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Development of LKPD Model Discovery Learning Based on Android in The Buffer Solution Material

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Abstract: The Development of Students' Discovery Learning Worksheet Based on Android in Buffer Solution. The objectives of this research were to develop and determine the feasibility of Android-based learning media and to describe its characteristics, teachers' and students' responses to the student worksheets discovery learning based on Android in buffer solution. This research used Borg and Gall research design and development which only focused on the first five stage. The data were analyzed using descriptive statistics analysis. The expert validation showed that the average percentage on content suitability aspect, construction and readability were 89,44%, 92,85% and 92,94% and considered as very high criteria consecutively. The teachers' responses on suitability, construction and readability aspects were 92,59%, 93,96% and 94,51% and considered as very high criteria respectively. Therefore, students' responses on readability and attractiveness were 96,03% and 98,05% and considered as very high criteria. Based on these results, the student worksheets based on Android generated by this research is valid and worthy as sources of learning.

Keywords: learning media, discovery learning model, student worksheets, android, buffer solution.

Abstrak: Pengembangan LKPD Model Discovery Learning Berbasis Android Pada Materi Larutan Penyangga. *Penelitian ini bertujuan untuk mengembangkan dan mengetahui kelayakan dari media pembelajaran berbasis android serta mendeskripsikan karakteristik, tanggapan guru dan tanggapan peserta didik terhadap LKPD model discovery learning berbasis android pada materi larutan penyangga. Penelitian ini menggunakan desain penelitian dan pengembangan menurut Borg dan Gall dengan hanya berfokus pada lima tahap pertama. Data penelitian dianalisis menggunakan analisis statistika deskriptif. Validasi ahli menunjukkan bahwa rata-rata persentase aspek kesesuaian isi, konstruksi dan keterbacaan berturut-turut sebesar 89,44%, 92,85% dan 92,94% dengan kriteria sangat tinggi. Tanggapan guru pada aspek kesesuaian isi, konstruksi dan keterbacaan berturut-turut sebesar 92,59%, 93,96% dan 94,51% dengan kriteria sangat tinggi. Tanggapan peserta didik pada aspek keterbacaan dan kemenarikan berturut-turut sebesar 96,03% dan 98,05% dengan kriteria sangat tinggi. Berdasarkan hal tersebut LKPD berbasis android yang dihasilkan dari penelitian ini valid dan layak digunakan sebagai media belajar.*

Kata kunci: *media pembelajaran, model discovery learning, LKPD, android, larutan penyangga.*

▪ INTRODUCTION

Chemistry as a discipline in science learning must also pay attention to the characteristics of science. Similar to this, chemistry as a process includes ways of thinking, reasoning, formulating problems, conducting experiments and observations, analyzing data, and concluding to obtain scientific products. Therefore, in chemistry learning should focus on providing direct experience to students in order to develop competence in scientifically understanding the natural surroundings. Providing direct experience can be done by observing phenomena that occur in everyday life, which are then criticized to obtain scientific concepts (Kemendikbud, 2016).

In the 2013 curriculum, class XI chemistry subjects, one of the basic competencies (KD) that must be taught to students, namely KD 3.13 Explains the working principle, pH calculation, and the role of buffer solutions in the body of living things. KD 4.13 Make a buffer solution with a certain pH. The buffer solution material has the characteristic of being careful in calculating the pH of a buffer solution. In addition, based on the basic competencies and syllabus in the 2013 curriculum on buffer solution material, students need to be given a practicum activity to achieve these basic competencies and it is hoped that students will be able to solve problems and find a concept. One of the learning models recommended in the 2013 curriculum to be taught to students on buffer solution material is the Discovery Learning model.

Discovery learning is a model for developing an active learning method by finding yourself, investigating yourself, then the results obtained will last a long time in memory and students can also learn to think analytically and try to solve their own problems (Hosnan, 2014). Learning by discovery is learning to find, where a student is faced with a problem or a difficult situation so that students can find solutions (Markaban, 2008). To be able to apply the discovery learning model properly, it is described in student worksheets (LKPD).

The development of LKPD as a learning medium is expected to follow the development of ICT as the demands of the 21st century. In the 21st century, a person is required to have several skills, including learning and innovation skills, skills in using technology and information media (information, media and technology skills), as well as life and career skills (life and career skills). Therefore, it is necessary to integrate ICT into the learning process (Arsyad, 2013).

Some of the research that has been carried out related to the development of LKPD on buffer solution material that has been carried out include: the development of problem-based LKPD (Fitriani, 2016), the development of LKPD based on the scientific approach (Asnaini & Adlim, 2016), and the development of LKPD based on problem based learning (PBL).) (Rambe, 2019). However, there are weaknesses in the development of the LKPD, namely that it is still done conventionally by using paper as the medium.

On the other hand, smartphone users in Indonesia in 2019 amounted to 105 million users, total penetration growth of 42%. The smartphone operating system that is rapidly developing in the Indonesian market is android (Hidayat, 2019). Based on this, the development of android-based LKPD is an opportunity as an innovation in learning. Especially in the current situation of the COVID-19 pandemic.

Based on the Minister of Education and Culture Circular No. 4 of 2020 concerning the implementation of education policies in the emergency period of the spread of COVID-19, in mid-March 2020, the government decided to temporarily stop learning activities at schools (Mendikbud, 2020). Schools are considered as one of the

media that has the potential to expand the spread of COVID-19 because of the direct interaction between students, teachers, and parents at a close distance. Learning that was originally carried out face-to-face was replaced with learning from home (BDR). In this regard, android-based LKPD can be used as an alternative as a learning medium, because it is easily accessible by anyone, done anywhere, anytime without having to come face to face in the learning process (Florischa, 2020).

Based on the results of filling out a preliminary study questionnaire on four high school teachers at each school in Bandarlampung, namely (SMAN 4, SMAN 9, SMAN 14, and SMAN 15 Bandarlampung) through google forms information was obtained that before the COVID-19 pandemic all teacher respondents taught buffer solution material with experimental and discussion methods, so that students can more easily understand the learning of the buffer solution material. The obstacles faced by all teacher respondents while using the LKPD were the contents of the LKPD which were only material summaries, non-structural questions, inadequate practical guidelines and limited time. At the beginning of the COVID-19 pandemic, teachers thought that school closings would only be carried out for a short time, so that to continue learning to students, teachers only gave structured tasks in the LKPD to students. But after the learning was carried out until nearing the end of the even semester, it turned out that students experienced problems, one of which was students who did not understand the tasks given in LKPD and the use of LKPD which was less practical because they could not be taken anywhere because the LKPD used was still using paper as the medium.

Based on these descriptions, this article will describe the results of the development of an Android-based discovery learning model LKPD on buffer solution material which aims to describe the characteristics, teacher responses and student responses regarding the developed android-based LKPD.

▪ METHOD

Research Design

The method used in this research is research and development or Research and Development. According to Borg & Gall in Sukmadinata (2013), there are 10 steps or stages in the implementation of Research and Development, namely: (1) research and information gathering, (2) planning, (3) initial product development, (4) initial field trials , (5) revision of trial results, (6) field trials, (7) revision of products from field trials, (8) field implementation trials, (9) revision of final products, (10) dissemination and distribution.

The steps taken in this research and development are only carried out up to the fifth stage (the revised trial results stage). This is due to the limited time and expertise of researchers who are still lacking in carrying out the next stages.

Research Data Sources

Sources of data in this study were chemistry subject teachers and students of class XII IPA at Bandarlampung Senior High School. In the preliminary study stage, data were obtained from 4 class XI chemistry teachers and 10 high school students from class XII IPA from 4 high schools in Bandarlampung.

Data collection technique

The data collection technique in this research is filling out a questionnaire through google forms. There are several instruments used in this study, namely: (1) instruments in the preliminary study (a questionnaire to analyze the needs of teachers and students for the developed Android-based LKPD), (2) expert validation instruments (questionnaire for content suitability, construction and readability aspects) and (3) initial field trial instruments (questionnaire for aspects of the suitability of content, construction and readability of android-based LKPD for teachers and questionnaires for aspects of readability and attractiveness of android-based LKPD for students).

Research Procedures and Data Analysis Techniques

The initial procedure in developing this Android-based LKPD product is research and information collection consisting of literature studies and preliminary studies. The data obtained were analyzed by the formula:

$$\%J\ in = \frac{\sum Ji}{N} \text{ x } 100\%$$

Information:
% J in = Percentage of answer choices-i
∑Ji = Number of respondents who answered-i
N = Total number of respondents (Sudjana, 2005)

The technique of analyzing data from the questionnaire results in the preliminary study was carried out by: first classifying the data, this method aims to classify the answer choices based on the questionnaire statement. A table containing the statements and the answer code for each questionnaire statement is made to facilitate the coding and classifying process of data. Second, tabulating the data based on the classifications made, this method aims to provide an overview of the frequency and tendency of each answer based on the questionnaire statement and the number of respondents (questionnaire fillers). Third, scoring respondents' answers is based on a Likert scale.

Table 1. Scoring in the questionnaire based on a Likert scale

Answer Options	Score
Strongly Agree (SS)	5
Agree (S)	4
Disagree (KS)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

The next stage is planning which includes product design and a series of development processes. The next stage is to develop the initial product, namely the drafting of the LKPD discovery learning model based on Android on the material of the buffer solution and the preparation of the validation instrument. Then the android-based LKPD is validated. Data validation results were analyzed using the formula:

$$\%Xin = \frac{\sum S}{Smaks} \text{ x } 100\%$$

Information:
% Xin = Percentage of answers to questionnaire-i
∑ S = Total answer score
Smaks = maximum score (Sudjana, 2005)

After knowing the percentage of answers to the questionnaire, then calculate the average answer on each questionnaire to determine the level of suitability of content, construction, readability and attractiveness using the formula:

$$\%Xi = \frac{\sum \% Xin}{n}$$

Information:
% Xi = Average percentage of questionnaire-i
∑% Xin = Total percentage of questionnaire-i
N = Number of questionnaire questions (Sudjana, 2005)

The next stage is to revise the android-based LKPD based on the validation results. Then LKPD android-based discovery learning model was tested at SMAN 14 and SMA Negeri 15 Bandarlampung to determine the responses of teachers and students to the developed android-based LKPD.
The data obtained from the study were then analyzed. The data analysis technique in this study used descriptive statistical analysis (Sudjana, 2005) and used the interpretation of the percentage of the questionnaire according to Arikunto (2008) as presented in Table 2.

Table 2. Interpretation of the percentage of the questionnaire

Percentage (%)	Criteria
80,1 – 100	Very high
60,1 – 80	High
40,1 – 60	Moderate
20,1 – 40	Low
0,0 – 20	Very low

The interpretation of the validation criteria for the analysis of the percentage of products from expert validation can be shown using Arikunto's (2010) interpretation as presented in Table 3.

Table 3. Percentage analysis validation criteria

Percentage (%)	Level of validity	Information
76-100	Valid	Worth / does not need to be revised
51-75	Quite valid	Fairly feasible / partial revision
26-50	Less valid	Less feasible / partially revised
<26	Invalid	Not worth it / total revision

▪ RESULTS AND DISCUSSION

Research Results and Information Gathering

At the literature study stage, KI and KD analysis of the buffer solution material contained in the 2013 revised curriculum for class XI SMA, namely KD 3.13, explains

the working principle, calculation of pH and the role of buffer solutions in the body of living things and KD 4.13 to make a buffer solution with a certain pH. Next, make a concept analysis, formulate indicators of competency achievement, and prepare lesson plans. So that we get a theory related to the correct preparation of LKPD, this was presented by Widjajanti (2008) that the preparation of LKPD must meet the following requirements, namely: didactic, construction, and technical requirements.

The preliminary study was carried out in four public high schools in Bandarlampung namely SMAN 4, SMAN 9, SMAN 14 and SMAN 15 Bandarlampung. The preliminary study was carried out by filling out an online questionnaire to 4 chemistry teachers and to 10 students of class XII Science.

Based on the results of a preliminary study of teacher respondents, it shows that 100% of teacher respondents have used LKPD. As many as 50% of teacher respondents used LKPD from certain publishers which contained material summaries, practice questions and practicum guides, then 50% of teacher respondents used their own LKPD by modifying the internet and various other sources. The results of preliminary studies related to teacher responses to sources of use can be seen in Figure 1.

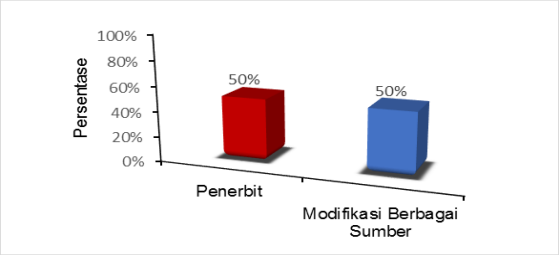

Figure 1. Teacher responses to sources of use

As many as 100% of teacher respondents stated that they had never made an Android-based LKPD. As many as 50% of teacher respondents stated that the constraints in making android-based LKPD were because they did not have an android-based LKPD guide and as many as 50% of teacher respondents stated that it was due to limited time in making android-based LKPD. The results of a preliminary study related to the teacher's response to the obstacles in the preparation of an Android-based LKPD can be seen in Figure 2.

Figure 2. The teacher's response to the obstacles in the preparation of android-based LKPD

All teacher respondents stated that they had never taught or seen when learning in the classroom the teacher taught using Android-based learning media as a learning medium. The results of preliminary studies related to teacher responses related to classroom learning using Android-based learning media can be seen in Figure 3.

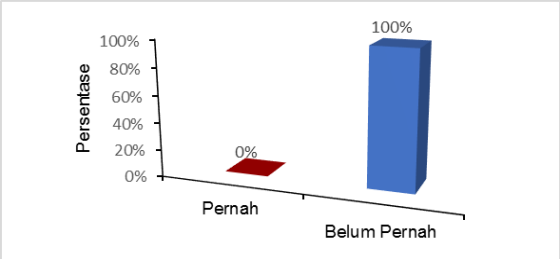

Figure 3. Teacher responses related to classroom learning using media android based learning

All teacher respondents stated that it is necessary to develop LKPD discovery learning model based on android on buffer solution material. This is because the teacher as a respondent hopes that through the Android-based LKPD students can use their smart phones for things that are useful and make it easier for students to learn from home (BDR), understand concepts and teach buffer solution material. The results of preliminary studies related to teacher responses regarding the need to develop android-based LKPD can be seen in Figure 4.

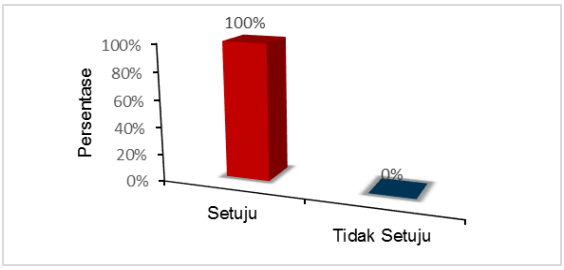

Figure 4. Teacher responses regarding the need to develop based LKPD Android

Based on the results of a questionnaire that had been filled in by 10 students from four public high schools in Bandarlampung, data analysis was obtained for research and collection of information on the development of an Android-based discovery learning model LKPD on buffer solution material, the results of the student questionnaire analysis stated that 80% of teachers had used LKPD learning chemistry in class. The results of preliminary studies related to students' responses to the use of LKPD in the classroom can be seen in Figure 5.

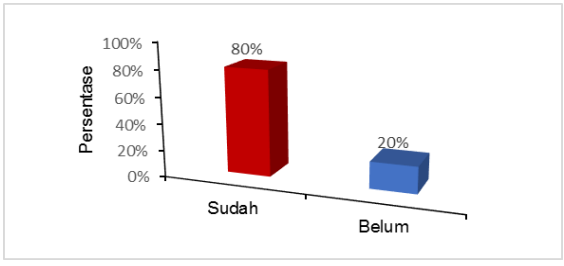

Figure 5. Student responses to the use of LKPD in the classroom

As many as 70% of student respondents still have difficulty using the LKPD provided by the teacher. This is because the material described in the LKPD is too short

so it is difficult to work on the questions found in LKPD. The results of preliminary studies related to students' responses regarding difficulties in understanding the LKPD provided by the teacher can be seen in Figure 6.

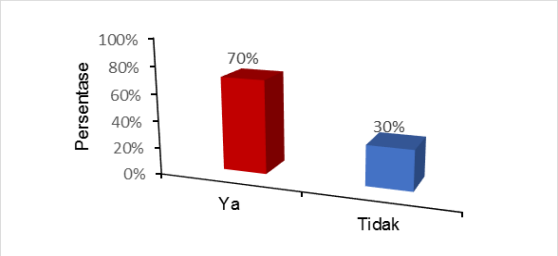

Figure 6. Student responses related to difficulties in understanding the LKPD given by the teacher

As many as 100% of students stated that it was necessary to develop an Android-based LKPD discovery learning model on the buffer solution material. The results of preliminary studies related to student responses related to classroom learning using Android-based learning media can be seen in Figure 7.

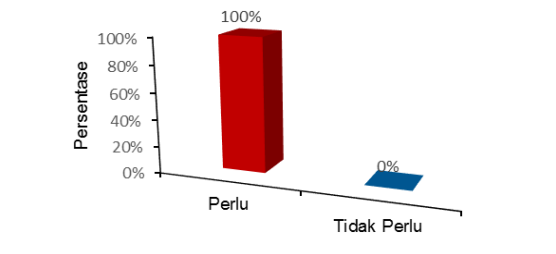

Figure 7. Student responses related to learning in class using Android-based learning media

Product Planning Results

In this product planning, the purpose of using the storyboard will be discussed, who is the user of the storyboard and a description of the storyboard components. The objectives of using this storyboard are: (1) as a medium in the learning process that can help students in studying the buffer solution material; (2) assisting teachers in creating interactions, especially interactions between students and learning resources in learning; (3) as a reference for the development of an Android-based discovery learning model LKPD on other chemical materials. Users of this storyboard are chemistry teachers and students of class XI IPA.

The components of this storyboard consist of three parts, namely: (1) an introductory section consisting of a login page, home screen, topics and objectives, basic competencies, learning materials, and instructions for using LKPD; (2) the content section consists of the identities of LKPD 1, LKPD 2, LKPD 3 and LKPD 4, indicators of competency attainment and the stages of the discovery learning model, namely stimulation, problem identification, data collection, data processing, verification and generalization; (3) the closing section consists of a bibliography and an android-based LKPD developer profile.

Initial Product Development Results

After the product planning is carried out, then the product development is carried out. The parts of the LKPD product development model discovery learning based on android on the buffer solution material are as follows:

Introductory section, this section consists of a login page, home screen, topics and objectives, basic competencies, learning materials, and instructions for using LKPD. On the student login page section, first, fill in the name and origin of the school / institution. This section is designed using a combination of blue and white as the background, then added animated images of men and women wearing laboratory coats which aim to attract students to want to read and learn the contents of the Android-based LKPD.

The home screen is designed to be simpler than the login page while still displaying animated images of men and women wearing laboratory coats. This section also displays a welcome greeting to the interactive learning media of students' worksheets, then added instructions for using LKPD to make it easier for users to use the Android-based LKPD.

Topics and targets, the topic section displays the material to be taught in chemistry learning, namely the material of buffer solutions. The target section displays the class to be taught on the buffer solution material, namely class XI SMA even semester.

Basic competencies show the basic competencies contained in the 2013 revised curriculum for class XI SMA, namely KD 3.13 and KD 4.13 regarding the material of buffer solutions. Then the learning material displays the learning material that will be taught at KD 3.13 and KD 4.13 in the 2013 curriculum revision of class XI SMA. And, the instruction for using LKPD contains instructions in the implementation of learning the buffer solution material that will be taught. The content section, this section is the core of the LKPD, which contains the materials used to achieve the indicators. Android-based LKPD consists of 4 LKPD with a time allocation of LKPD 1, namely 2x45 minutes which includes sub-material definitions, properties and components of the buffer solution. The time allocation for LKPD 2 is 2x45 minutes which includes submaterial working methods and the principle of the buffer solution. The time allocation for LKPD 3 is 2x45 minutes which includes submaterial calculating the pH of the buffer solution. The time allocation in LKPD 4 is 1x45 minutes which includes submaterial roles of buffer solutions in the body of living things. The identity of LKPD 1, LKPD 2, LKPD 3 and LKPD 4 based on android includes cover, discussion submissions, time allocation and competency indicators to be achieved.

The learning stages in this Android-based LKPD use a discovery learning model consisting of stimulation, problem identification, data collection, data processing, verification and generalization. At the stimulation stage, it contains pictures, discourses and tables related to the sub-subjects to be studied.

In the problem identification stage, students are directed to write down hypotheses of the problems to be solved according to their understanding of the given phenomenon. The data collection stage, the teacher provides the opportunity for students to collect as much relevant information as possible to prove whether the hypothesis is true or not. The data processing stage consists of processing data and information that students have obtained through interviews, observations and so on. The proof stage contains orders to

prove the formulation of problems that have been formulated by students and relate them to the results of the processed data.

The generalization stage, there are orders for students to summarize in general what they get from the material that has been studied with attention to the evidentiary stage. The results of this stage must be agreed upon by the teacher and all students so that students have the same conclusion on learning buffer solutions.

The closing section, this section consists of a bibliography and an android-based LKPD developer profile. In the bibliography section contains the literature used in the preparation of an Android-based discovery learning model LKPD on buffer solution material, the Android-based LKPD developer profile contains a glimpse of the biodata of android-based LKPD developers.

Expert Validation Results

After the LKPD of the discovery learning model based on android on the buffer solution material was completed, it was then validated by two education lecturers. Validation is carried out by asking for assessments and suggestions from each validator regarding the Android-based LKPD that was developed regarding aspects of content suitability, construction and readability. The following validation results can be seen in Table 4.

Table 4. Expert validation results

Rated aspect	Percentage(%)	Criteria
Content suitability	89,44	Very high
Construction	92,85	Very high
Legibility	92,94	Very high

The content suitability aspect consists of two aspects, namely, the suitability of the material content with KI-KD and the suitability of the content of the LKPD with an android-based discovery learning model. Based on the results of expert validation in Table 4, the aspect of suitability of the contents of this LKPD obtained a percentage of 89.44% and has very high criteria and is declared valid based on Table 3.

The construction aspect relates to the use of language, sentence structure, vocabulary, difficulty level and clarity. Based on the results of expert validation in Table 4, the construction aspect obtained a percentage of 92.85% and had very high criteria and was declared valid based on Table 3.

The legibility aspect, aims to determine the attractive appearance, variation of letters, font size, image quality, display quality on the screen and navigation used in the developed android-based LKPD. Based on the results of expert validation in Table 4, the legibility aspect obtained a percentage of 92.94% and had very high criteria and was declared valid based on Table 3.

Judging from the percentage of validation results in each of the assessed aspects, the Android-based LKPD has very high criteria so that the android-based LKPD is suitable for use for learning in schools. Based on suggestions, input and improvements from the validator to every aspect that is assessed in the LKPD discovery learning model based on android on the buffer solution material, improvements are made. After the Android-based LKPD has been repaired according to the suggestions of the validator, the Android-based LKPD discovery learning model on the revised buffer solution material will be tested to determine the responses of teachers and students to the developed android-based LKPD.

Initial Field Trial Results

LKPD based on android development results that have been validated and have been corrected based on the validator's suggestion, then an initial field trial was carried out at SMAN 14 and SMAN 15 Bandarlampung. The trial was carried out by providing an Android-based LKPD application link that was developed, then downloading the application, then asking for feedback and suggestions from teachers and students on filling out the questionnaire via the Google Forms that had been provided.

Teacher response

During the initial field trials, the teacher was given a link to the LKPD application based on the results of the development and then the teacher gave feedback via google forms that had been provided on aspects of content suitability, construction and readability. LKPD discovery learning model based on android on buffer solution material. The following results from teacher responses can be seen in Table 5.

Table 5. Results of teacher responses

Rated aspect	**Percentage(%)**	Criteria
The suitability of the content of the material	92,59	Very high
Construction	93,96	Very high
Legibility	94,51	Very high

The content suitability aspect consists of two aspects, namely, the suitability of the material content with KI-KD and the suitability of the content of the LKPD with an android-based discovery learning model. Based on the results of the teacher's responses in Table 5, the aspects of the suitability of the contents of this LKPD obtained a percentage of 92.59% and have very high criteria.

The construction aspect relates to the use of language, sentence structure, vocabulary, difficulty level and clarity. Based on the results of the teacher's responses in Table 5, the construction aspect obtained a percentage of 93.96% and had very high criteria.

The legibility aspect, aims to determine the attractive appearance, variation of letters, font size, image quality, display quality on the screen and navigation used in the developed android-based LKPD. Based on the results of the teacher's responses to the LKPD readability aspect, it was obtained a percentage of 94.51% and had very high criteria. Overall, there are no suggestions for improvement from the teacher so there is no need for revision of the developed android-based LKPD.

Students' responses

At the time of the initial field trial, students were given a link to the LKPD application based on the results of the development and then students gave their responses via google forms that had been provided on the aspects of readability and attractiveness. LKPD discovery learning model based on android on buffer solution material. The following results from students' responses can be seen in Table 6.

Table 6. Results of students' responses

Rated aspect	Percentage(%)	Criteria
Legibility	96,03	Very high
Attractiveness	98,05	Very high

Based on the results of students' responses to the LKPD discovery learning model based on android on the buffer solution material listed in Table 6, the readability aspect of LKPD obtained a percentage of 96.03% and the attractiveness aspect of LKPD had a percentage of 98.05%. Overall there are no suggestions for improvement from students. Based on the percentage of students' responses, it can be concluded that the aspects of readability and attractiveness in the android-based discovery learning model LKPD on the buffer solution material have very high criteria.

Characteristics of Development Worksheet Based on Android

The characteristics of the LKPD discovery learning model based on android on the buffer solution material are as follows: (1) the structure of the LKPD on the discovery learning model based on android on the buffer solution material consists of an introduction, content, and closing parts. The introductory section consists of a login page, home screen, topics and objectives, basic competencies, learning materials, and instructions for using LKPD; the content section consists of the identity of LKPD 1, LKPD 2, LKPD 3 and LKPD 4, indicators of competency achievement and the stages of the discovery learning model, namely: stimulation, problem identification, data collection, data processing, verification and generalization; the closing section consists of a bibliography and an android-based LKPD developer profile; (2) LKPD discovery learning model based on android on buffer solution material is accompanied by a phenomenon that is closely related to the daily life of students at the stimulation stage; (3) the content of the LKPD of the discovery learning model based on android on the buffer solution material refers to the KI and KD in the buffer solution material; (4) LKPD discovery learning model based on android on buffer solution material uses communicative language and does not cause multiple interpretations.

Constraints in the Development of Android-Based LKPD

The obstacles that exist in the development of LKPD based on android-based discovery learning models on this buffer solution material include the limitations of researchers in developing Android-based LKPD, at the time of the initial field trials the researchers had problems, namely at the same time students were carrying out the final semester exams (UAS). , so that the researcher waits for students to complete the UAS first, then the researcher provides an Android-based LKPD application link and a google forms link for the responses of students. Initially, some student respondents had difficulty in how to use the Android-based LKPD application so the researcher had to guide it first.

▪ CONCLUSION

Based on the results of the research and discussion that has been carried out, it can be concluded as follows: (1) the characteristics of the LKPD developed in this study, the discovery learning model based on android in this buffer solution material consists of an introduction, content and closing parts. The introductory section consists of a login

page, home screen, topics and objectives, basic competencies, learning materials, and instructions for using LKPD; the content section consists of the identity of LKPD 1, LKPD 2, LKPD 3 and LKPD 4, indicators of competency achievement and the stages of the discovery learning model, namely: stimulation, problem identification, data collection, data processing, verification and generalization; the closing section consists of a bibliography and an android-based LKPD developer profile. (2) the teacher's response to the LKPD discovery learning model based on android on the buffer solution material in the aspect of content suitability was 92.59%, construction 93.96% and readability 94.51% which had very high criteria; (3) students' responses to the LKPD discovery learning model based on android on the buffer solution material in the aspects of readability of 96.03% and attractiveness of 98.05% which have very high criteria.

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