

Moodle Based Worksheet on Scientific Article Writing: A Students Perceptions

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Abstract: Moodle based Worksheet on Scientific Article Writing: A Students Perceptions.

Objectives: This research aims to find out necessity analysis of student worksheet development based on Moodle for scientific article writing reviewed by student perceptions. **Method:** The data were collected by using questionnaire and interview activity. The questionnaire was used to find out the students' perceptions. The interview was used to adjust and match the questionnaire data result with the actual condition. The technique of analyzing data is descriptive qualitative analysis. **Findings:** The findings showed that: 1) students perceived the scientific article writing material important to learn, 2) the learning process had not facilitated the students, 3) the learning material was only centered on textbook, 4) the technology utilization in composing learning material should be improved, and 5) writing material presentation should be revised based on the students' characteristics. **Conclusion:** It is necessary to develop Moodle-based student worksheet on scientific articles writing.

Keywords: Moodle-based worksheet, scientific article, students perceptions.

Abstrak: Lembar kerja siswa berbasis Moodle pada penulisan artikel ilmiah ditinjau dari persepsi siswa. **Tujuan:** Penelitian ini bertujuan untuk mengetahui analisis kebutuhan terhadap pengembangan lembar kerja siswa (LKS) berbasis Moodle pada penulisan artikel ilmiah ditinjau dari persepsi siswa. **Metode:** Data dikumpulkan dengan menggunakan angket dan wawancara. Angket digunakan untuk mengetahui persepsi siswa. Wawancara digunakan untuk menyesuaikan dan mencocokkan antara hasil data angket dan kondisi di lapangan. Teknik analisis data yang digunakan yaitu teknik analisis deskriptif kualitatif. **Temuan:** Hasil penelitian menunjukkan bahwa 1) siswa menganggap materi penulisan artikel ilmiah penting untuk dipelajari, 2) proses pembelajaran belum membantu siswa, 3) bahan ajar yang digunakan hanya terpusat pada buku, 4) pemanfaatan teknologi dalam menyusun bahan ajar perlu ditingkatkan, dan 5) penyajian materi perlu direvisi sesuai dengan karakteristik siswa. **Kesimpulan:** Perlu dilakukan pengembangan LKS berbasis Moodle pada penulisan artikel ilmiah.

Kata kunci: lembar kerja siswa berbasis moodle, artikel ilmiah, persepsi siswa.

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■ INTRODUCTION

One of influential factors of students' learning success is determining learning material used by teachers in delivering it to students. Teachers as facilitators must be able in composing an applicable learning material for students to be actively and effectively used and reflect what becomes the learning objectives. Therefore, learning material development is important to master by teachers in order to create joyful and active learning.

Generally, learning materials at school use printed text book by government or other handbook at the school library. Besides that, teachers also use other learning materials, such as module and student worksheet. However, the uses of those two learning sources are still limited to do, especially student worksheet. It is due to worksheet learning material used by them has already had 'one way go package' in the form of printed-published worksheet. In fact, the obtained worksheet published by publisher has not always met the interest and necessities of students. It sometime does not meet with the characteristics of students. Student worksheet is a learning material which could improve students' competences on certain materials. It will be more meaningful if it is composed by the teacher himself. Students will be easier in understanding the material and working on either exercises or tasks of the worksheet. It is because students have been habituated and been aware of their teacher's writing style in giving instruction. Besides that, the material content is adjusted to the teacher's material delivery on classroom learning activity (Sasanti, Samsul & Amri, 2019). Student worksheet could be used as initial stage in determining what must be done. It helps them developing ideas or notions as well as inviting them to participate in working on the given exercises and tasks. The objective of student worksheet is to facilitate students to actively

participate in learning activity especially in training them to observe, express hypothesis, experiment about certain material, and to find solution to solve problems based on the given guidance (Celikler & Aksan, 2012).

Present social life cannot be separated by technology advancement. Technology advancement, especially the use of Internet and its application, has brought changes into social life styles, without exception, the educational world. Specifically on language learning lesson, the use of technology has been being implemented in learning process. However, its uses are still limited on electronic media, such as radio, recording, video, and television. By the advance of technology development, especially Internet or website based technologies, it significantly influences in learning language. Internet and website based technologies could provide many options in developing learning activities into interesting and creative learning activities. Shyamlee & Phil (2012) state the use of technology gives positive influences on learning activities. The use of technology based learning material in its process could improve and develop students' competences, especially language skills. Students will be more creative in developing their ideas or notions. They also could broaden their insights and information reference across space and time limitations. Besides that, by keeping up with technology development, it can make teachers more creative and productive.

Based on the explanation, there is a need of innovation related to learning which could mediate technology and learning activities. One of innovations to do is developing technology based learning material. To create learning material which keeps up with technology advancement trend, teachers could use application or available facilities on website both freely or charged. One of the free offered, accessed, and applied facilities by beginner is

Modular Object Oriented Dynamic Learning (Moodle). Moodle is an open source type which is typically used in educational world. This platform has configurable features and allows assessment process arrangement for students based on schedule. Besides that, the platform also offers complete features to support teaching - learning process. Costa, Alvelos, & Teixeira (2012) state that Moodle platform is divided into two types: information source and module. Information source deals with the composed learning material in a digital form and is uploaded into Moodle. Information source is composed based on the teacher's creativity in arranging learning material. The module deals with complete features which have been provided by Moodle. The module is used as communication between teacher and students in Moodle based learning activity.

Scientific article writing is an important material to learn as early as possible. It is due to its sustainability nature. It means the material will be learned by students while they are continuing to higher education levels. Besides that, learning this material at the very beginning could train students' writing habit, especially in writing based on scientific principles. A study conducted by Singh & Mayer (2014) proved that scientific article writing lesson at the beginning period seemed to be able to improve the students' writing skills. Moreover if in writing activity process is assisted by technology based application, there is high expectation to improve writing quality result. Perk (2015) states that scientific article writing is a writing skill which must be learned continuously and sustainable. This skill mastery is not only used for academic purposes only but also a pre-requirement to improve effective communication in social society environment. Besides that, learning this material can train students to identify, analyze, and construct a scientific article.

There are several frequently faced problems in writing scientific article. They usually deal with lack of reference for the writers, especially dealing with references from primary books, doubts in using journal template, dominant local language uses, and references dealing with scientific article writing technique (Novales et al, 2014). Similar statement is stated by Perk (2015) that there are four main student difficult matters in writing scientific article. Those matters deal with structures and contents of the articles, their writing styles, spellings, and writing rechecks.

Based on the problems, there is a need of student worksheet development which is able to improve the students' skills, especially in writing scientific article by using Moodle. There have been several studies related to student worksheets based on Moodle. A research result about student worksheet development based on Moodle was ever conducted by Castro (2017) in his research titled Moodle-based Worksheet to Enhance Reading Comprehension. The research had purpose to find out influences of worksheet based on Moodle in developing reading comprehension strategy on English course at Bogota University. The stages of the research were firstly composing worksheet consisted of serial activities which could improve comprehensive reading skills of the students. Secondly, this worksheet was uploaded in Moodle by using quiz feature. Thirdly, the assessment and feedback were done through discussion forum feature.

The research also showed that 1) student worksheet based on Moodle could improve knowledge through interesting, clear, and contextual material explanations. The material explanations which were appropriate on the context and students' interests in which were explained by using interesting audiovisual media could influentially improve the students' comprehensions. 2) there were similarities between student worksheet forms with the test

form in facilitating students to understand the existing guidance. Besides that, the use of Moodle could assist them figuring out their test results quickly and obtain feedbacks from their worked tasks. 3) the use of discussion forum helped students in explaining their comments, notions, or questions without feeling nervous and hesitate as they experienced face to face. 4) the applied Moodle layout and features helped students' comprehension processes. They could easily be habituated to use the features in Moodle.

Other study deals with writing skill based on Moodle was ever conducted by Khairiree (2011) in his research titled A study of constructivist in mathematics in virtual class with Moodle and the geometer's sketchpad. The research aimed to improve mathematics knowledge of the first year business mathematics International college students, Suan Sunandha Rajabhat University. The research was conducted by designing Moodle web and adjusting the course features by uploading their contents and material topics, worksheets, tasks, and discussion forums. The findings showed that students could improve their mathematics skills by using Moodle virtual class. In this class, they could interact and communicate with their peers. Besides that, there was an ease for them in exploring information and data dealing with the material quickly and accurately. Based on the research observation, this virtual class could train hesitate students whom never interacted in face to face class to share questions and comments. Thus, Moodle implementation in mathematics activity by using geometrical sketch could provide positive influence in improving the students' mathematics knowledge.

Murugesan (2012) in his research titled Promising outcomes of an online course in research writing at a Rwandan University stated that the researchers from developing countries frequently experienced difficulties in carrying out

their scientific writing. It motivated the researcher to conduct experiment toward those researchers at Rwandan University dealing with improvement of the researcher's writing based on online media. The selected media as the exercising media for the researcher was Moodle. The writing training activity based on Moodle showed that almost all researchers could complete the training and they stated to have felt satisfied due to the training. The research was carried out by arranging material dealing with research writing training. Those materials would be grouped based on features in Moodle. The applied features were lesson, forum, database, feedback, and glossary.

The findings showed that level of research writing result accomplishment was sufficiently high or it could be stated that the research writing results could be completed within relatively - short time. Besides that, positive feedback provisions indicated that Moodle could improve the researchers' writing skills at Rwandan University. It could be an indicator of success in Moodle based writing training. It could be seen from 1) the existence of plan and learning tutorial before starting the training activity, 2) Moodle display presented suitable content with the interests of students and it used understandable language to facilitate students, and 3) the instructor remained to be able to interact with the students either directly or indirectly through forum feature. The students could find out their scores and feedbacks given by the instructor quickly. Besides that, the instructor could notice how the activeness of the students were in participating the training. The training implementation could utilize workshop results as research final reports. Workshops had purposes to prepare researchers with knowledge and skills of writing research results based on journal writing principles which would be reviewed by peers. Thus, indirectly, the feature lead participants' writing results to be published.

Ajlan and Zedan (2014) state there are several advantages of Moodle implementation in learning activity. Moodle provides facilitative features for teachers in composing learning activity plans. Teachers could compose courses (material) and group students based on their carried out previous necessity analysis. Besides that, the material explanations are not only explained in the form of written documents but also it could be combined by other media, such as audio and video. In conducting assessment, teachers could use assessment feature which is designed based on scoring rubric demanded by the teachers. Enhancement toward students learning outcomes could be done through feedback provisions. Besides that, Moodle has main function. It is to combine pedagogic and technological skills into learning activities. It has purpose to empower social constructivism pedagogy as an excellent educational meant for students. Social constructivism pedagogy does not only attempt to facilitate improving students' cognitions but also developing their independence through social interactions.

Similar matters are stated by Goyal and Tambe (2015). They state that Moodle implementation in learning process could provide dynamic change impacts on teachers' competences. Large requirement of teachers' demands, such as calling register, explaining material, giving tasks and assessments, and supervising have taken most of teachers' time allotments so they could not have time to develop other competence, such as scientific writing competence. However, those activities could be done properly by assistance of Moodle so teachers could have time to do other activities. For students, Moodle based learning influenced in improving interaction and communication either to teacher and peers which were frequently difficult to do during face to face learning. information access and learning time allotment

limitation could be solved properly by Moodle. It is because Moodle provides quick and unlimited information access. Besides that, students could learn materials and work on the task properly either inside learning activity or outside learning activity.

Generally, necessity analysis is arranged to find out and determine whether there is gap between the ideal performance and present condition (Lee & Ownes, 2004). Necessity analysis is a main component to do before designing and carrying out research and development. Pushpanathan (2013) states that in learning and teaching language, there is a need of necessity analysis especially to compose more relevant learning programs with actual necessity of students. This information would be judged to find out whether this carried research and development could reach the targeted learning objectives.

This current research and development have similarities and differences to several relevant previous studies, such as from Castro (2017), Murugesan (2012), and Khairiree (2011). The similarity is such as Moodle implementation in learning activities. The differences deal with Moodle display and its feature utilizations. Castro's research (2017) has reading activity part of the worksheet combined into quiz feature of Moodle without changing the Moodle theme display. Meanwhile, in this current research, the Moodle display is changed into writing activity worksheet form. Moodle based worksheet is designed and composed based on student worksheet format. Thus, on course menu display, there are elements such as title, core competence and basic competence, material summary, example, task guideline, group task, and material task.

Murugesan (2012) focuses on research writing training activity which uses lesson, forum, database, feedback, glossary, and workshop

features in the training activity. All information and activity data were done by uploading them into Moodle. This research focuses on interaction and writing activities of students through online. Similar matter also becomes this current research objective. It is to improve students' writing skills especially dealing with scientific article writing activity. However, in this research also focuses on training students to find reference and information sources dealing with their researches to be carried out accurately, correctly, and trustworthy. It has purpose to train students to be able to select correct and incorrect information based on facts. Besides that, this research does not only use task, chat, and workshop features but also it uses wikis feature in improving students' writing skills.

Khairiree (2011) in his research focused more on mathematics material development by using geometrical sketch. Moodle was used as virtual class by focusing activities on uploading activity worksheet and discussion forum to improve interaction and communication between teachers and the college students. This research is carried out by having purpose to develop student worksheet learning material based on Moodle on scientific article writing material. The researcher develops student worksheet based on Moodle with purpose as complementary learning materials instead of textbooks. The use of Moodle is used as mediating media for teachers in developing ICT based learning materials. The teacher's limitation in explaining reference sources dealing with scientific article writing material and face to face time allotment limitation in classroom become the reasons for the researcher to use Moodle. If the three previous studies have their all content and topic materials uploaded in Moodle, this research does not only upload the materials but also it will link the materials by using Google Drive, journal links and websites, and Youtube. Students' activeness and interaction are

done by using the existing features in Moodle, such as attendance list, feedback, chat, forum, and comment column.

Based on the explanations, the researcher needs to conduct need analysis study in advance as preliminary stage of research and development. The necessity analysis is used to find out what becomes the necessity dealing with the developed learning materials students. The problem formulations of this research are 1) how are the students' perceptions toward scientific article writing material learning? 2) how are the students' perceptions toward the use of learning material on scientific article writing learning activities on the field? 3) How are the perceptions and hindrances faced by the teacher while teaching scientific article writing material? 5) How should the learning material formulation be developed in scientific article writing learning? The objective of this research is to describe the students' perceptions dealing with scientific article writing material learning and the use of its learning materials, to describe the perceptions and hindrances experienced by the teacher while teaching scientific article writing material, and to identify the learning materials which need to be developed in scientific article writing learning.

■ METHODS

This research aims to find out necessity analysis of student worksheet development based on Moodle for scientific article writing reviewed by student perceptions. The data and information results were obtained by distributing questionnaire and interview activity. The applied questionnaire consisted of eight categories. They were learning scientific article writing necessity, learning source, learning material, school laboratory utilization, difficulty concerning with scientific article writing, Moodle based student worksheet development, material content, and scientific article writing material presentation stage.

Each category consisted of 1 - 5 questions with total of the questions were 20 questions. The responses from the students were done by using close choices (Yes and No) and opened choices. The interview was used to adjust and match the questionnaire data result with the actual condition.

The stages in analyzing the necessity was based on the students' perceptions. They covered: (a) identifying necessity. On this stage, the researcher determined students to be chosen as the research subjects and identify the data concerning with the students' necessities toward scientific article writing material. This stage attempted to identify gap existence or problem between what existed and what was expected. On this stage, questionnaire arrangement and distribution as well as interview were begun. (b) determining priority. The obtained data and information from questionnaire distribution were identified and arranged within priority order. The determinations of priorities were based on selection criteria which were already agreed. (c) determining necessity to cover. All necessity analysis results were arranged based on priority. Then, the next stage was determining the necessities to cover. It was done based on the previous data results which were described qualitatively.

The data analysis used qualitative descriptive method. All data from the questionnaire were tabulated, analyzed, interpreted, and described by percentage.

Meanwhile, the data from interview were identified, analyzed, interpreted, and described qualitatively. The subjects consisted of XI grade - Public SHS 1 Partigia, with total 45 students selected by proportionate stratified random sampling. Flowerdew & Martin (2005) stated that this technique is used in groups that have homogeneous strata. A random sample can be taken in each stratum by proportionately. Besides that, there were also Indonesian language teachers of Public SHS 1 Parittiga, consisting of fifteen teachers of Bangka Barat Municipality Indonesian Lesson Teacher Focus Group Discussion.

■ RESULTS AND DISCUSSION

Based on questionnaire distribution result, it was obtained information about students' necessities toward the development of student worksheet based on Moodle for scientific article writing material. There are eight points discussed in the questionnaire. They are importance of scientific article writing lesson, the used learning source, problems faced while writing scientific article, Moodle based worksheet development, the types of the applied worksheet by teachers, school laboratory facility utilization, scientific article material content, and stages in presenting scientific article writing material.

The result of questionnaire distribution shows that 100% students considered scientific article writing material is important. Studies

Table 1. Analysis of the applied learning sources.

No	Questions	Students' Perceptions (%)	
		Yes	No
1.	Students have textbooks or other handbooks.	28.9%	71.1%
2.	Students use Internet in learning activity.	95.6%	4.4%

discussing about scientific article writing have been done by scholars, started from Singh & Mayer (2014), Ossevoort, Koeneman & Goedhart (2012), Murugesan (2012), Willmott, Clark & Harrison (2015), and Novales et al. (2014). Those studies tried to review scientific article writing in learning. The findings also showed positive influences on students in learning the material. One of the positive influences dealt with students' habits to write scientifically. Besides that, scientific article writing also trained students to think and reason scientifically and systematically. Based on the researches, it could be stated that scientific article writing was important to be learned by students.

On table 1, it is obtained information that most students do not have textbooks or handbooks to learn about the material (71.1%). There are only 28.9% of them have textbooks or handbooks. This shortcoming of owning handbooks or textbooks was caused by their preferences to use Internet in browsing related information about scientific article writing. It is proven by 95.6% of them choosing the Internet as reference rather than using textbooks to facilitate them understanding the material. Deniz (2010) stated that the Internet users were mostly people aged 16 - 24 years old. The age range is within middle and higher education levels. The users are not only limited on social interaction and amusement necessities. However, it begins functioning as reference source for them in seeking information related to lesson materials. Besides that, constructivist learning approach which is currently held by teachers causes higher Internet utilization necessity. More comprehensively, in educational world, Internet functions as warehouse of information, unlimited communication meant, interactive learning meant, and student interest improvement meant.

It is also stated by Dogruera, Eyyamb, and Menevisab (2011). Based on their research, it

showed that 80% of students considered Internet as attractive and joyful information sources. A quick information distribution across time and space limitation makes Internet as most frequently used information searching site by students. Besides that, teachers' roles are to encourage students to use Internet in seeking various information during learning activity sufficiently influenced in improving students' learning interests.

On statement daling with the use of textbooks as learning materials, then 73% students answered that the teachers used textbooks published by the Government in delivering learning materials. The remaining percentage, 27%, stated that the applied learning material by the teachers was taken from complementary materials, such as student worksheet besides the use of textbooks. Textbooks published by the government typically become main reference for students and teachers in learning a lesson material. However, it is important to note that textbook existences frequently do not fit on students' interests and necessities. Its broader scope of materials with large numbers of chapter units plus many content or example implementations make them irrelevant parts and weaknesses of textbooks. It is because textbook is arranged and printed to meet general school learning material necessities. Besides that, the use of inauthentic language (language which does not represent daily life language) and the book thickness could influence students' motivations to read textbook (Basturkmen, 2010). Therefore, teachers need to develop complementary learning source to deliver each material of the textbook in specific manner. It has purpose to facilitate students in understanding lesson materials.

On the previous information, it was obtained 27% teachers used student worksheet as supplementary learning materials. The applied student worksheet was arranged into two

versions. 67% students stated that the applied student worksheet was a published student worksheet version and 33% students stated that the applied student worksheet was a teacher-made version. Celikler and Aksan (2012) state an excellent and good student worksheet is a worksheet which could invite students to be active in learning activities. While using student worksheet, students are expected to observe, share hypothesis, experiment, and find solution of a problem based on the guidelines. With another word, student worksheet could facilitate students in conducting feedback activities dealing with material comprehension, implementation of guideline stages, and information reconstruction which is obtained based on the purpose and demanded guidelines.

Based on table 2, it is obtained information dealing with students' difficulties in learning scientific article writing material. Seen from the textbook uses as learning sources, it was found out 84.4% students considered the material in the textbook was difficult to understand. Meanwhile, 15.6% of them considered it not too difficult to understand. Second, it is obtained that students' enthusiasm in learning the material becomes the reason of the teacher to develop

facilitative learning material to ease students in understanding it. 66.7% students were enthusiastic to keep up with the learning while 33.3% students were not. Thirdly, it was obtained information that 80% of students considered the content of the material was difficult to understand. Meanwhile, 20% of the students considered the material easy to understand. Fourth, 68.9% students stated that the applied learning material did not assist them to understand scientific article writing material.

The learning material composition had to be selected and arranged based on the needs and characteristics of students. Besides that, supportive facility and infrastructure selections for learning process is needed, especially those which could improve students' enthusiasm in learning activities. Appropriate learning material and facility selections could influence students' enthusiasm toward the learned material. Therefore, an attempt to improve learning could be done by revising techniques of composing learning material and its supportive facilities.

Mehisto (2012) states the ideal learning material should be composed by the purpose to support students and teachers rather than limiting them. A qualified learning material could guide

Table 2. Necessity analysis of students' difficulties in learning scientific article writing material.

No	Questions	Students' Perceptions (%)	
		Yes	No
1.	Having difficulty to learn scientific article writing material from textbooks.	84.4%	15.6%
2.	Students' enthusiasm in learning.	66.7%	33.3%
3.	Having difficulty in understanding scientific article writing.	80%	20%
4.	Having difficulty in understanding the applied material by the teacher.	68.9%	31.1%

students in seeking information and use reference source to learn, to develop knowledge and skill progressively, and to help students in communicating understanding and arguments effectively. Besides that, an excellent and correct learning material is not only communicating information but also it encourages students to improve their creativities and independence, to recognize their thought and learning limitations, and to help them understanding when the information is used and to select it based on the needs. It is important to remember that the arranged learning material does not only help students understanding the materials in a classroom but it could also help them outside of classroom.

Table 3 shows information in which 91.1% students want the developed student worksheet to be understandable and to have interesting display. One ways to make worksheet displayed interestingly and creatively is by using technology, especially Internet based technology. The use of technology becomes main part in learning process. It is in line with era advancement which requires technology implementation into daily lives. However, on the applied scientific article writing learning, heretofore, there has not been any technology implementation as mediating media in delivering the learning material. It was proven by

68.9% students answered that teachers had not used technology based learning media to deliver the material. 31.1% students stated that the teachers used technology in learning. Based on interview result, it was known that the applied technology was PowerPoint.

Manohar, Dashputra, & Suresh (2015) stated that the use of technology utilization as media to deliver material is important to do. Students tend to be more active in learning by having learning material presented by technology utilization to those taught by printed learning materials or by written activity ob board. Teachers should keep up with the technology development. They should select and choose the appropriate one to students' needs and characteristics. It is to avoid any bad backwash for the teachers.

Based on the observation, it was found that Public JHS 1 Parittiga had two computer labs with wifi connection access. These facilities are allowed to be accessed by teachers in teaching-learning activities. However, the actual learning process implementation found that the laboratory was rarely used by teachers, especially Indonesian language teachers. It was proven by 73% students answered that the teachers never used the computer laboratory facility to support Indonesia language lesson activity. This laboratory utilization

Table 3. Necessity analysis of student worksheet development based on Moodle.

No.	Questions	Students' Perceptions (%)	
		Yes	No
1.	Students expect the composed student worksheet could make them understand and it should have interesting display.	91.1%	8.9%
2.	ICT implementation by teachers in learning activities.	31.1%	68.9%

is realized into ICT based learning which is needed in school environment. It was because not all students had laptop computers or smart phone to support ICT based learning in the classroom. This matter is realized by the government through its cooperation with education institution. They provide free assistance to schools dealing with supportive ICT facility provision. One of the government's rules is providing laboratory, especially computer laboratory. Most of schools in Indonesia have owned laboratory facilities. However, the use of laboratory has not been maximal.

Table 4 shows information dealing with the necessity of Moodle based worksheet development. 97.8% students considered there was a need of such learning material development. There are many applicable technology application used by teachers in arranging learning material. One of them, and the most typical, is Moodle. Moodle is a web-based learning by utilizing Internet connection in its implementation. Findings of several researchers, such as Wulandari (2015), Sanches et al (2012), Mauri (2012), & Lien (2015) stated that Moodle implementation in learning activity could facilitate in improving students' writing skills. It is due to Moodle has

important and appropriate features to improve students' writing skills. They are wiki, blog, and workshop features. Those features could be used as students' writing exercise media. Through these features, a student could collaborate in writing either done with their peers or teachers.

On the next statement, it is known that 97.8% students considered the necessity of worksheet development by utilizing technology development, especially based on Moodle.. Worksheet is the most typical learning material used by teachers as supportive learning materials in understanding material. Based on interview result, it was obtained that the used worksheet by teachers was printed version worksheet made by them or published by publisher. Worksheet is chosen as learning source to be developed because it provides various tasks or exercise as well as material summary which is entailed by the implementation examples. However, printed worksheet has weaknesses, such as passive, less interactive, inflexible, and hindering feedback. Therefore, teachers must develop ICT based student worksheet to be more interesting, flexible, interactive, and facilitating feedback. One of applicable ICTs technology for teachers is Moodle application. Moodle has interesting and

Table 4. Necessity analysis of student worksheet development based on Moodle.

No.	Questionnaire Aspect	Students' Perceptions (%)	
		Yes	No
1.	Necessity of Moodle based learning material development	97.8%	2.2%
2.	Necessity of student worksheet development based on Moodle in facilitating students to learn material.	97.8%	2.2%
3.	Necessity of guideline arrangement in implementing the student worksheet development based on Moodle in learning activity	100%	0%

interactive features. Those features have similarities to activities conducted by teachers in face to face classroom teaching. The features are such as course, participant list, exercise, quiz, assessment, and so forth. Besides that, the course feature in Moodle could be modified based on the necessity of the teachers. As for example, the display and course activity content are adjusted to learning material types, such as student worksheet (Standford, 2009).

It is important to consider by teachers that before implementing ICT based learning materials, teachers should firstly compose book or module concerning to the use of the learning material. It was proven by the questionnaire data. It showed 100% students demanded the guideline while they were going to implement ICT based learning, especially student worksheet based on Moodle. Besides that, the guideline functions to facilitate students independently by using the learning material.

Based on the questionnaire result, it was obtained that students demanded the developed scientific article writing learning material to cover concepts, examples, discussions, and exercises. It is indicated by 67% students chose the option. 4% students stated that learning material should



Figure 1. The necessity analysis of scientific article writing content material. Concept (dark blue), examples (red), exercise (green), combination of concept, example, discussion and exercise (purple), others (light blue).

only cover about the concept; 11% stated that learning material contents should consist examples; 16% students stated they demanded learning exercises consisting of exercises; 2% students stated learning material should consists other things (Figure 1).

Dealing with scientific article material content, it was obtained that 44.4% students demanded the content to cover definition; 55.6% wanted to cover linguistic features; 64.4% wanted to cover the systematics; 66.7% wanted to cover writing stages; 53.3% wanted to cover examples;

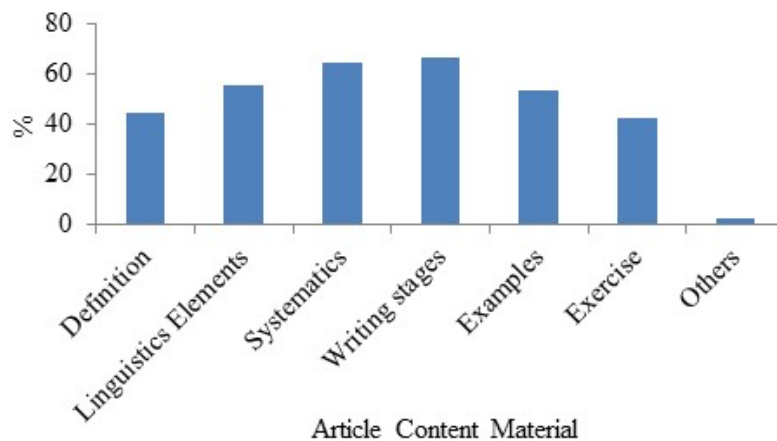


Figure 2. The necessity analysis of scientific article writing content material.

42.2% wanted to cover exercises; and 2.2% wanted to cover other matters (Figure 2). Thus, students wanted the contents to have writing stages, systematics, linguistics elements, examples, definitions, and exercises.

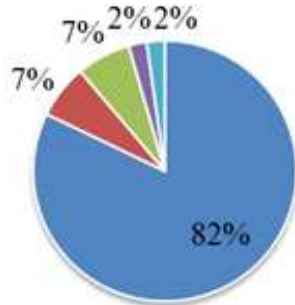


Figure 3. Necessity analysis dealing with material explanations. Brief, clear, concise (dark blue), brief & concise (red), orderly & concise (green), brief (purple), understandable & recallable (light blue)

Dealing with material explanations, 82% students wanted to be explained briefly, clearly, and concisely; 7% wanted to be briefly and concisely; 7% wanted to be orderly and concisely; 2% wanted to be briefly; and 2% wanted to be explained in understandable and recallable manners (Figure 3). It indicated that students wanted to have brief, clear, and concise worksheet.

Dealing with exercise types of the learning material, it was obtained 69% students demanding stages covering clear and order steps to work on the worksheet; 24% students demanding stages covering steps to work on the exercise with correct dictions; and 7% wanted to have correct steps to answer the questions (figure 4). Thus, students expected the exercise or task in the worksheet to be entailed by guideline of definitions which are explained clearly and orderly.

Based on the interview done toward the Indonesian language teachers in Public SHS 1 Parittiga and the members of Indonesian language

FGD in Bangka Barat Municipality, the information could be formulated as follows. First, the learning source applied by the teachers in delivering scientific article writing material was dominated by textbooks published by government. Teachers needed to prepare specific learning materials and supportive learning materials instead of textbooks. It had purpose to facilitate students in understanding the delivered materials. Besides that, the supportive learning materials could train students to be active and innovative in arranging learning materials based on the needs and characteristics of students as well as the learning objectives.

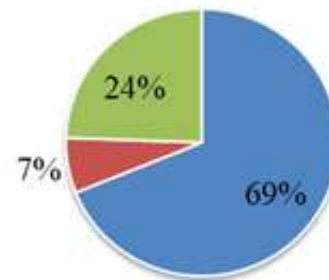


Figure 4. Need analysis of demanded exercise types. Clear and orderly (blue), ways to answer questions (green), appropriate diction (red)

Secondly, the use of technology as facility to deliver the materials was not used properly. Teachers mostly used PPT to deliver the materials. The contents of PPT were copies from the textbook completely. Teacher anxiety levels in learning new technology became a reason to not use technology in arranging learning material. In fact, the use of technology could improve students' interests in learning activities. Teachers were faced to challenges in selecting and arranging learning materials by implementing technology as the mediating media. It has purpose to make learning activity lasting actively and interestingly. Manohar et al. (2015) stated that the use of PPT was better than whiteboard.

However, the use of website on the Internet was more interesting than PPT.

Third, several teachers used worksheet as learning materials in delivering the materials. However, the applied worksheet was a published version by publisher. It is so unfortunate since such worksheet type is merely explaining materials in general and does not consider students' needs. Teachers who used personal created worksheet as learning materials had done it sufficiently excellent in learning activities. However, the worksheet had weaknesses. They were from Internet downloads without being modified based on students' needs.

Fourth, many students had difficulties in arranging and composing notions into paragraph which became teachers' problems. Local language domination in students' learning environments indirectly influenced them in composing sentences or paragraphs. Besides that, their understandings about linguistic features of Indonesian language were very minimal. Thus, it made them difficult in writing. Pasaribu (2016) stated that students had high anxiety in writing. The anxiety is sourced from difficulties in organizing notions, to use language, low self-confidence, lack of experience, and time management difficulty. Fifth, teachers expected the existence of guiding and training books related to ways of arranging and composing interesting, creative, and joyful technology based learning materials.

■ CONCLUSIONS

Based on the interview done toward the Indonesian language teachers in Public SHS 1 Parittiga and the members of Indonesian language FGD in Bangka Barat municipality, it was obtained information that Moodle based worksheet development on scientific article writing material was needed by XI graders of Public SHS 1 Parittiga. The student worksheet development

based on Moodle is important to conduct because the worksheet could train students to be independent, to think orderly, to express their arguments or notions with strong references, to train them writing based on the applied principles, and to train them using Internet positively.

■ REFERENCES

- Ajlan, A. & Zedan, H. (2014). Why Moodle. *IEEE International Workshop on Future Trends of Distributed Computing Systems*, 58—64.
- Basturkmen, H. (2010). *Developing Courses in English for Specific Purposes*. New York: Paglave Macmillan.
- Castro, K. R. (2017). *The impact of Moodle-based worksheets to enhance students reading comprehension*. (Master's thesis, Universidad Externado de Colombia, Bogota D.C., Colombia). Retrieved from <http://www.semanticscholar.org/paper/The-impact-of-Moodle-based-worksheets-to-enhance-Castro/bc1e283ba92da493f89dea5376d139912f5e029f>.
- Celikler, D., & Aksan, Z. (2012). The effect of the use of worksheet about aqueous solution reactions on pre-service elementary science teachers' academic success. *Procedia Social and Behavioral Sciences*, 46, 4611—4614.
- Costa, C., Alvelos, H., & Teixeira, L. (2012). The use of Moodle e-learning platform: A study in a Portuguese University. *Procedia Technology*, 5, 334—343.
- Deniz, L. (2010). Excessive use and loneliness among secondary school students. *Journal of Instructional Psychology*, 37(1), 20—23.
- Dogruer, N., Eyyam, R., & Menevis, I. (2011). The use of the internet for educational purposes. *Procedia-Social and Behavioral Sciences*, 28, 606—611.

- Flowerdew, R., & Martin, D. (2005). *Methods in human geography: A guide for students doing a research project (2nd Edition)*. New Jersey: Pearson Education Limited.
- Goyal, E., & Tambe, S. (2015). Effectiveness of Moodle-enabled learning in private Indian Business School Teaching Niche Programs. *The Online Journal of New Horizon in Education*, 5(2), 14—22.
- Khairiree, K. (2011). A study of constructivist in mathematics in virtual class with Moodle and the geometer's sketchpad. In Yang, W. C., Majewski, M., A. T. D. & Karakirk, E. (Eds). *Proceeding of The Sixteenth Asian Technology Conference in Mathematics (pp. 159—167)*. ATCM Inc. Published, VA:USA.
- Lee, W. W., & Owens, D. L. (2004). *Multimedia-based instructional design*. San Fransisco: Pfeiffer.
- Lien, C. T. (2015, August 13—15). *Enhancing writing skills for second-year english majors through a Moodle-based blended writing course: An action research at Hue University of foreign languages*. Paper presented at the 6th International TESOL Conference, Curtin University, Australia. Retrieved from <http://www.vnseameo.org/TESOLConference2015/Materials/Fullpaper/Ms.%20Cao%20Thi%20Xuan%20Lien.pdf>.
- Manohar, T., Dashputra, A., & Suresh, C. (2015). Students' perception about teaching learning media in didactic lectures. *Journal of Education Technology in Health Sciences*, 2(3), 103—107.
- Mauri, T., Colomina, R. M., Clara, M., & Ginesta, A. 2012. Support for learning in collaborative writing tasks with Moodle. *Electronic Journal of Research in Educational Psychology*, 9(3), 1103—1128.
- Mehisto, P. (2012). Criteria for producing CLIL learning material. *Encuentro*, 21, 15—33.
- Murugesan, R. (2012). Promising outcomes of an online in research writing at a Rwandan University. *European Science Editing*, 38(3), 60—64.
- Novales, C., I. P., Padron, N., Q., Murguia, A. P., & Rivero, P., L., G. Hondares, L., E., M. (2014). Aspectos importantes de la redaccion cientifica (Important aspects of scientific writing). *Rev Ciencias Medicas*, 18(2), 362—380.
- Ossevoort, M., Koeneman, M., & Goedhart, M. (2012). Exploring scientific research articles in the classroom: Learn how to use research articles in your science lessons. *Science in School*, 25, 36—40.
- Pasaribu, T. A. (2016). Students' writing anxiety: Causes and effects of a Moodle-based writing course. In David Shaffer, & Maria Pinto (Eds), *Shaping the future with 21st century skills*. Proceedings of the 24th Annual Korea TESOL International Conference Seoul (pp 87—96). KOTESOL, Korea.
- Perk, Marcel Van Der. (2015). *A Guide for Scientific Writing: Bachelor Earth Science*. Netherlands: Utrecht University.
- Pushpanathan, Ln. T. (2013). A need for needs analysis. *International Journal of Applied Research & Studies*, 2(1), 1—6.
- Sanchez, G. A., Pellicer, Y. S., Valera, Y. R., Sanchez, W. R., Ollarzabal, A. L. M., & Ales, A. F. (2012). Scientific writing course and infotechnology on virtual platform Moodle: Results and experiences. *Pixel-Bit. Revista de Medios y Educacion*, 41, 173—183.
- Sasanti, N. S., Samsul, S. I., & Amri, M. (2019). Developing students worksheet to support kanji teaching. *Advances in Science Educational and Humanities Research*, 380, 342-345.

- Shyamlee, S. D., & Phil, M. (2012). Use of technology in English language teaching and learning: An analysis. *International conference on Language, Media and Culture*, 33, 150—156.
- Singh, V., & Mayer, P. (2014). Scientific writing: Strategies and tools for students and advisors. *Biochemistry and Molecular Biology Education*, 405—413.
- Stanford, J. (2009). *Moodle 1.9 for Second Language Teaching*. Birmingham: Packt Publishing.
- Willmott, C., J., R., Clark, R. P., & Harrison, T. M. (2015). Introducing undergraduates students to scientific reports. *Bioscience Education*, 1(1), 1—8.
- Wulandari, Mega. (2015). Moodle-based learning model for paragraph writing class. *LLT Journal: A Journal on Language and Language Teaching*, 18(2), 73—90.