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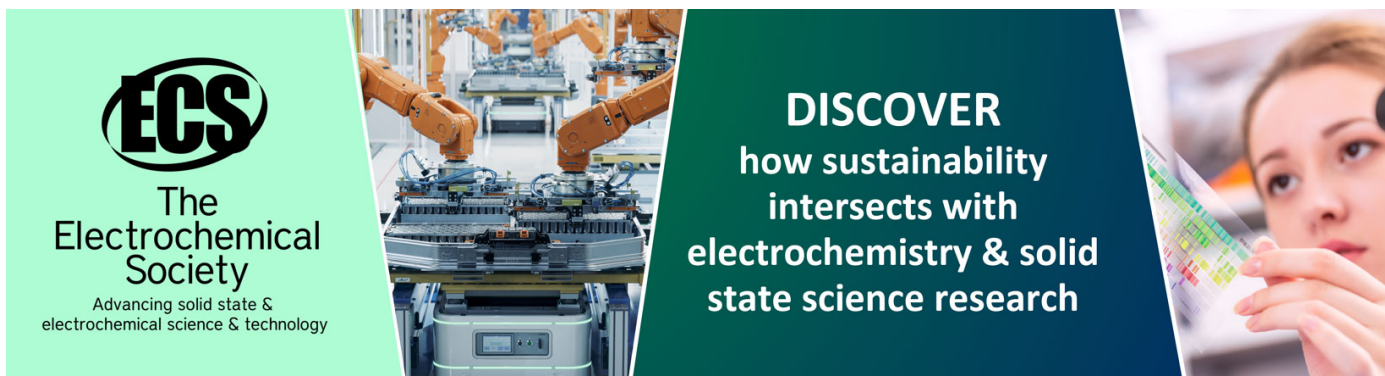
Analysis of Students Worksheet (LKPD) integrated science with the theme of the motion in life using integrated connected type 21st century learning

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Analysis of Students Worksheet (LKPD) integrated science with the theme of the motion in life using integrated connected type 21st century learning

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Abstract. This research is motivated by the demands of 2013 curriculum in government regulation of education and culture No. 22 of 2016 which requires the educators to design lesson plans and prepare media which suitable with the characteristics of 21st century learning. 21st century learning is learning that integrates literacy, knowledge, skills and attitudes which encourage students to think critically in problem solving, communicative, creative and collaborative (4C) through religious attitudes, cooperation, mutual cooperation, integrity and nationalism, so that the students will have high-level of thinking skills (HOTS). However, the reality in the field found in the preliminary study, the achievement of learning quality is still far from what is expected, it can be seen from the analysis of the Integrated Science LKPD used by students which is still not optimal in facing the challenges of the 21st century. The aim of this study is to analyze learning media in the development of Integrated Science LKPD with the theme of motion in life using integrated connected type 21st century learning. This research is a descriptive study with a qualitative approach. The sample of this study was the students of Junior High School 1 Lubuk Alung. The data used were primary data from interviews and questionnaires. The results of this study are the LKPD used by the school is still not suitable for the 21st century education character (4C). it can be seen from the science LKPD used by the students has not shown the critical thinking skills in solving problems which help them to improve the ability of higher order thinking skill (HOTS), and it also cannot fully help the students to express their conceptual and practical creative ideas.

1. Introduction

Natural Sciences is a unified whole of knowledge and a number of material or concepts which are interrelated and holistic. The student's mastery is not only focused in knowledge in the form of facts, concepts or principles, but also a process and conclusion of an invention. Integrated learning is a learning which allows students both individually and active groups to explore and find concepts holistically and authentically (Puskur, 2008).

The 21st century brought about popular changes, namely the rapid development of Science and Technology, which resulted the changing of learning paradigm marked by changes in curriculum, media and technology. Good learning media interprets abstract concepts to be easily understood. Information and Communication Technology (ICT) based learning cannot be separated from the demands of 21st



century learning. One of them is the integration of technology as a learning media to develop learning skills.

The Learners need to learn how to use technology which is essential for everyday life and to be productive in the workplace. In addition, teaching and learning in the context of 21st century learning, especially in the 2013 curriculum, is that the students learn the materials through examples, applications, and real-world experiences both inside and outside the school. In order to obtain the demands as the part of 2013 curriculum implementation as stated in Minister of Education and Culture regulation No. 22 of 2016 which requires educators to design a lesson plan and prepare media or teaching materials which suitable with the characteristics of 21st century learning, which integrates literacy, knowledge, skills and attitudes as well as a mastery of technology, it is necessary to use teaching materials appropriately, sustainably, and affordable to the lesson material.

One of the teaching materials that can be used during the learning process is the Participant Worksheet (LKPD). The LKPDs that are prepared can be designed and developed according to the conditions and situations of learning activities that will be encountered. The activity sheet contains instructions, steps to complete a task. LKPD has many advantages, namely facilitating educators in carrying out learning, and students will learn independently and learn to understand and carry out a written assignment. Trianto (2009: 233) added that LKPD contains a series of activities that must be carried out by students to maximize their basic understanding to form basic skills according to indicators of learning achievement that must be fulfilled.

Physics Science is an effort that can improve students 'creative thinking abilities and the necessity for a teacher to design teaching materials in order to improve students' creative thinking abilities by applying connected type learning concepts.

Connected type is a type of cohesiveness which intentionally attempted to connect one concept to another concept, one topic to another topic and one skill to the other skills in one discipline.

According to Fogarty (1991: 14), the connected type is a type of inter-subject integration. it actually organizes or integrates one concept of skills or abilities which are developed in a subject or sub-subject associated with the concepts, skills or abilities of the subject or other sub-subjects in one field of study. The connected can be done spontaneously or planned in advance. Thus, learning activity becomes more meaningful and effective. In other words, integrated connected type learning is done by linking one subject to the next subject, one concept to another concept, one skill to the other skills and can also connected work activities on that day to the next day in one field of study.

Based on the results of the analysis carried out with the students and science teachers at Junior high School 1Lubuk Alung, it is found that the learning activity had been carried out in an integrated manner. Learning is done by the teacher using a reference to the Integrated Science book, but the Student Activity Sheet (LKPD) used is not fully optimal in facing the 21st century challenges. The LKPD used only includes a summary of the material and exercises in the form of multiple choice, short entries, and description without any real discussion / practical activities, so that learning by using LKPD is the same as using a science reference book.

Therefore the use of LKPD in learning activity is still limited which only a few students use it, the absence of an integration chart on the LKPD shows that the LKPD is not yet integrated. Biology, physics, and chemistry subject material are still separated. LKPD used by the school is still not suitable for 21st century education characteristics (4C) since the science LKPD used has not shown the critical thinking skills in solving problems which help the students to improve their higher-order thinking skill (HOTS), and cannot help the students to express students' creative ideas in conceptual and practical. The learning process is still teacher-centered with the lecture method so the students become less active and do not have the opportunity to develop their knowledge independently. These problems cause low student learning outcomes and less students' creative thinking skills. This is in line with Supardi (2008) which said that creative thinking influences learning achievement. If the student's creativity thinking is low then the learning achievement is also low and vice versa.

To overcome the problems above, it is necessary to develop an Integrated Science LKPD with motion themes in life using the integrated Connected Type of 21st Century learning.

2. Research Method

This research was a descriptive study by using a qualitative approach. Descriptive study is not intended to test certain hypotheses (Suharsimi, 2010). it is a form of research that is used to look at phenomena that exist in the natural surroundings. These phenomena can be in the form, activities, characteristics, changes, relationships, similarities, and differences between one phenomenon to another. Descriptive research can describe the phenomenon under study, describe the processes that occur and present various important information about these variables.

The population used of this study was junior high school students grade IX of SMPN 1 Lubuk Alung. The number of respondents were decided based on the appropriate statistical approach with the applicable rules. Sampling was taken by using a non-probability sampling technique that was accidental sampling, which the people who were met the research objectives criteria. The sample of the study were the students and teachers of SMPN1 Lubuk Alung. The data obtained from primary data through questionnaires. The questionnaires were used to analyze the teacher's assessment.

The data analysis technique used was the Likert scale. This scale can be used to measure people's opinion or perception about social events or symptoms. The variables measured were divided into sub-variables in the form of statements filled by the respondents. The content of the questionnaires could be as follow: (1) the quality of the content and objectives which consists of the accuracy, the balance, and the suitability of the LKPD used; (2) the quality of learning which consists of the ability to provide opportunities and assistance in learning, motivating, and impacts on students; (3) the technical quality which measure whether the LKPD used was simple, clear, practical and understandable. The instrument used for observation activity was a checklist or a Likert scale accompanied by a rubric. The results of the questionnaire were obtained by calculating the scores of each respondent. The scores analyzed by using equation:

$$S_k = \frac{\sum X_i}{X_{maks}} \times 100 \% \quad (1)$$

Where: S_k is the score obtained, X_i is the total of scores for each student and X_{maks} is the maximum score of the questionnaire for each indicator.

Furthermore, the scores obtained from each respondent were analyzed. The Data analysis was used to assess student competency for each indicator using the provisions in Table 1 as follows:

Table 1. Descriptive analysis table for observation results

No	Category	Value	Score
1	Very good	4	$90 < N \leq 100$
2	Good	3	$75 < N \leq 90$
3	Less than	2	$60 < N \leq 75$
4	Very Less	1	≤ 60

Source :the ministry of education and culture data (2013)

3. Results and Discussion

The results of this study are in the form of a percentage of LKPD as a media that will be implemented in learning. The analysis components of learning media consists of three: the content and quality, quality of learning and technical quality. The results of the study obtained from LKPD instruments developed as follows:

3.1. Content Quality and Objective Analysis

Content and Quality analysis includes the accuracy of the LKPD as a media with learning objectives, the relevance between LKPD and teaching materials with learning objectives, LKPD used support learning materials and suitable with the level of students' thinking. The analysis of the quality content and objectives of the learning media is shown in Figure 1.

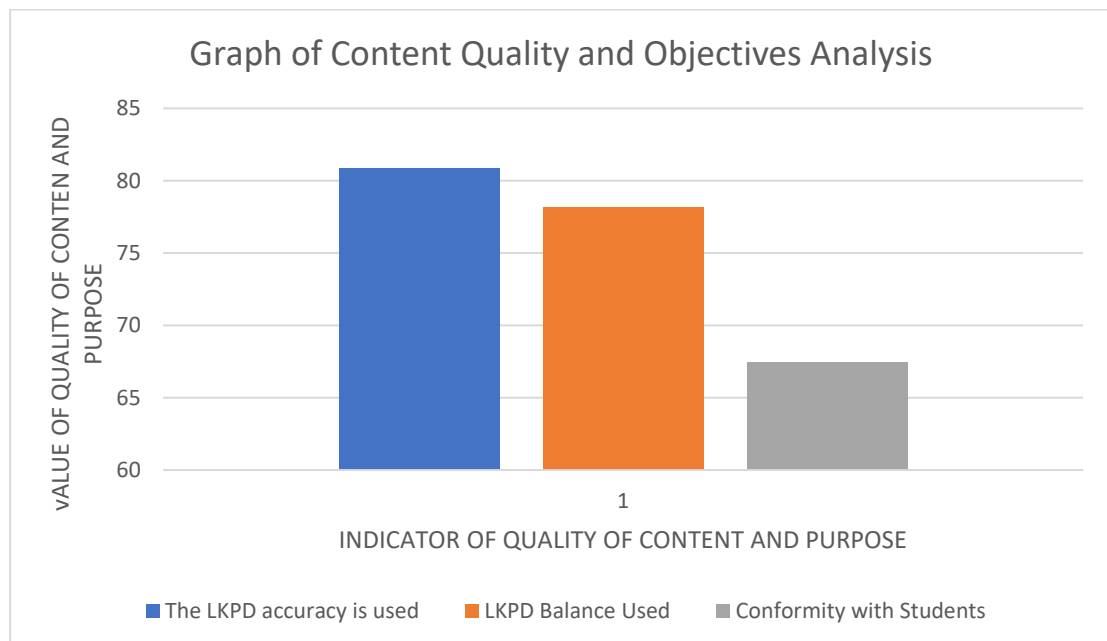


Figure 1. Graph of Content Quality and Objectives Analysis

Figure 1 shows that the accuracy and the balance of the media used are good with a value 80.83 and 78.12, but the suitability indicator needs to be improved since it is still low at the point 67.46. The results of content quality and objectives can be clearly seen in Appendix 1.

3.2. The Quality of Learning Analysis

The quality of media used in the learning process can provide assistance, motivate, and can be used more than one sense of the students to participate in learning activities. Then, the media used by students can stimulate the students to think and do analysis, give a common perception of the learners about the subject matter and increase students' activeness and participation in learning. Analysis of the quality of LKPD used in learning is shown in Figure 2.

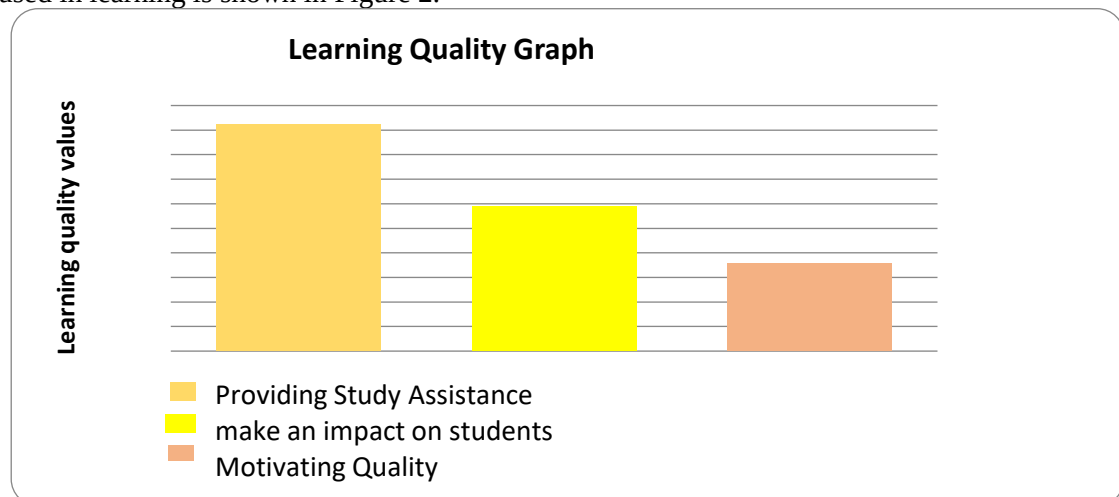


Figure 2. Graph of Learning Quality Analysis

Figure 2 shows that the LKPD used at school give the highest contribution in providing learning assistance indicator with the value 76.23. Giving impact on students indicator is in the second position with a percentage 72.89, and the last is motivating quality indicator with the value 70.56. Overall, the quality of the LKPD used in the learning process can be categorized as poor since its score is in under

the average and it can be assumed that the LKPD used at the school now needs improvement. The detail information of learning quality analysis can be seen in Appendix 1.

3.3. Technical Quality Analysis

The technical quality of the media used consist of the variation, simplicity, practicality, and the understandable of the LKPD. Analysis of the technical quality of the LKPD used in learning is shown in Figure 3.

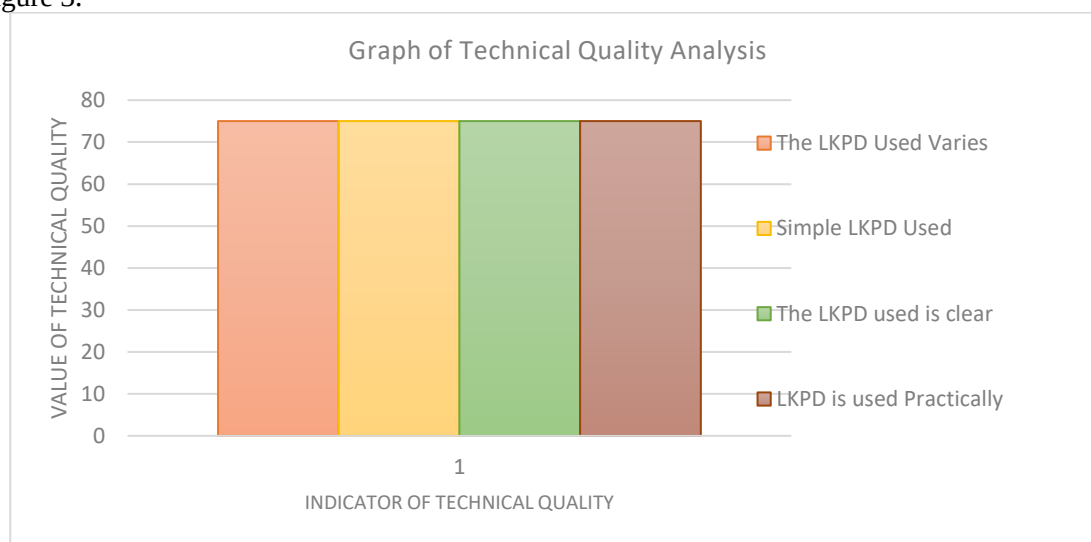


Figure 3. Graph of Technical Quality Analysis

Figure 3 shows that the technical quality of the LKPD used in learning is still low. It can be seen by the average score is just 75. The results of a complete analysis of the technical quality of the LKPD used can be seen in Appendix 1.

Printed media is the visual media which created through the process of printing. it presents a message through letters and images which illustrated to deliver the message or information. One of the type of printed media is LKPD, which is a kind of book about a field of study or particular effort to achieve learning objectives. Based on this matter, an analysis was conducted related to LKPD as a learning media. Criteria for selecting the media of learning are based on the quality.

First, the quality of content and objectives. The quality of content and objectives of the LKPD as a media consist of accuracy, balance, and suitability with the students' condition. The accuracy of the LKPD as a media includes the relevancy with learning objectives, maintaining the relevance between learning material and learning objectives, having a relevant measurement tool with learning material and objectives in the form of tests, assignments, behavioral checklists, providing a good learning atmosphere, so they can achieve the learning objectives. Based on the results of the analysis, the accuracy of the LKPD as the indicator is 80.83 which is in the good category (B).

Moreover, the analysis result of the LKPD as a learning media on balance indicator which includes support the learning materials, a good order in presented the materials from simple to complex, overcomes the limitations of space, time and sensory power of the students, clear description and less verbal is 78.12 with a good category (B). Although the result is above the average score, there is still need improvement for each indicator.

Furthermore, the suitability of LKPD as a media is classified as poor with a value of 67.46 in less category (C). It is because the LKPD used is not able to encourage the students to think critically in solving problems, the LKPD is also unable to link the competencies and contexts which lead the student from low-order thinking skills (LOTS) towards a higher-order thinking skill (HOTS) in facing 21st century challenges, the LKPD used has not yet described 21st century learning, the existing LKPD only includes material summaries and exercises in the form of multiple choice, short entries, and descriptions

without any real discussion / practice. It also has not shown any relationship or integration between Physics, Chemistry and biology and practical activity is also rare.

Second, the quality of learning which consists of the ability to provide assistance, motivating, and bring impact on the students in learning process. The quality of learning LKPD as a media has several indicators such as: gives the structure of subject matter for easier learning, lead the same perceptions of learning material to all students, increase students' participation and activeness, and motivate the students in learning. The result of the analysis shows that the quality of LKPD as a learning media is still low. it is because the value for these three indicators are: 76.23 for learning assistance with poor categories (B), 72.89 for giving impacts with C category, and 70.56 for motivation with less category (C). This is because the learning process is still teacher-centered so that students become less active and do not have the opportunity to build their knowledge independently. As a result, students have low learning outcomes and their 4C competencies are less developed. Based on this case, it needs to improve the LKPD so that students can be motivated and become more active in learning process.

Third, the technical quality which includes: the media used are varied and not only focus on LKPD, the media used are simple and understandable, the learning media used are clear and practical. Based on the analysis result of LKPD technical quality, this media is in not good category (C) with value 75. It shows that there is a need to improve the technical quality of LKPD as a media which will make the teaching material clearer, so that the lesson can be more understandable for the students. The learning media can make the teaching learning process more effective and efficient in a conducive atmosphere, so that the students get the lesson easily. Teaching activity becomes more attractive thus it builds students' motivation in learning and get meaningful study.

4. Conclusion

To find out the LKPD as a media for learning and what is the criteria of the LKPD as a good media for science, an analysis of learning media was conducted. The analysis results show:

1. The contents and objectives quality of LKPD as a media consists of accuracy, balance, and suitability indicators.
 - a) The accuracy of the LKPD as a media has a value 80.83 with a good category (B).
 - b) The balance of the LKPD as a media is 78.12 with a good category (B).
 - c) The suitability of LKPD as a media with the students is still classified as poor with the value 67.46 in less category (C).
2. The quality of LKPD as a learning media is still low. It can be seen from the indicator value :
 - a. LKPD Providing learning assistance is 76.23 with an less good category (B).
 - b. giving an impact on students is 72.89 with a less category (C).
 - c. motivating the students is 70.56 with less categories (C)
3. The technical quality of LKPD as a media is still not good with a value 75 in(C)category.

References

- [1] Arsyad, Azhar. 2011. *Media Pembelajaran*. Jakarta: Raja Grafindo Persada.
- [2] Depdiknas. 2011. *Panduan pengembangan pembelajaran IPA secara terpadu*. Direktorat Jenderal Pendidikan Dasar Depdiknas. Jakarta
- [3] Fogarty, R. (1991). *Ten ways to integrate curriculum*. Palatine Illinois : IRI/SkylightPublishing, Inc. (accessed 18 juli 2018)
- [4] Kementrian Pendidikan dan Kebudayaan. 2013. *Materi Pelatihan Guru Implementasi Kurikulum 2013 SD Kelas IV* . Jakarta: Dirjen Disdasmen kemdikbud
- [5] Newby, Timothy et. J, et. al. 2000. *Instructional Technology for Teaching and Learning*, New Jersey, USA : Merrill an Imprint of Prentice-Hall.
- [6] *Peraturan Menteri Pendidikan dan Kebudayaan Nomor. 8 Tahun 2016 tentang LKPD Pelajaran*. Jakarta: Depdiknas.

- [7] *Peraturan Menteri Pendidikan dan Kebudayaan Nomor. 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar dan Menengah*. Jakarta: Depdiknas.
- [8] *Peraturan Pemerintah Republik Indonesia Nomor 32 Tahun 2013 tentang Standar Nasional Pendidikan*. 2013. Jakarta: Sekretaris Negara Republik Indonesia
- [9] Prawiradilaga, Dewi Salma. 2009. *Prinsip Desain Pembelajaran*. Jakarta : Prenada Media Group.
- [10] Sanaky, Hujair AH. 2009. *Media pembelajaran*. Yogyakarta : Safiria Insania Press
- [11] Susilana, Rudi, Cepi Riyana (2009). *Media Pembelajaran: hakikat, pengembangan, pemanfaatan dan penilaian*. Bandung : Wacana Prima
- [12] Sardiman, Arief (2011). *Interaksi dan Motivasi Belajar Mengajar*. Jakarta : Grafindo Persada
- [13] Sukardi. 2007. *Evaluation of Education*. Jakarta: Earth Literacy.
- [14] Suharsimi, Arikunto, (2010). . *Fundamentals of Educational Evaluation*. Jakarta : Bumi Aksara
- [15] Sudjana, Nana. 2011. *Media Pengajaran*. Bandung: Sinar Baru Algensindo
- [16] Trianto (2009). *Mendesain model pembelajaran inovatif progresif*. Surabaya : Kencana
- [17] *Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Standar Nasional Pendidikan*. Jakarta: DPR RI dan Presiden RI.
- [18] Widjanjanti, endang. (2008). *Kualitas Lembar Kerja Siswa*. (Online),. (staff. Uny.ac.id/system/files/pengabdian/endang