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# The Influence of Hyper Content-Based Practicum Guidance on Students' Scientific Literacy Ability in Material Structure and Function of Plant Tissues for Class XI IPA Students at SMA Negeri 2 Gowa

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**Abstract**. This research is an experimental research*Quasi Experimental Design* which aims to determine the effect of a practicum-based guide*hyper content* on the scientific literacy skills of class XI IPA students at SMA Negeri 2 Gowa on the material structure and function of plant tissue with a research design "*Nonequivalent Control Group Design".* The population in this study was class XI IPA SMA Negeri 2 Gowa which consisted of six classes with a total of 151 students. The sample of this study consisted of two classes, namely class XI IPA 1 as an experimental class of 25 students and class XI IPA 2 as a control class of 25 students who were randomly selected.*Simple Random Sampling*. The research variables consist of independent variables, namely practicum-based guides*hyper content* while the dependent variable is scientific literacy ability. Data collection is done through giving*pretest* and*posttest*. Data were analyzed with descriptive statistics and inferential statistics with the help of*SPSS (Statistical Product and Service Solutions) versi 25*. The results showed that the average value of the results*posttest* the experimental class is 71.33 and the control class is 54.73. In the hypothesis test through*Independent Sample T- Test* with a value of p = 0.000 <a = 0.05, it can be concluded that there is an influence of practicum-based guidance*hyper content* on students' scientific literacy skills on the material structure and function of plant tissue in class XI IPA SMA Negeri 2 Gowa.
***Keywords:*** *Practicum Guide; Hyper Content; Science Literacy*

**Abstrak.** Penelitian ini merupakan penelitian eksperimen *Quasi Experimental Design* yang bertujuan untuk mengetahui pengaruh penuntun praktikum berbasis *hyper content* terhadap kemampuan literasi sains siswa kelas XI IPA SMA Negeri 2 Gowa pada materi struktur dan fungsi jaringan tumbuhan dengan desain penelitian "*Nonequivalent Control Group Design"*. Populasi dalam penelitian ini adalah kelas XI IPA SMA Negeri 2 Gowa yang terdiri dari enam kelas dengan jumlah total 151 siswa. Sampel penelitian ini sebanyak dua kelas yaitu kelas XI IPA 1 sebagai kelas eksperimen sebanyak 25 siswa dan kelas XI IPA 2 sebagai kelas kontrol sebanyak 25 siswa yang dipilih secara *Simple Random Sampling*. Variabel penelitian terdiri dari variabel bebas yaitu penuntun praktikum berbasis *hyper content* sedangkan variabel terikat yaitu kemampuan literasi sains. Pengumpulan data dilakukan melalui pemberian *pretest* dan *posttest*. Data dianalisis dengan statistik deskriptif dan statistik inferensial dengan bantuan *SPSS (Statistical Product and Service Solutions) versi 25*. Hasil penelitian menunjukkan bahwa pada nilai rata-rata hasil *posttest* kelas eksperimen 71,33 dan kelas kontrol yaitu 54,73. Pada uji hipotesis melalui *Independent Sample T- Test* dengan nilai p = 0,000 < a = 0,05 dengan demikian dapat disimpulkan ada pengaruh penuntun praktikum berbasis *hyper content* terhadap kemampuan literasi sains siswa pada materi struktur dan fungsi jaringan tumbuhan siswa kelas XI IPA SMA Negeri 2 Gowa..
***Kata Kunci:*** *Penuntun Praktikum; Hyper Content; Literasi Sains*

## INTRODUCTION

Along with the current developments, Indonesia is in the era of the Industrial Revolution 4.0, with various sophistication of information and communication technology, so that it has a huge influence on various aspects of life, including in the world of education. In the current era of the industrial revolution 4.0, the world of education is required to give birth to the next generation of nations who are able to compete later. One of the competencies that the next generation must have is abilitymultiliteracy. Multiliteracy can include scientific literacy, digital literacy, literacy literacy, numeracy literacy, financial literacy and cultural literacy. Meanwhile, the ability of multiliteracy in Indonesia is still very low when compared to other countries, especially in scientific literacy.

The above can be proven from the data collected by Tohir (2019: 1) saying that the PISA results (*Programme for International Student Assessment*) 2018 in the scientific literacy category Indonesia is ranked 9th from the bottom, namely ranked 71st with an average score of 396, the score obtained in 2018 decreased when compared to the PISA results in 2015, namely with an average score of 403.

Based on the above, as an educator it is required to be more innovative in learning by utilizing current technological sophistication, in order to improve students' scientific literacy skills. One of the things that can hone and improve students' scientific literacy skills at school is by carrying out practicums that will train students' scientific literacy skills in conducting an experiment to prove the theories they have learned. According to Koretsky (2015) practicum activities provide a very large role, especially in building understanding of concepts, verification (proof), correctness of concepts, fostering process skills (basic scientific work skills and students' affective abilities) and fostering a "love of learning. Therefore, we need an appropriate learning media used to support practicum activities in learning biology so that the goals of learning biology can be achieved.

Practicum activities must of course be equipped with practicum guides. The practicum guide is a practicum implementation guide that contains procedures for preparation, implementation, data analysis and reporting. The availability of practicum guides is expected to be able to become a guide for students and it is hoped that it can also attract students' interest in practicum activities. But in fact not all schools have practicum guides, this will certainly hinder the implementation of a practicum, especially in biology practicum. This is similar to the results of observations and interviews conducted at SMA Negeri 2 Gowa. It was found that the practical implementation at SMA Negeri 2 Gowa had not been carried out optimally. This is due to the absence of practicum guides or the absence of laboratory assistants and assistants

so that teachers are overwhelmed guiding students alone while the number of students is relatively large. This is what makes students less interested in doing practicum, because they don't get itexplanation more clearly related to practice.

Based on the description above, one of the efforts that can be made to optimize practicum activities to improve students' scientific literacy skills is to present a practicum guide based on*hyper content*. Based practicum guide*hyperconnect* In it, it fully explains the practicum activity unit that will be carried out and contains it*QR code* which can be accessed easily via an Android phone, computer or*laptop*, by scanning*QR code* which has been provided in the guide.

Through*hyper content* students, can access matters related to the practicum to be carried out including, can access practicum rules, practicum objectives, related materials, practicum tools and materials, work procedures, work procedure videos, tables of observations, practice questions, and conclusions . With a practicum based guide*hyper content* This will certainly help in carrying out practicum, students will be more interested and it will be easy to understand the contents of the guide. Based on the theory of the effectiveness of using guides*hyper content* alreadyproven by Hidayat (2020: 7) who says that "the effectiveness of using guide media is based*hypercontent* the basic principles of 2 dimensions have been proven to increase students' scientific literacy.

The material on the structure and function of plant tissue that is taught in class XI in odd semesters, is one of the learning materials that is very suitable for practicum because the material is categorized into one of the materials that requires proof between theory and actual practice, in addition to implementing network structure and function practicum. This plant is also rarely used because the practicum process requires quite difficult skills.

Based on the description above and to provide an alternative solution to the constraints of practicum implementation, namely in the form of a biology practicum guide at SMA Negeri 2 Gowa, the researcher is interested in conducting research with the title "The Influence of Practicum Based Guidance*hyper content* on students' scientific literacy skills on the material structure and function of plant tissue in class XI IPA SMA Negeri 2 Gowa". Based on the background above, the formulation of the problem in this study is: is there an influence of practicum-based guidance*hyper content* on students' scientific literacy skills on the material structure and function of plant tissue in class XI IPA SMA Negeri 2 Gowa?

## RESEARCH METHODS

The type of research used in this study is the type of research*Quasi Experimental Design* which aims to find

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practical guide-based*hyper content* on scientific literacy abilities of class XI IPA students of SMA Negeri 2 Gowa. This research will be conducted at SMA Negeri 2 Gowa, when the implementation of this research will be in the odd semester of the 2021-2022 academic year in August-October 2021.

In this study, the population taken was all XI IPA students at SMA Negeri 2 Gowa for the 2021/2022 academic year consisting of 6 groups with information that all classes were equivalent or there was no superior class.

Sampling in this study using techniques*Simple Random Sampling* and the class that was selected was IPA 1 class which was the research sample as the experimental class and class XI IPA 2 which was the research sample as the control class. This study uses an experimental method with the research design used is design*Nonequivalent Control Group Design.* This research consists of several stages, namely, the observation stage, the preparation stage, the implementation and evaluation stage. Data collection using observation methods, documentation methods, and tests. The data analysis technique used in this research is descriptive analysis and inferential analysis.

## DISCUSSION

### Data Description of Students' Science Literacy Test Results on Structure and Function of Plant Tissues in Experiment Class and Control Class

distribution of value data*Posttest* the experimental class and the control class can be seen in the frequency diagrams in Figures 1 and 2 as follows

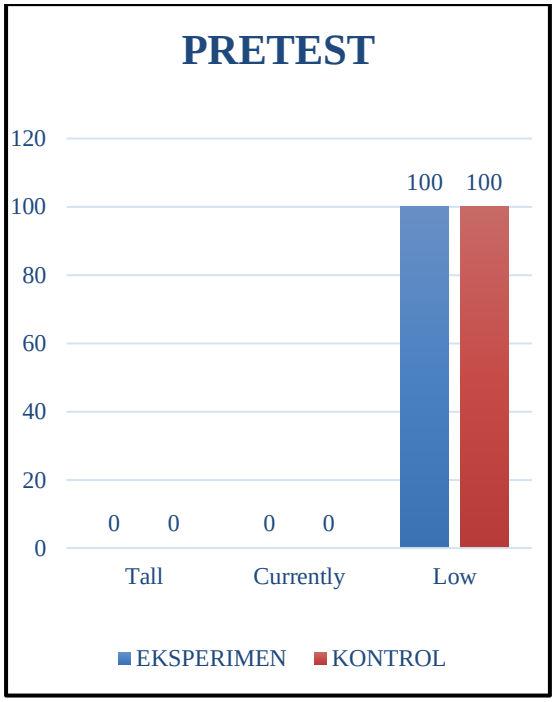


Figure 1 Diagram*pretest* Experiment Class and Class Control

Based on figure 1 regarding the yield value diagram*pretest* the experimental class and the control class can be seen that both classes are in the low category.

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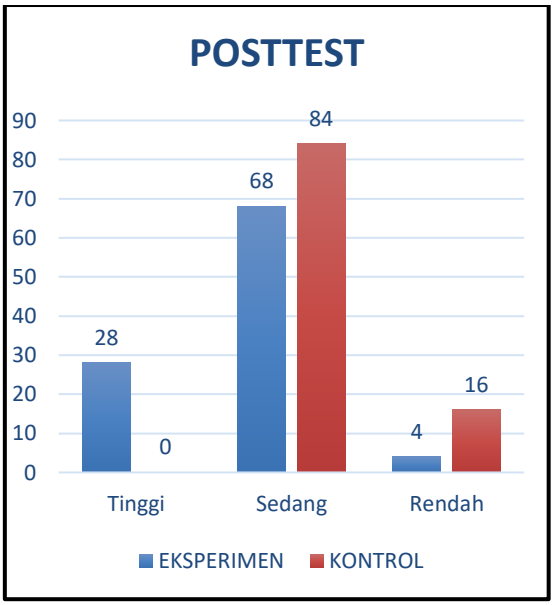


Figure 2 Diagram*Posttest* Experiment Class and Control Class

Based on figure 2 regarding the yield value diagram*posttest* It can be seen that the two classes, namely the experimental class and the control class, experienced an increase after being given a practicum-based guide treatment*hyper content* in experimental classes and non-based practicum guides*hyper content* in the control class. But the increase in the value of the two classes is different, that is, the experimental class has a higher score than the control class. This can be seen clearly in the diagram above.

**Normality test**

Before testing the hypothesis, the first prerequisite analysis test is the normality test. This test aims to determine the distribution of pretest and posttest data on students' biology science literacy variables. The Normality Test is used using SPSS 25 with the help of the test*Normality Test* (*Kolmogorov-Smimov*). The data is said to be normally distributed, if the significant value (Sig) is > 0.05 or 5%. The test criteria are if the significance value (sig.) <0.05 means that the sample distribution is not normal, if the significance value (sig.) > 0.05 means that the sample is normally distributed. Based on table 4.4 the normality test results with*Kolmogorov-Smirnov* it can be seen that all pretest and posttest data for both the experimental class and the control class have sig> 0.05, it can be concluded that the data group is normally distributed. The summary of the normality test results from the pretest and posttest data respectively can be seen in table 1 below:

Table 1 Normality Test Results*Pretest* and *Posttest* Experiment Class and Control Class

| **Tes Literasi Sains Siswa** | | | | | |
|---|---|---|---|---|---|
| ***Tests Of Normality*** | | **Kelas** | | | |
| | | **Pre-Test Eksperimen** | **Post-Test Eksperimen** | **Pre-Test Kontrol** | **Post-Test Kontrol** |
| ***Kolmogorov-Smimov*** | **Statistik** | 0.167 | 0.097 | 0.150 | 0.139 |
| | **Df** | 25 | 25 | 25 | 25 |
| | **Sig.** | 0.72 | 0.200 | 0.149 | 0.200 |

The test criteria are if the significance value (sig.) <0.05 means that the sample distribution is not normal, if the significance value (sig.) > 0.05 means that the sample is normally distributed. Based on table 4.4 the normality test results with*Kolmogorov-Smirnov* it can be seen that all pretest and posttest data for both the experimental class and the control class have sig> 0.05, it can be

concluded that the data group is normally distributed.

**Homogeneity Test**

Homogeneity test aims to determine whether the data obtained is homogeneous or not. Homogeneity testing using Test*Homogenity Of Variance* on*Levene Statistic* Through*SPSS* version 25. The results of the data homogeneity test can be concluded by comparing the probability value with a significant level of 0.05 with a decision making if the significant value is greater than 0.05, then the variance of each sample is the same (homogeneous). And if the significant value is less than 0.05, then each sample is not the same (not homogeneous).

The following results of the homogeneity test can be seen in 2 below:

Table 2 Homogeneity Test Results

| Tes Literasi Sains Siswa | | | |
|---|---|---|---|
| **Levene statistic** | **Df1** | **Df2** | **Sig.** |
| 2.518 | 1 | 48 | 0.119 |

Based on table 4 shows that the data in this study is homogeneous. This can be seen from the value of sig α = that is > α, which means that the significance value of the data in the experimental class and control class is much greater than the test significance level of 0.05, so the two research data above are said to be homogeneous.

**Hypothesis testing**

After the prerequisite analysis test was carried out which concluded that the data were normally distributed and had a homogeneous variance, then the hypothesis was tested. Hypothesis testing was carried out to find out whether there was an effect of a practicum-based guide or not*hyper content* on students' scientific literacy skills on the material structure and function of plant tissue in class XI IPA SMA Negeri 2 Gowa. Testing will be processed using analysis*Independent sample t-test* with the help of SPSS 25. The criteria for accepting data whether there is an influence or not is based on the significant value that comes out of*output* SPSS, if the sig value <0.05 then the practical guide is based *hyper content* influence ($H_1$). The following results of hypothesis testing can be seen in table 3 below

Table 3 Hypothesis Test Results

| **Statistics** | ***Posttest*** |
|---|---|
| *Sig(2-tailed)* | 0,000 |
| Level *Sig* (α) | 0,05 |

Table 1 provides an overview of the results of the hypothesis test obtained valuessignificance which is 0.000 smaller thanα 0.005

The test results show that the hypothesis $H_1$ accepted and $H_0$ rejected. So gotconcluded that there is the influence of guiding practicum based*hyper content* on students' scientific literacy skills on the material structure and function of plant tissue in class XI IPA SMA Negeri 2 Gowa.

The results of the descriptive analysis show the results of the experimental and control class students' scientific literacy tests. And it is known that the scientific literacy test results in the experimental class are higher than the scientific literacy tests of students in the control class. Research datastatistics can be seen in table 4.1 on page 49. Based on the scientific literacy category in the experimental class there were students who belonged to the high category while in the control class there were no scientific literacy test results belonging to that category. Likewise in the medium category more experimental class students belong to that category than the control class, conversely in the low category many control class students belong to that category compared to the experimental class. The results of the categorization data can be seen intable 4.3 on page 50. In the experimental class the value of the scientific literacy test increased more than the control class this was due to the use of a guide-based*hyper content* in the experimental class which causes students to be more interested in understanding new or contemporary learning models with a more visual learning style, that's what students get when accessing practicum guides*hyper content*. Sestreet With this in mind, Koderi (2017) says that electronic guides are able to increase the effectiveness and efficiency of learning, increase motivation, retention and student achievement, as well as increase the effectiveness of the learning process for teachers when used in locations that have good internet quality. This is reinforced by Amin's research (2019) which says that student learning styles tend to be more visual, this is in accordance with the guide's approach.*hyper content* which is able to present teaching media visually such as 2D animation which can be accessed online using*Qr code.*

In addition to contemporary learning styles, students also have wider access to the material being taught. Students can scan*QR Code* available. Students can easily access material related to the structure and function of plant tissues. This is in accordance with Lisa's research (2018) which states that*QR Code* can encourage students to explore additional learning resources on the topic through multimedia materials. Improving student literacy test results with the use of practicum-based guides*hyper content* This is also supported by data from observations of student activities. At the first meeting the results of observing student activity obtained were 67.0% it is included in the quite active category. At the second meeting obtained 76.6% indicating that student activity began to increase with the active category. At the third meeting it continued to increase with 80.0% being included in the active category. Then at the fourth meeting obtained 82.3% with the active category. hthe results of observing student activity during 4 meetingsinside class, indicating that learning using a practicum-

based guide*hyper content* on the material structure and function of plant tissue is effective for use. This shows that the activeness of students in learning is very visible, starting from the stage of accessing the guide*hyper content*, group division, joint discussion, anddraw conclusions at the end of learning. With full student involvement during the learning process with teacher guidance, it will make students' understanding of a material stronger, and this can affect student learning outcomes for the better.

During the practicum activities, in the experimental class students were more active in accessing*QR Code* compared with the control class because they can only read things related to practicum material in the practicum guide. This affects student learning motivation. This is in accordance with Septiani's research (2020) which says that electronic guides*hyper content* which is a digital learning material can increase students' learning motivation. Students' critical thinking skills can be affected. This can be seen from the students' answers both when working on the scientific literacy test and the questions in the practicum guide. This is in accordance with researchNur Zaelani (2021) which says that electronic guides*hyper content* can improve critical thinking skills. In addition to influencing learning motivation, practicum-based guidance*hyper content* also affect the learning process, namely to be more productive and make students become creative. This can be seen when students are no longer given a more detailed explanation during the practicumabout things that will be done during the practicum because they can immediately understand it through*QR Code* available and the execution time is completed on time. This is in accordance with Chicioreanu's research (2015) which states that students use*QR Code* to improve their learning process, productivity, and creativity. Provision of more and more interesting learning resources through*hyper content* very effective in fostering self-confidence and independence of student learning. This can be seen from the students after scanning*QR Code* and understand the material, students have understood the things that will bedone so that the teacher is not overwhelmed in guiding many students. This is in accordance with Muttaqiin's research (2019) which states that by providing accessible and customized learning resources, students can strengthen their self-confidence and learning independence to build their own knowledge and stimulate their thinking skills. This is reinforced by Hidayat & Rusijono (2020) who say that the guide is based*hyper content* can be used effectively in independent learning activities.

In practicum implementation, with full student involvement during the learning process with teacher guidance, it will make students' understanding of a material stronger, and this can affect students' abilities to be

better, namely the ability to communicate and collaborate. This is in accordance with Siang's research (2019) which says that this digital learning concept has encouraged the development of students' abilities to learn independently, but also the ability to communicate, collaborate, and think critically based on document formats that were originally printed and then digital. or electronics. Working on the scientific literacy questions given can train students' ability to solve problems in accordance with Yuriza's theory (2018) which says that students have the ability to solve problems also have good scientific literacy skills.

Based practicum guide*hyper content* has been proven effective and can be used as a learning resource for students. This is in accordance with the results of Salenussa's research (2020) which says that, modellearning based*Hyper Content* proven effective and can be used as a learning resource for paraparticipant educate. This is reinforced bystudy Hidayat (2020) who said that the development of the media "Based Guide*Hyper Content* – "Basic Principles of 2 Dimensional Animation" can be used effectively in student independent learning activities. Besides being effectively used in the learning process, it is very suitable to be developed for the needs of more learning resources that adapt to the demands of 21st century education in the era of the industrial revolution 4.0. This is in accordance with Yahya's research (2018) which states that, a combination of learning materials*paper-based* with digital in the environment*mobile learning* form*QR code* has good potential to be developed. From the discussion above, it can be said that the use of practicum-based guides*hyper content* on the material structure and function of the networkplants is an effective learning alternative that can be used in the learning process to achieve better biological science literacy skills in class XI IPA students at SMA Negeri 2 Gowa.

## CONCLUSION

Based on the results of the research and the results of data analysis, it can be concluded that there is an effect of applying the guide*hyper content* toability students' scientific literacy as evidenced by the results of hypothesis testing with a significant levelreach 0.000 is smaller than 0.05.

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