Needs Analysis of Student Workshop Based on Discovery Learning on Static Fluid Materials In Palangka Raya

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Abstract: Needs analysis is important before developing a product. The purpose of this research is to find out: 1). 11th grade physics material which is considered difficult by students 2). Teaching materials used in learning physics; 3). Knowing the need to develop student worksheets based on discovery learning This research is a quantitative descriptive study. The samples in this study were physics teachers and 11th grade students of Senior High School 10 Palangka Raya as many as 22 people. The results of this study are: 1). Physics material that is considered difficult by students is static fluid material with the percentage of students who choose this material is 77%. 2). The teaching materials used by teachers in physics subjects are modules, student worksheets and textbooks with the largest percentage selected being textbooks, which is 82%. 3). Students want student worksheets that have an attractive appearance, are easy to understand and lead to discovery learning, so as many as 100% feel the need to develop discovery learning-based student worksheets..

Keywords: Needs Analysis; Student Worksheets; Discovery Learning; Static Fluids.

INTRODUCTION

The curriculum has an important role in the world of education. The curriculum serves as a guideline for carrying out educational activities (Kurniaman and Noviana, 2017). Currently, the curriculum used in Indonesia is the 2013 curriculum. The 2013 curriculum applies a student-centered learning pattern (Minister of Education and Culture Regulation, Number 36 of 2018). Teachers play an important role in the administration of education. The teacher plays a very important role, because it is the teacher who makes students of good academic quality, expertise, emotional, spiritual and moral maturity (Alawiyah, 2013).

Teachers are required to be more creative and innovative in learning activities. One of the supporting factors is teaching materials. Teachers as educators need to develop and grow their own creativity in order to improve the quality of learning by developing an innovative teaching material product to support the learning process (Zuriah, Sunaryo and Yusuf, 2016). The choice of teaching

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materials that can be developed is student worksheet. These are teaching materials that can be in printed or non-printed form consisting of a collection of sheets containing learning materials, summaries and work instructions, and assignments that students must do and refer to the competencies to be achieved (Perdana, 2017).

Physics is one of the foundations of science. Many scientists use physics to develop other sciences (Young, 2001:1). Physics learning has the aim of improving students' thinking skills so that students become accustomed to thinking systematically, objectively and cognitively (Pratama and Istiyono, 2015: 104). One of the learning models that can be combined with student worksheets and in accordance with the 2013 curriculum is the discovery learning model or commonly known as Discovery Learning. This model invites students to find their own information learned and then understand its meaning, the main characteristic of this model is to explore and solve created problems, combine and draw conclusions from what was found, focus on students, and combine new knowledge with existing knowledge. exists (Kristin, 2016).

Student worksheets based on discovery learning are student worksheets that can help students to think independently, analyze independently, and independently prepare the final results of the activities carried out (Noviafitri; Somakim and Hartono, 2016). The purpose of discovery learning-based student worksheets is to create fun, interesting, active, creative and independent learning (Juliyanto and Soejoto, 2017). student worksheets based on discovery learning also present phenomena in everyday life so that students find it easy to observe these phenomena. Phenomena in life are always related to physics. Therefore, DL-based student worksheets are suitable for use in physics subjects, especially static fluid materials, because static fluid materials contain common phenomena in everyday life so they can be observed directly by students.

Student worksheets (Student Worksheets) have been developed several times by previous research such as the development of student worksheets based on the RME approach, student worksheet based on project based learning, student worksheet with inquiry discovery learning model, student worksheet based on REACT learning model, and student worksheets based on guided discovery learning (Atika, at al., 2016; Fajriyanti at al., 2018; Sasanti, at al. 2017; Fitriaini, 2020; Norsanty, 2016). However, student worksheets based on discovery learning on static fluid materials are still very rarely developed.

Before developing teaching materials, it is necessary to conduct a needs analysis to find out the problems in depth in the field. This needs analysis is carried out to provide an overview of the implementation of learning and the problems that occur so that solutions and recommendations can be planned in the form of developing teaching materials if needed (Yusnia and Suparman, 2018). Therefore,

the researchers conducted a needs analysis to students on student worksheets based on discovery learning on static fluid material.

METHOD

This research method is research and development or Research and Development (R&D). The research and development method is the method used to produce a certain product (Sugiyono, 2019). This study uses the PPE (Planning, Production, and Evaluation) model, this research and development focuses on the initial to final analysis consisting of the planning, production and evaluation stages. (Arif and Abdillah, 2018). This research is limited to the planning stage, where the planning stage contains product planning activities by conducting needs analysis and literature studies.

The researcher used this type of qualitative descriptive research. The purpose of this research is to analyze students' needs for teaching materials used to facilitate students in learning activities. The data collection technique in this study was to conduct interviews with high school physics subject teachers to find out the teaching materials commonly used. The second data collection technique is done by distributing questionnaires to grade 11 students directly or face-to-face to find out whether it is necessary to develop student worksheets based on discovery learning on static fluid material. The questionnaire in data collection uses a Likert scale, the scores obtained are calculated in number and the average score obtained is by the following formula (Siregar, 2017).

$$\bar{x} = \frac{\sum x_i}{n}$$

Legend :

$\bar{x}$ = Component Average Score

$\sum x_i$ = Component Sum Score

n   = Number of component items

From the calculation of the average of each statement, then the percentage of answers to all respondents is calculated using the formula (Arikunto, 2010):

$$Percentage\ each\ aspect = \frac{Sum\ of\ score\ that\ obtained}{Total\ of\ score\ maksimum} \times 100\% \qquad (1)$$

RESULT AND DISCUSSION

From the results of interviews with physics subject teachers at Public Senior High School 10 Palangka Raya, the results showed that teachers had some difficulties in teaching physics material. teachers usually use modules, textbooks and some materials using student worksheets as learning aids. Teachers usually use student worksheets which are available in modules and textbooks.

Needs analysis is the initial reference for this development. Needs analysis in this study by distributing questionnaires to students at senior high school 10 Palangka Raya was carried out directly or face to face. The results of the needs analysis of student worksheets based on discovery learning are as follows:

Physics subjects are considered as difficult subjects for most students. Physics subjects have various kinds of material in it. For 11th grade senior high school, in particular, the materials studied include Elasticity and Hooke's Law, Static Fluids, Temperature and Chlorine and so on. From this variety of material, students have their own views on the level of difficulty of the material mentioned earlier. From the needs analysis carried out, the results obtained are depicted in Figure 1 and figure 2.
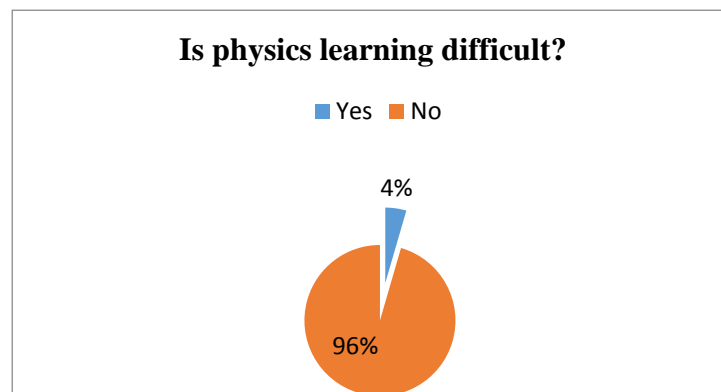

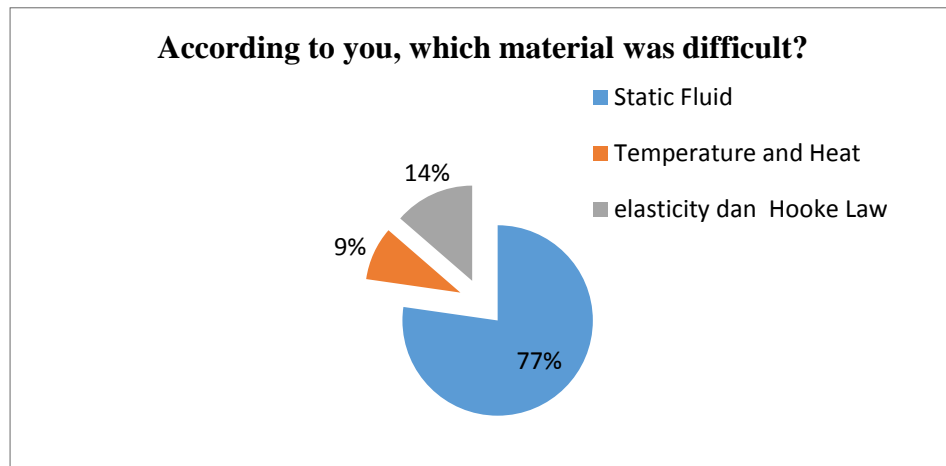*Figure 1. Diagram of Student Responses to Physics Lessons*

Figure 2. Diagram of Student Responses to Physics Lessons

Figure 1 shows that 96% of students think physics is a difficult subject. One of the factors causing physics lessons to be considered difficult is that physics material is difficult to understand because it contains memorization, formulas and mathematical calculations (Samudra, Suastra and Suma, 2014). Figure 2 shows the analysis of student data on physics subjects that are considered difficult. Figure 2 shows that 77% of students choose static fluid as the most difficult material, 9% of students consider temperature and heat to be difficult and 14% consider elasticity and Hooke's law to be difficult. So it can be concluded that the material that is considered difficult by students is static fluid material. Static fluid material is material in physics subjects that are considered difficult by some students because the concepts are difficult to understand (Zani, Adlim and Rini, 2018).

One of the supports that facilitate the process of transferring knowledge from teacher to student is the teaching materials used. There are several types of teaching materials, such as biki, student worksheets, modules and handouts (Bachtiar, 2015). The teaching materials used by teachers at the Palangka Raya 10 Public High School are shown in Figure 3
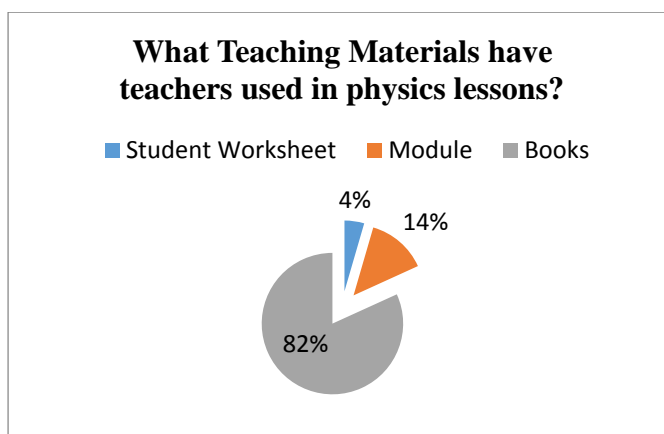
Figure 3. Student Responses to the Development of Discovery Learning-Based Student Worksheets

Figure 3 shows that 88% of students stated that what teachers usually used were textbooks, 9% of students suggested teachers use modules and 3% stated that the teaching materials used by teachers were STUDENT WORKSHEETS. These are important teaching materials in learning activities, one of which is experimental activities, because student worksheets contain a summary of the material, activity sheets and questions (Arafah, Ridlo and Priyono, 2012). student worksheets are teaching materials that can make it easier for students to summarize the material learned, train students to study and do assignments independently and make it easier for students to understand the material in student worksheets (Sakdiah and Kurniati, 2019).

The results of the needs analysis regarding the use of student worksheets in experimental activities showed, as many as 64% of students stated that they did not use student worksheets and 36 students stated that they used student worksheets in experimental activities. The development of student worksheets is adapted to the conditions of students and the learning environment (Rohaeti, et al., 2009). student worksheets should be designed by the teacher themselves, because the teacher is more aware of the condition of students and the diversity of cultures and their environment. Teachers should pay attention to the characteristics of students and their environment so that the learning process can run well and fun (Dawut, at.al, 2021).

The results of the analysis of student needs regarding the attractiveness of the student worksheet given by the teacher and whether the student worksheet given by the teacher directs students to independent discovery shows results, 77% stated that the student worksheet given by the teacher was not interesting and 23% stated that the LKS given by the teacher was attractive. . Attractive student worksheets can increase student motivation. The assessment of student questionnaires on

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student worksheets given by the teacher was based on discovery learning or discovery learning and the results obtained were 95% of students answered no and 5% of students chose Yes. Next, the researcher asked whether the students wanted to do development in the form of student worksheets and the results obtained are shown in Figures 4.
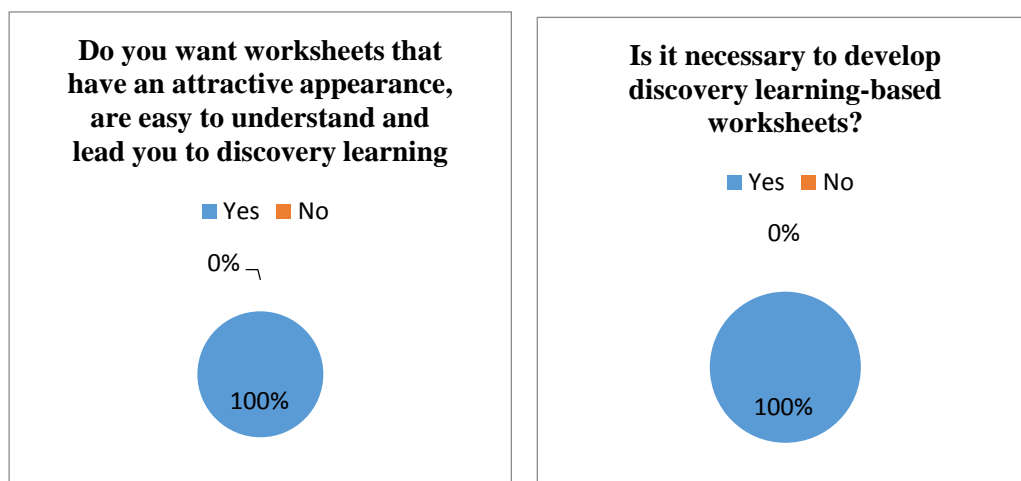

Figure 4. Diagram of Student Responses to the desired student worksheet

Figures 4 shows the responses of students who want and feel the need to develop a teaching material that is interesting, easy to understand and directs students to discovery learning. The data from the needs analysis carried out will be the basis for further development research

CONCLUSION

Based on the results of the distribution of the needs analysis questionnaire, it can be concluded that: 1) Physics is considered a difficult subject for students. One of the physics material that is considered difficult by most students is static fluid material with a percentage of 77%. 2) The teaching materials used by physics teachers in schools are student worksheets with the percentage of students choosing as many as 4%, modules 14% and textbooks having the largest percentage of 82%. 3) want student worksheets that have an attractive appearance, are easy to understand and lead to discovery learning, so as many as 100% feel the need to develop discovery learning-based student worksheets.

Based on the conclusions of the research that has been done, it can be given suggestions for students. It is hoped that students will increase their motivation and enthusiasm for learning in physics lessons. Suggestions for physics subject teachers to better utilize and use interesting teaching materials to motivate students in studying physics.

REFERENCES

Alawiyah, Faridah. 2013. Peran Guru dalam Kurikulum 2013. Ekspresi. 4(1).

Arafah, Sherlly .S; Saiful .R; Bambang .P. 2012. Pengembangan LKS Berbasis Berfikir Kritis Pada Materi Animalia. Unnes Journal Of Biology Education. 1(1)

Arif, Moh .A dan Abdillah. 2018. Pengembangan Modul Belajar Mandiri LaTeX Beamer Sebagai Alternatif Media Presentasi Mahasiswa Program Studi Pendidikan Matematika. Jurnal Teori dan Aplikasi Matematika. 2(2).

Arikunto, S. 2010. Prosedur Penelitian Auatu Pendekatan Praktik. Jakarta: Rineka Cipta

Atika, Nur dan Zubaidah Amir .M.Z. 2016. Pengembangan LKS Berbasis Pendekatan Rme untuk Menumbuhkembangkan Kemampuan Berpikir Kritis Matematis Siswa.Suska Jurnal of Mathematics Education.2(2).

Bachtiar, Effendi .T. 2015. Penulisan Bahan Ajar. Bogor: Institut Pertanian Bogor

Dawut, Susana, et al. Penggunaan LKS Berbasis Pendekatan Saintifik di Sekolah Dasar Selama Pandemi Covid-19. Jurnal Literasi Pendidikan Dasar. 2(1).

Fajriyanti, Zaroah .D, Tias .E dan Sigit .S. Pengembangan LKS Berbasis Project Based Learning untuk Meningkatkan Keterampilan Proses Sains Siswa SMP. Jurnal Pendidikan IPA Veteran. 2(2).

Fannie, R. Z dan Rohati. 2014. Pengembangan Lembar Kerja Siswa (LKS) Berbasis POE (Predict, Observe, Explain) Pada Materi Program Linear Kelas XII SMA. Jurnal Sainmatika. 8(1).

Fitriaini, Depi dan Lies Andriani. 2020. Pengembangan LKS Berbasis Model Pembelajaran REACT Terintegrasi Nilai Keislaman untuk Siswa MTs Kabupaten Kampar. Suska Jurnal of Mathematics Education. 6(2).

Juliyanto, Angga dan Ady Soejoto. 2017. Pengembangan Lembar Kerja siswa (LKS) Berbasis Discovery Learning pada Kompetensi Dasar Menjelaskan PDB, PDRB, PNB, dan PN Di SMA Sejahtera Surabaya. Universitas Negeri Surabaya. 5(1).

Kristin, Firosalia dan Dwi Rahayu. 2016. Pengaruh Penerapan Model Pembelajaran Discovery Learning Terhadap Hasil Belajar IPS pada Siswa Kelas 4 SD. Scholaria. 6(1).

Kurniaman, Otang dan Eddu Noviana. 2017. Penerapan Kurikulum 2013 dalam Meningkatkan Keterampilan, Sikap, dan Pengetahuan. Jurnal Primary Program Studi Pendidikan Guru Sekolah Dasar Fakultas Keguruan dan Ilmu Pendidikan Universitas Riau. 6(2)

Norsanty, Untari .O dan Zahra .C. 2016. Pengembangan Lembar Kerja siswa (LKS) Materi Lingkaran Berbasis Pembelajaran Guided Discovery untuk Siswa SMP Kelas VII. Jurnal Pendidikan Matematika. 2(1).

Noviafitri, Selly; Somakim dan Yusuf Hartono. 2016. Pengembangan Lembar Kerja siswa Berbasis Model Discovery Learning pada Pokok Bahasan Sudut Kelas VII. Jurnal Elemen. 2(2).

Permendikbud RI. Nomor 36 Tahun 2018 . Tentang Perubahan Peraturan Mentri Pendidikan Dan Kebudayaan Nomor 59 Tahun 2014 Tentang Kurikulum 2013 Sekolah Menengah Atas/Madrasah Aliyah

Perdana, Akbar, Siswoyo, Sunaryo. 2017. Pengembangan Lembar Kerja siswa Berbasis Discovery Learning Berbantukan PhET Interactive Simulations pada Materi Hukum Newton. Jurnal Wahana Pendidikan Fisika. 2(1).

Pratama, Nurris .S dan Edi Istiyono. 2015. Studi Pelaksanaan Pembelajaran Fisika Berbasis Higher Order Thinking (HOTS) Pada Kelas X Di SMA Negeri Kota Yogyakarta.Prosiding Seminar Nasional Fisika dan Pendidikan Fisika (SNFPF).6(1)

Rohaeti, Eli; Endang .W .L dan Regina .T .P. 2009. Pengembangan Lembar Kerja Siswa (LKS) Mata Pelajaran Sains Kimia Untuk SMP. Inovasi Pendidikan. Jilid 10(1)

Sakdiah dan Kurniati. 2019. Analisis Pemanfaatan LKS Terhadap Motivasi Belajar Siswa pada Mata Pelajaran Ekonomi Kelas XI di SMAN 4 Mataram. Society: Jurnal Pendidikan IPS. 11(1).

Samudra, Gede .B; I Wayan .S; Ketut .S. 2014. Permasalahan-Permasalahan yang Dihadapi Siswa SMA Singaraja dalam Mempelajari Fisika. E-Jurnal Program Pascasarjana Universitas Pendidikan Ganesha.Vol.4

Siregar, Syofian. 2017. Statistika Terapan untuk Perguruan Tinggi: Edisi Pertama. Jakarta: Kencana.

Young, Hugh D dan Roger A. Freedman, 2001, Fisika Universitas (Edisi Kesepuluh: Jilid 1), Jakarta: Erlangga.

Yusnia, Desy & Suparman. 2018.Analisis Kebutuhan Bahan Ajar Berbasis Guided Discovery. Dipresentasikan pada Prosiding Seminar Nasional Pendidikan Matematika Etnomatnesia.

Zuriah, Nurul, Hari .S, Nurbani .Y. 2016. IbM Guru dalam Pengembangan Bahan Ajar Kreatif Inovatif Berbasis Potensi Lokal. Jurnal Dedikasi. Vol.13. ISSN: 1693-3214