Table 1). The facts that occurred in the field were in line with research conducted by Utama et al. (2019) that identified and explained scientific facts are included in the indicators for measuring scientific literacy skills. In line with this research, Fitria et al. (2017) stated that the analytical skills possessed by students can also be used to measure students' scientific literacy skills.

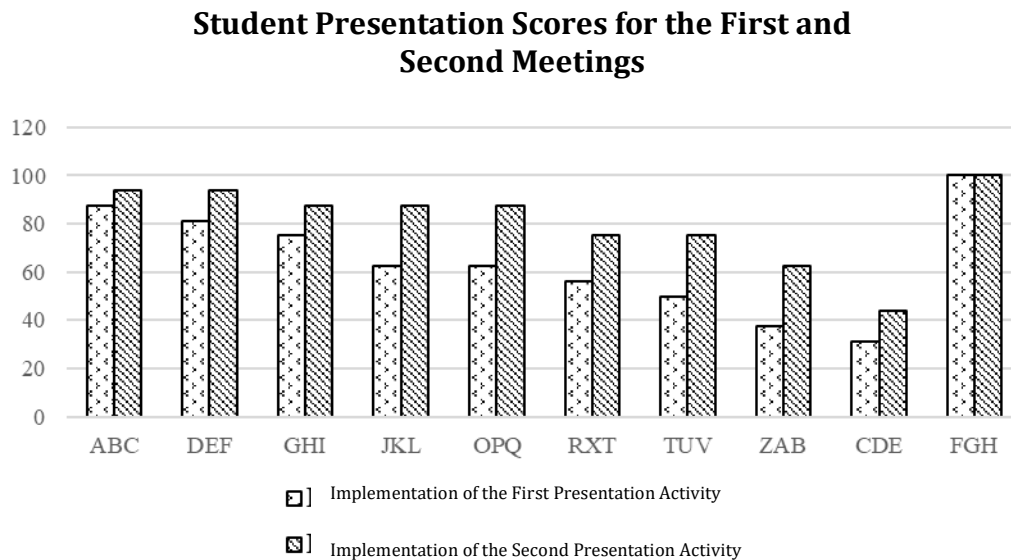


Figure 2. Data on Student Presentation Results from the First and Second Meetings

Table 2. Scientific Literacy on the Topic of Plant Tissues

No.	Indicators Scientific Literacy	Facts that happened	
		Before Implementation	After Implementation
1.	Answering	All the students looked confused when responding to the questions asked by the teacher, so all of them just remained silent.	All students responded to the teacher's questions enthusiastically.
2.	Explaining	Six out of 10 students could not explain what they already knew about plant tissue through the quiz questions given.	Seven out of 10 students could explain what they know about plant tissues through the quiz questions provided.
3.	Analyzing	Eight out of 10 grade XI students have not been able to analyze information about plant tissues by completing quiz questions given by the teacher.	All grade XI students have been able to analyze information about plant tissue by completing quiz questions given by the teacher.
4.	Identifying	Eight out of 10 students could not identify the characteristics of the location and function of plant tissue by completing the quiz questions the teacher gave.	All students could identify plant tissue's characteristics, location, and function by completing the quiz questions given by the teacher.
5.	Doing	Three out of 10 students can apply the material taught by the teacher to everyday life.	Seven out of 10 grade XI students could complete the quizzes above the KKM score.

Source: Researcher Data (2023)

The first stage, namely determining the presentation topic, can be seen in [Table 3](#), which shows that students have not achieved all indicators of scientific literacy. In the implementation of the first and second presentation activities, there was a development of students; namely, students were able to achieve all indicators of scientific literacy, answering (C2), explaining (C2), analyzing (C4), identifying (C2), and conducting literature searches (P2). When the teacher gives the presentation topic to students, students must master the presentation material that will be delivered to the audience group so that students can answer questions from the audience group during the question and answer session. The third stage of the presentation is determining the purpose of the presentation. The data in Table 2 shows that students can achieve all indicators of scientific literacy. The next stage is determining the core information to be delivered. At this stage, students have not been able to achieve the indicators of scientific literacy at the first and second meetings. However, at the third meeting, it can be seen that all students have achieved the indicators of scientific literacy. The last two stages of

the presentation activity are determining the opening and closing of the presentation and making special notes for the presentation. Table 2 shows that the presentation activity stages of opening and closing the presentation and making special notes for the presentation are considered capable of training students' scientific literacy skills. According to Noer (2017), a good presenter will continue practicing to make the presentation activities even better. Of course, this is closely related to students' scientific literacy skills. If students continue to practice making presentations, then all indicators of scientific literacy will also be achieved.

Table 3. Comparison of Learning Before and After Implementation of Presentation Activities

No.	Presentation Steps	Meeting 1 (Before Implementation)					Meeting 2 (Implementation of First Presentation Activity)					Meeting 3 (Implementation of Second Presentation Activity)				
		Science Literacy Indicators														
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1.	Topic determination	x	x	x	x	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓
2.	Knowing the audience's needs	x	x	x	x	x	✓	✓	x	x	✓	✓	✓	✓	✓	✓
3.	Goal determination	✓	x	✓	x	✓	x	✓	x	✓	✓	✓	✓	✓	✓	✓
4.	Determining the core information to be conveyed	✓	x	x	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓
5.	Creating presentation content	✓	x	x	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓
6.	Determining the opening and closing of the presentation	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7.	Making special notes for the presentation	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Description: (x) indicator has not been achieved, (✓) indicator has been achieved,

Source: Researcher Data (2023)

Discussion

The explanation of each stage of the presentation activity has been proven to be able to train students' scientific literacy skills. There was a change in the form of a significant increase from before and after the implementation of the presentation activity. In its implementation in the classroom, of course, there will be many obstacles for teachers. Teachers cannot do this if they only rely on their own strength. Teachers need help from the Holy Spirit to enable teachers to implement learning in the classroom. The transformation or change in students can only be done by God (Jane, 2018). However, as God's co-workers, teachers have a role to play in guiding students.

Conclusions

The implementation of presentation activities in the classroom has proven to train students' scientific literacy skills. The stages of presentation activities include determining the presentation topic, knowing the audience's needs, determining the purpose of the presentation, determining the core information to be conveyed, creating the presentation content, determining the opening and closing of the presentation, and making special notes for the presentation, are considered to be able to train the scientific literacy skills of grade XI students. The implementation of presentation activities can train students to achieve scientific literacy indicators, namely answering (A1), explaining (C2), analyzing (C4), identifying (C2), and doing (P2). Through the study of the presentation activity method that has been carried out, what can be reflected is that the role of a teacher as a student guide in the classroom is vital. Teachers must consider implementing appropriate learning methods to help students train their scientific literacy skills. This is done as a form of teacher responsibility to Allah, who has given knowledge and the ability to guide students.

Declaration statement

The authors reported no potential conflict of interest.

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