

## THE DEVELOPMENT OF ELECTRONIC STUDENT WORKSHEETS (E-LKPD) ECONOMIC MATERIALS ACCOUNTING CYCLE BASED ON PROBLEM-BASED LEARNING (PBL) COMPANIES

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**ABSTRACT :** *This development research aims to produce electronic student worksheets (E-LKPD) in the economics subject of trading company accounting which is a logical science and requires high reasoning to understand it so that the problem-based learning model is very appropriate by adding real-world problems that students must solve before start learning, so it is necessary to analyze the E-LKPD development process and its feasibility. LKPD has been conventionally inefficient and unable to facilitate online learning. The researcher used research and development (R&D) research, using the modified 4D development modified model of Thiagarajan without performing the disseminate stage. The result of the feasibility validation of the four validators are as follows; (1) Validation of material gained 92.5% with a very decent category with rich advantages in sales and purchase transactions; (2) Validation of learning design experts scored 93.75% with a very decent category with the excellent of case studies; (3) Validation of linguists gained 95% with a very decent dictionary with easy-to-understand linguistic clarity and (4) Validation of learning technologist gained 92.7% with the advantage of very simple and easy-to-use technology. The implications of this study can be an alternative to completing distance learning while preparing the important instruments in the face of a free curriculum.*

**Kata kunci** – *E-LKPD, Problem Based Learning, Trading Company Accounting Cycle*

## INTRODUCTION

Entering the era of society 5.0, humans live in an all-digital era, knowingly or not they will start to coexist and depend on digital technology. All sectors have begun to transform in the digital world, both the economic sector and the education sector. The technology that is widely applied by educational institutions, both formal and normal institutions, is paperless technology by reducing the use of paper that switches to digital formats (Rachmasari, Serevina, & Budi, 2019). Especially during the Covid-19 pandemic, the government's demands for distance learning or often known as online learning (on the network) are the main thing, so to support the effectiveness of online learning, adequate media and facilities are needed. Meanwhile, the Student Worksheet (LPKD) as an important part in m-learning is a means to assist and facilitate teaching and learning activities so that effective and active interactions are formed between students and educators, can increase student learning activities and achievements more efficiently, however the LKPD is still conventional and has not been able to facilitate online learning activities, so that learning becomes ineffective and requires relatively more costs. Therefore, it is necessary to arrange innovative LKPD in minimizing obstacles and increasing the value of its benefits, namely designing e-LKPD (electronic LKPD) as a learning medium that can be used in online or offline learning (Danaryanti, 2021) so that e-LKPD can be used anywhere and anytime. anytime using a laptop or smartphone (Apriliyani & Mulyatna, 2021). E-LKPD is an electronic book, like a printed book in general, which includes a cover page, table of contents, materials, practice questions, and so on (Pea et al., 2021).

At the high school level (SMA) in class XII majoring in Social Sciences, one of the important subjects is the accounting cycle of trading companies. This subject is one of the subjects that requires a level of understanding and logical reasoning. In this subject students are required to be able to analyze every occurrence of a transaction and make financial reports. To understand in depth the learning process needs to be linked to the real problems that exist in the residential environment. One suitable learning model is the problem based learning (PBL) model. PBL is a learning model that connects case studies or real world problems or students' social environment with the subject matter that students will learn (Salim & Dewi, 2018),

Based on the results of observations at SMAN 7 Malang class XII IPS 3 for three months, problems were found during the learning activities, namely, LKPD which was used as the main teaching material was still conventional, namely in printed form using newsprint. In its use, conventional worksheets are not able to attract students' enthusiasm, because the display of LKPD only uses two colors, namely black and gray and requires a large space when carrying it. In addition, conventional worksheets cannot be used in online learning situations. In research conducted by (Ananda, Muhfahroyin, & Asih, 2021) explained that the use of e-LKPD is very effectively used in online learning models, because e-LKPD is made in a digital format, and this e-LKPD can attract students' interest and enthusiasm in the learning process, either studying in class or studying independently because of its contemporary form, not requires a lot of space, and can be learned anytime and anywhere without being limited by space and time.

Another problem that was found was that the LKPD used had not used a learning approach model, so this made students not so deep, in understanding the material being studied this problem

was found when the discussion process took place regarding solving a problem students tended to be passive in responding to it. This happens because the level of understanding of students is still not so deep, because basically the subject of the trading company accounting cycle is a logical lesson material, therefore reasoning is needed in understanding the material in order to be able to solve the problems given. The problem based learning (PBL) learning model is thought to be able to improve students' understanding abilities and can improve students' critical thinking skills in solving a problem, so that the PBL learning model is very suitable for use in subjects that require a high level of reasoning or understanding. Based on some of the problems above, the researchers tried to develop an electronic student worksheet (e-LKPD) using a Problem Based Learning (PBL) approach. Economics subjects for e-LKPD trading companies will be made in the form of a Portable Document Format (PDF).

The objectives of this study are: 1) The procedure for developing electronic student worksheets (e-LKPD) based on Problem Based Learning (PBL) material for the accounting cycle of trading companies for class XII IPS 3 SMAN 7 Malang students, 2) The feasibility of electronic student worksheets (e-LKSPD) based on Problem Based Learning (PBL) material for the accounting cycle of trading companies for students of class XII IPS 3 SMAN 7 Malang.

## **LITERATURE REVIEW**

### **Development Research**

According to Sugiyono (2009: 297), research and development (R&D) is a basic research activity to obtain information on user needs, then proceed with development activities to produce products and assess the feasibility of these products. Development research aims to produce learning tools, such as syllabus, teaching materials, media, practicum modules, student work exercises to solve learning problems in class (Zulva, 2021). The background behind the need for development research is the existence of problems related to inappropriate learning devices. This problem can be encountered by researchers from observations during teaching (Maimufi, 2021).

### **Student Worksheet**

LKPD is a teaching material whose contents are very complete starting from material, material summaries to practice questions so that it will make students deeper in understanding the learning material. (Adha & Refianti, 2019) also argues that student worksheets are a collection of sheets that contain a summary of learning material material to practice questions, so that it can encourage students to be able to express their ideas and critical answers in solving existing problems. So that the LKPD will be more interesting and more contextual if it is made by the teacher because the teacher will arrange it according to the needs and conditions of the students' socio-cultural environment. (Dance, Agung, & Parmiti, 2019).

### **Electronic Student Worksheet**

Electronic student worksheets are an interesting teaching material, electronic student worksheets are formed in an electronic format that can be used anywhere and anytime using a laptop or smartphone. (Apriliyani & Mulyatna, 2021). (Augustha, Susilawati, & Haryati, 2021) also argues that the electronic student worksheet (e-LKPD) is a type of teaching material that can be used in offline and

online teaching and learning activities packaged in digital format, so as to make learning more interactive, so that e-LKPD can be a supporting facility in learning process, which makes learning activities more interesting. e-LKPD is designed to follow the development of the times so that it can print quality students and have good learning abilities in accordance with the times (Ananda et al., 2021).

### **Problem Based Learning**

Problem based learning is learning that uses real or authentic problems and open thinking as a context for students to develop problem solving and critical thinking skills and build new knowledge (Salim & Dewi, 2018). The PBL learning model basically emphasizes problem-solving-based learning and critical thinking in a real context that provides opportunities for students to learn broader things. Through PBL students gain experience in dealing with realistic problems, and emphasize the use of communication, collaboration, and available resources to formulate ideas and develop reasoning skills (Suardana, 2019). The characteristics of problem based learning are as a constructivist learning model oriented to student centered learning that can foster creative, collaborative, metacognitive thinking, and develop higher-order thinking skills, increase understanding of meaning, increase independence, facilitate problem solving, and build teamwork (Programme, Education & Sumatra, 2019).

### **Trading Company Accounting Cycle Economic Material**

Accounting is a part of economic material related to techniques in recording, summarizing, analyzing and reporting financial transactions in a company (Ariasmini, 2019). While the trading company accounting cycle is a series of stages that must be passed to change input in the form of transactions so as to produce output in the form of financial statements that occur in trading companies. A trading company is a form of company engaged in trading where the main activity is to buy, store and resell merchandise for profit without changing the form of the merchandise (Sariningtyas & Susilowibowo, 2020).

### **METHOD**

The type of research used in this research is Research and Development Research and Development (R&D). This research and development produces a new product or improves an existing product (Rusdi, 2018). This research and development adheres to the 4D development model of Thiagarajan, Semmel & Semmel (Sariningtyas & Susilowibowo, 2020). It consists of four stages, namely the define stage, the design stage, the develop stage, and the disseminate stage (Aisah & Rohayati, 2018). At this stage of development research, it is only limited to the develop stage because the development of e-LKPD aims to meet the needs of teaching materials on economic subjects for trading company accounting cycle materials in SMAN 7 Malang itself without any purpose for dissemination. Here are the steps: (1) The define stage, this stage is the stage to define the problem or issue to be discussed, which begins with the direct observation stage. Then interviews were conducted with students and teachers aimed at finding out more detailed problems or issues, then an analysis of content standards and competency standards was carried out. (2) The design stage at this stage carried out by researchers is to design a basic description of the PBL-based accounting e-LKPD for trading companies which will be developed in class XII IPS 3 SMAN 7 Malang.

The initial stage carried out by the researcher was compiling the material and then designing it according to the PBL approach model. At this design stage includes an analysis of basic competencies (KI), basic competencies (KD), learning indicators (I), and learning objectives that are adapted to the 2013 curriculum. selection of formats, selection of media and materials needed in compiling e-LKPD. Furthermore, the e-LKPD is created using the Canva website, Microsoft Office Word 2013, the Paint application, Google Form, the bit.ly website and the QR Code website which will be created in Portable Document Format.

The components in the E-LKPD include cover, introduction, basic competence, learning objectives, concept maps, materials, evaluation questions and back covers. (3) The development stage of this stage will be assessed and validated by The components in the E-LKPD include cover, introduction, basic competence, learning objectives, concept maps, materials, evaluation questions and back covers. (3) The development stage of this stage will be assessed and validated by The components in the E-LKPD include cover, introduction, basic competence, learning objectives, concept maps, materials, evaluation questions and back covers. (3) The development stage of this stage will be assessed and validated by four experts (validators) by giving an assessment questionnaire to each validator. The results of the questionnaire will be used to test the feasibility of the E-LKS cycle of trading companies. The four experts (validators) consist of content experts, learning design experts, linguists and learning technology experts. The data obtained from the assessment score will be analyzed in a qualitative way by using the ranking values arranged based on the Likert scale with the ideal maximum score of 4 and the ideal minimum score of 1.

From the validation data will be analyzed using the formula:

$$Nilai = \frac{\sum score}{\sum score total} \times 100\%$$

The data obtained from the results of the analysis will be summarized to determine the feasibility level of e-LKPD which can be known based on the exposure of the following table:

**Table 1. Criteria for interpretation of the experts' eligibility score**

Category	Percentage	Qualification
4	86% - 100%	Very worth it
3	76% - 85%	Worthy
2	56% - 75%	Decent enough
1	- 55%	Not worth it

Source :Retno (2021)

## RESULTS

This e-LKPD development procedure uses a 4D model with development modifications only up to the develop stage without carrying out the disseminate process. The stages of development are as follows: 1) the first stage define (definition) at this stage aims to determine and define the needs during learning, at this stage an observation is carried out for 3 months at SMAN 7 Malang which is carried out in class XII IPS 3 in the subject of Economics about the accounting cycle of a merchandising company. From the results of these observations, it was found that the problems in the composition of the LKPD used were still very conventional, in printed form with an unattractive design which was also very monotonous, which only consisted of black and gray colors. In addition, the fact that the LKPD used has not used a learning model that is in accordance with the needs of students.

Furthermore, material analysis is carried out to identify the main material that must be mastered and which will be studied by students in the trading company accounting cycle; 2) The second stage of design (design) After analyzing the needs and selecting materials that are in accordance with the competencies set out in the curriculum; and 3) Development Phase or developing the basic design of the PBL-based trading company accounting e-LKPD. At this design stage includes an analysis of basic competencies (KI), basic competencies (KD), learning indicators (I), and learning objectives that are adapted to the 2013 curriculum, format selection, the selection of media and materials for the e-LKS stage and the preparation of materials and then adjusted to the steps in the problem based learning (PBL) learning model.

The applications and web sites used by researchers to compile e-LKS are as follows; Microsoft Office Word 2013, Paint, Canva.com, Google forms, Linktr.ee, Bitly.com and Qr Code Monkey. After the e-LPKD has been created, it is then distributed to four experts (validators) by giving an assessment questionnaire to each validator. The results of the questionnaire will be used to test the feasibility of the e-LKS cycle of trading companies. The four experts (validators) consist of content experts, learning design experts, linguists and learning technology experts with Microsoft Office Word 2013, Paint, Canva.com, Google forms, Linktr.ee, Bitly.com and Qr Code Monkey. After the e-LPKD has been created, it is then distributed to four experts (validators) by giving an assessment questionnaire to each validator. The results of the questionnaire will be used to test the feasibility of the e-LKS cycle of trading companies. The four experts (validators) consist of content experts, learning design experts, linguists and learning technology experts with Microsoft Office Word 2013, Paint, Canva.com, Google forms, Linktr.ee, Bitly.com and Qr Code Monkey.

After the e-LPKD has been created, it is then distributed to four experts (validators) by giving an assessment questionnaire to each validator. The results of the questionnaire will be used to test the feasibility of the e-LKS cycle of trading companies. The four experts (validators) consist of content experts, learning design experts, linguists and learning technology experts with the results are as follows: (1) material content expert validation obtained a score of 92.5% in the "very feasible" category. Suggestions and input from content experts, namely: the material for payment terms for trading companies is adjusted to the material at the high school level, at the beginning of each chapter the learning objectives are rewritten, and the method of calculating merchandise inventory is added with illustrations.

The advantages of this e-LKPD are e-LKPD rich in examples of sales and purchases transactions; (2) the validation results from learning design experts obtained a score of 93.75% with the "very feasible" category. As for suggestions and input from learning design experts the footer section or the current quotes section is omitted because it is not related to the material being studied or is maintained with quotes that are included in relation to the material. The advantages of this e-LKPD



are: with the advantages of case studies to raise relevant and current; while (3) the validation results from linguists obtained a score of 95% in the "very feasible" category.

The suggestions and inputs from linguists are: a) the use of fonts in the instructions for use is more enlarged and corrects writing that still has errors, and b) improvements to the use of punctuation marks, conjunctions, capital letters, non-standard words and typos. The advantages of this e-LKPD are the language used is very easy to understand.

*The results of the validation from learning technology experts obtained a score of 95.75% in the "very feasible" category. As for suggestions and input from learning technology experts to fix the qr scan. The advantages of this e-LKPD is that the technology used is very simple so it is very easy to operate. Thus, we can conclude that the PBL-based LKPD electronic student worksheet for trading company accounting cycle materials can be said to be very feasible to use.*

## **DISCUSSION**

From the validation test results obtained quantitative data in the form of acquisition scores in the form of percentages as follows 93.5% of content experts, 93.75% of learning design experts, 95% of language experts and 95.75% of learning technology experts. So that based on the acquisition score, the E-LKPD is included in the "very feasible" category. In addition to obtaining quantitative data, qualitative data is also obtained in the form of suggestions and input from experts as follows; from material/content experts, the suggestions and inputs are the first the material for payment terms for trading companies is adjusted to the material at the high school level. Second, at the beginning of each chapter, the purpose of the third learning is rewritten. The method of calculating merchandise inventory is added with illustrations. The advantages of E-LKPD in terms of material content, the E-LKPD has a very complete content component, starting from the basic concept of a trading company, the stage of recording transactions of a trading company and the stage of summarizing. In addition, E-LKPD has three variations of learning evaluation models that are equipped with an automatic assessment system. The evaluation model in the first E-LKPD is a competency test question that aims to find out the level of students' understanding of the material that has been studied, the second is remedial questions that are intended for students who score below the KKM when working on competency test questions and the third is enrichment questions that allotment for students who score above the KKM when working on competency test questions.

Qualitative data from learning design experts in the form of suggestions and input are as follows in section The current poster/footnote or quotes is omitted because it is not related to the material being studied or maintained with the photographic notes listed relating to the material. As for the advantages E-LKPD in terms of learning design used is a problem based learning (PBL) model that is used simply. The case studies that appear at the beginning of each material are very relevant to the environmental conditions of students. It can stimulate students' critical thinking level in the learning process. Qualitative data from linguists in the form of suggestions and input as follows First, the use of the font in the instructions for use is enlarged and corrects the writing that is still wrong. Second, correct the use of punctuation marks, conjunctions, capital letters, non-standard words and typos. As for the advantages E-LKPD in terms of language, namely, the language used in the E-LKPD is very easy to understand, the choice of font type, font size is very attractive and up-to-date so that it can attract students' reading interest. The last qualitative data, namely from learning technology experts in the form of suggestions and input, is that the qr scan section is repaired. The advantages of E-LKPD in

terms of the technology used are, the technology used is very simple and effective. The E-LKPD is loaded in a portable document format, the use of this format makes this E-LKPD can be used or accessed using smart phones, laptops and computers, be it Android, IOS and Windows. The use of an automatic assessment system is very helpful in the process of assessing learning outcomes. The E-LKPD design is composed with a very harmonious color and image collaboration.

## **CONCLUSION**

Based on the results and discussions that have been described above, it can be concluded that the electronic student worksheet (E-LKPD) is problem based learning (PBL) material for the accounting cycle of trading companies at SMAN 7 Malang. This E-LKPD was developed based on the 4D development model from Thiagarajan, Semmel & Semmel which consists of four stages, namely Define, Design, Develop development stage, and Dissemination/Disseminate stage. However, with development modifications without doing the Disseminate stage. After the product is finished, the next stage is a feasibility test to determine the feasibility level of the e-LKPD conducted by four validators. The validator experts who test the feasibility level of e-LKPD are material content expert validators, learning design expert validators, language expert validator and learning technology expert validator.

The score for the acquisition value of e-LKPD validation carried out by four experts is as follows; (1) Validation of material content experts obtained a score of 92.5%, (2) Validation of learning design experts obtained a score of 93.75%, (3) Validation of linguists obtained a score of 95% and (4) Validation of learning technology experts obtained a score of 92.75%. So it can be concluded that the test results from 4 experts stated that electronic student worksheets (e-LKPD) based on problem based learning (PBL) material for trading company accounting cycles were very feasible to use. (3) The validation of linguists obtained a score of 95% and (4) the validation of learning technology experts obtained a score of 92.75%. So it can be concluded that the test results from 4 experts stated that electronic student worksheets (e-LKPD) based on problem based learning (PBL) material for trading company accounting cycles were very feasible to use. (3) The validation of linguists obtained a score of 95% and (4) the validation of learning technology experts obtained a score of 92.75%. So it can be concluded that the test results from 4 experts stated that electronic student worksheets (e-LKPD) based on problem based learning (PBL) material for trading company accounting cycles were very feasible to use.

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