Developing German E-Modul Level A1.1 Using Liveworksheet for High School Student

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Abstract. This research aims to determine the feasibility and effectiveness of A1.1 level German language e-modules assisted by live worksheets for high school students. This type of research is development research using the ADDIE instructional design model. The results of the research show that the average assessment obtained from material experts is in the very appropriate criteria (4.59 or 92%), from instructional design experts is in the appropriate criteria (4.18 or 84%) and from media experts is in the criteria very decent (4.40 or 88 %). The effectiveness of the e-module being developed was tested based on the gain from the learning outcomes of the experimental class and the learning outcomes of the control class. The average gain score from the experimental group was greater than the control group (29.6 > 20.4). So it can be interpreted or concluded that the use of teaching materials in the form of German language e-modules at level A1.1 assisted by live worksheets was used effectively in the learning process at German language subjects in high school.

Keywords: E-module, liveworksheet , German level A1.1.

1 Introduction

Globally, German is widely used in the fields of education, employment, science, technology, tourism, arts and culture. German is the second most important language for the field of science and Germany occupies the third place in the world in granting research/research and scientific development scholarships to foreign countries including Indonesia [1]. The development of German language learning programs needs to consider the policies in force in German-speaking countries . Communication worldwide has increased substantially in recent decades due to rapid technical and scientific developments and nowadays it is very important for students to think about the practical application of communication skills in foreign languages especially German [2] .

In learning German there are 4 competency skills that must be mastered by students. The 4 competencies are listening skills (Hörverstehen), speaking skills (Sprechfertigkeit), writing

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skills (Schreibfertigkeit), and reading skills (Leseversetehen)[3]. The German language learning includes receptive (listening and reading) and productive (speaking and writing) language skills. Learning the four language skills is presented in an integrated manner [4].

The German language has linguistic competency standards , which are contained in the European Union agreement for Language Competency levels and are known as Gemeinsame Europäischen Rahmen (G E R), According to the European Union's agreement, there is a six-level scale for German language competence (Niveau), as evidenced by German language proficiency tests at levels A1, A2, B1, B2, C1 and C2 [5]. The basic level in German it is A1 and A2. Level A1 is the initial stage for German language learners to learn, especially in high school [6].

Based on several studies conducted in Indonesia, several problems were found in learning German. In writing ability, the research conducted found several problems, such as the lack of students' ability to compose German sentences, the lack of students' writing activities during the German learning process took place, and the lack of vocabulary knowledge. German words and structures [7]. The same problem was also found in research, but in their research findings the researchers found that the use of flashcard learning media was effective in improving writing skills [8]. In reading ability, students experience difficulties in reading because students do not understand the meaning of the reading due to the lack of student vocabulary in German. These problems with reading ability were also found in research [9]. In speaking ability, some students have difficulty speaking German, students have difficulty expressing words and sentences in German, this is due to a lack of speaking practice given by the teacher [10]. In listening skills, potential difficulties in the process of learning German listening. Learning to listen to German has additional umlaut letters as well as pronunciations which tend to be different in consonants and vowels which results in students having to try to adapt to every word that contains an umlaut [11] . To achieve the correct pronunciation of a foreign language, students must master not only a new dialect , but also adapt it to a different accent from the native language [12].

Condition in above will cause students to feel uncomfortable and less motivated and result in fear, anxiety, so they don't like learning German [13]. These difficulties require teachers to develop creativity in learning German and innovating their learning by developing teaching materials that are appropriate to the learning needs of students [14]. The integration of technology in foreign language learning is very effective for development [15].

Based on interviews and initial surveys conducted with German language teachers who teach at SMA N 1 Kotapinang, South Labuhanbatu Regency, information was obtained that teaching materials for German language subjects were still limited in type, the books used in schools were less interesting/not varied, and there were no interactive. The German language book used only contains material, grammatical summaries, practice questions, so it cannot fulfill the 4 competencies (speaking, listening, writing and reading) that students must have in learning German.

The number of books available to students is very limited, not all students have German language books. The books used by teachers and students are impractical and easily damaged. Students cannot study independently at home with their German books if they are not taught directly by their German teacher. This is because the teaching materials or books used do not contain instructions for using and working on questions. It was further explained that post-

Covid-19 learning which was carried out online made students accustomed to using their cellphones or devices. This habit leads them to use cellphones frequently during learning, besides that students are less enthusiastic and have difficulty understanding German learning material. Based on the results of the initial survey conducted above, another fact was obtained that the learning outcomes of some students' German materials did not meet the KKM that had been set, namely 75. This occurred because students still found it difficult in some of the German language learning materials they were learning. In the process of learning German there are still many students who are still wrong in putting the subject into a verb (conjugation) then students are limited in their German vocabulary, as well as the lack of students' ability to compose sentences in German. This is caused by one of the factors, namely the lack of motivation of students in the learning process because teachers still do not use effective and innovative teaching materials that stimulate students to be actively involved in learning German.

According to previous research conducted regarding the development of Instagram social media-based E-modules in learning German grammar as a source of independent learning at SMA N 1 Minggir, Sleman. Results were obtained 83% in the "very good" category from material validation, 92% in the "very good" category from media validation. 78% in the good category from German language teachers and 87% in the "very good" category from student responses. The average percentage generated is 85% so that the Instagram social media-based e-module for German grammatical learning gets the "very good" category and is suitable for use as an independent learning resource [16]. However, in this study, it was only used for learning German grammar. In fact, in learning German there are 4 competencies that students must master.

Based on the problems described above, teaching materials for learning German that are updated are needed. form The German level A1 e-module is assisted by a liveworksheet which contains 4 German language competencies, namely listening (hören), speaking (Sprechen), writing (schreiben), and reading (lesen) in the e-module that will be developed. This e-module development is equipped with video, audio , animation and interesting self-evaluations. This is in line with research in her research which explained that German language students like learning with audio and video recordings, they find them useful and as a complement to appropriate studies, which can partially compensate for missing native speakers [17] . Reinforced by research conducted in their journal that interactive e-modules present material in which there are several media components such as images, audio, and video making learning more interesting and interactive, then interactive e-modules are able to encourage students' learning motivation in studying foreign languages, so that it increases [18].

This e-module will be prepared with clear instructions for each practice question in German language learning, so that students are able to do the assignments independently without extra guidance from the teacher in their learning. This is in line with research which states that explicit instructions are the most effective way when presenting grammar materials in foreign language teaching [19].

This e-module is made using a web-based application, liveworksheet. Liveworksheets uses the latest technology used in learning to produce audio and display videos [20]. Apart from that, there are many interesting features provided by Liveworksheets which are useful for creating

e- module designs. This web-based application can be applied in the preparation of interactive teaching materials [21]. The developed e-module can be used by students with student devices/cell phones via the e-module link sent by the teacher. Thus, research into the development of German Language E-module Level A1.1 with the help of Liveworksheets for high school students will become today's teaching material that teachers can use in learning German.

The objectives to be achieved in this research are: (1) To determine the feasibility of German language e-module level A1.1 assisted by liveworksheets for high school students; (2) To find out the effectiveness of German language e-modules at level A1.1 with the help of live worksheets for high school students.

2 Research methods

his research is research that uses the development model or Research and development (R&D). In this development research, researchers used the ADDIE development model to produce German language e-modules which were designed in stages. The material in the e-module that will be developed by the researcher is German language material at level A1.1 for class XI in phase F at SMA.

As for the research subjects in this development research, namely class XI students at SMA N 1 Kotapinang. To see the effectiveness of the product being developed, the researchers only took 2 classes, namely class XI IPA 5 as the control class and XI IPS 2 as the experimental class which were selected using random sampling techniques or random samples. In addition, to see the feasibility of the product being developed, 3 experts were selected consisting of 1 material expert, 1 learning media expert, and 1 learning design expert.

The research procedure is the steps taken in the research. The development procedure carried out by researchers includes several stages [22]. The research that the researchers developed refers to the ADDIE development model which is modified according to the needs of researchers. The development procedure includes five stages, namely Analysis (Analyze), Design (Design). Development (Development), Implementation (Implementation) and Evaluation (Evaluation). The steps applied in development research are as follows:

Analysis Phase (Analyze), This stage carried out a needs analysis at SMA Negeri 1 Kotapinang class XI in German language subjects. Needs analysis includes the process of learning activities, the form of teaching materials used during learning activities, competencies that must be obtained by students. From the analysis carried out, it will later be used as the basis for developing e-modules. Based on material analysis, analysis of student needs, and analysis of student characteristics, researchers are interested in developing e-modules for A1 Level German language learning with the help of Liveworksheets. The e-module is equipped with materials that can not only improve one competency, but all four competencies in learning German. This e-module can be accessed via each student's cellphone, so that students can study independently whenever and wherever. The e-module is designed interactively, which is equipped with video, audio, animation, self-evaluation which is designed like a game.

Design Stage (Design), Stage regarding the e-module that will be created (design). The e-module that will be developed is an e-module for A1 level German. This e-module was

designed with the help of an interactive Liveworksheet which will contain material that can accommodate the four competencies in learning German. The things that are done at this design stage are : (a) Designing the material that will be included in the e-module including designing the audio that will be inserted in the e-module, designing the video that will be inserted in the e-module , Designing German language text and images that will be inserted in the e-module, Designing German language text material about everyday life that will be inserted in the e-module. (b) Make an outline of the structure (outline) of the e-module, (c) Create an e-module assessment instrument.

Development Stage (Developmen), The development stage is the implementation of the design stage. The development stage begins with producing e-modules that are developed to produce products that are in accordance with the formulated learning objectives. In this case a Level A1.1 German language e-module was produced with the help of Liveworksheet. The stages of developing this e-module include assembling all the material that has been collected. The material is taken based on the four competencies that students must pass in German, designing the appearance of modules in Microsoft Office Word. In this case the researcher can adjust the position, layout, form of questions, images, animation columns, task collection columns, evaluation columns and so on, then convert them into Liveworksheet forms. After the product in the form of an e-module has been developed, the e-module will be validated by 1 German material expert lecturer, 1 technology-based media expert lecturer, 1 learning design expert lecturer. If the e-module has not reached the eligibility or valid criteria, the researcher will revise the e-module according to the suggestions given until it is feasible to try out. Then after revising at this stage a small group trial was also carried out on 5 students whose aim was to find out the validity of the product after being examined and given advice by experts, the input from this individual trial was then used as the basis for making product improvements. Then conducted a medium group trial of 15 students with the aim of getting advice and input from the small group regarding the feasibility of the product. After that, field trials were carried out on 36 students regarding the attractiveness and feasibility of the product developed by the researcher. It also aims to find out whether there are still deficiencies that need to be corrected from the product being developed. After carrying out a series of product trials above, the product can be declared feasible as a valid teaching material in the field.

Implementation Stage (Implementation), At this stage, after the German Language Level A1.1 e-module assisted by Liveworksheet is declared valid and suitable for testing by validators, the product will be tested. A trial was carried out to obtain information regarding the effectiveness of the A1.1 Level German e-module assisted by the Liveworksheet that had been developed. This trial phase was carried out at SMA Negeri 1 Kotapinang. The trial that will be carried out is a limited trial

Evaluation Stage (Evaluation), The evaluation stage aims to evaluate development products that have been tested. Evaluation is carried out to provide a final score or revision of the A1.1 Level German e-module assisted by the Liveworksheet that has been developed. Revisions are made according to the results of the evaluation and needs that have not been fulfilled by the e-module from the development results.

In this study, data analysis techniques will be obtained through qualitative data and quantitative data. Qualitative data were obtained through the validator's suggestions and comments, in a descriptive form. Quantitative data were obtained through the results of

distributing questionnaires, as well as student learning achievement tests to see if there were differences in improving student learning outcomes taught using the A1.1 level German e-module assisted by Liveworksheets developed with the German language textbooks used by schools.

The data obtained based on the questionnaire will be processed using descriptive statistics. Descriptive statistics are statistics used to analyze data by describing or illustrating the data that has been collected as it is without intending to make generally accepted conclusions or generalizations [23].

The questionnaire was used to measure the feasibility level of the developed A1.1 level German e-module. The assessment scale used to analyze the German language e-module level A1.1 with the help of Liveworksheet is a Likert scale of 1 to 5, where 1 is the lowest score and 5 is the highest score. Determination of the range can be known through the highest score range minus the lowest score range divided by the highest score. Based on the determination of the range, a range of 0.8 is obtained. The average analysis validity criteria used can be seen in Table 1 .

Table 1 . Product Eligibility Validity Criteria

Average	Validity Criteria
4.21 – 5.00	Valid and does not need revision
3.41 – 4.20	valid and needs revision
2.6 1 – 3.40	Pretty valid and need to be revised
1.81 – 2.6 0	Invalid, some of the module contents were revised
1.00 – 1.80	Invalid and needs total revision

So the calculation of the validity score in the form of a percentage of the expert validation results [24], can be seen equation 1:

$$V = \frac{Tse}{Tsh} \times 100\ \% \qquad (1)$$

Information:
V = Percentage (%) Validation
Tse = ∑ validation score (validator)
Tsh = ∑ max score (expected)

The calculation results that have been obtained with the calculation formula will obtain the criteria as in Table 2 .

Table 2 . Validity Criteria Based on Values

Score Achievement	Validity Category	Information
25% - 40%	Invalid	Should not be used
41% - 55%	Invalid	Cannot be used
56% - 70%	Valid Enough	Yes, Major Revision
71% - 85%	Valid	Yes, minor revision
86% - 100%	Very Valid	Very Well Used

The questionnaire was given to 1 (one) German language lecturer, 1 (one) technology-based media expert lecturer, 1 learning design lecturer, 5 students for small group trials, 15 students for medium group trials, and 36 students students for field trials in South Labuhanbatu district. Research instrument grid regarding the quality of German language e-module material Level A1.1

Data obtained from learning outcomes tests are analyzed to determine whether there are differences in improvements in student learning outcomes. Before testing the hypothesis, data prerequisite tests are first carried out, namely the data normality test and homogeneity test.

a. The normality test is carried out to determine whether the research data is normally distributed or not. This means whether the distribution of data in the population is normal. Data normality testing was carried out using the Chi-Square formula (χ^2), in equation (2):

$$\chi^2 = \sum\left(\frac{(F_o - F_h)^2}{F_h}\right) \quad (2)$$

Information:
χ^2 = Chi-square
F_o = Frequency obtained from the sample
F_h = Expected frequency of the sample

The Chi-square value is used with a significant level of 5% and degrees of freedom equal to the number of frequency classes -1 (dk=K-1). If $\chi^2_{count} \leq \chi^2_{table}$, then it can be concluded that the data is normally distributed [25].

b. Homogeneity test aims to determine whether the distribution of data in the population is homogeneous. The variance homogeneity test is calculated using the Barlett test [26] .

c. Learning outcomes data that has met the prerequisite analysis test is used to test the hypothesis. Hypothesis testing is done to determine the conclusion whether the hypothesis is accepted or rejected. The research hypotheses to be tested are [27]:

$$H_0 : \mu_1 < \mu_2$$
$$H_a : \mu_1 \geq \mu_2$$

Information :
μ_1 = average student learning outcomes using the German language e-module
μ_2 = average student learning outcomes not using the German e-module

H_0 = There is no difference in student learning outcomes using German e-modules and those who do not use e-modules
H_a = there are differences in student learning outcomes using German e-modules and those who do not use e-modules

to test the hypothesis used a two-party test formula such as equation (3)

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (3)$$

Where S is the root of the combined variance calculated using equation (4) :

$$S^2 = \frac{(n_1-1)\,S_1^2 + (n_2-1)\,S_2^2}{n_1+n_2-2}. \; dimana \; S = \sqrt{S^2} \quad (4)$$

Information :
$\overline{x_1}$= average score of the experimental class
$\overline{x_2}$= average score of the control class
n_1= the average number of experimental classes
n_2= the average number of control classes
S_1^2 = variance of the experimental class group
S_2^2 = variance of control class group
S= Combined variance
t =calculating price

The test criterion is accepted H_0 if $t_{count} > t_{table}$ obtained from the t distribution list with dk = (n-1) with a significance level of α = 5

d. The formula for determining the effectiveness of the e-module is based on the average gain score. To find the gain, use equation (5)

$$Gain = skor\ postest - skor\ pretest \quad (5)$$

3 Results and discussion

The type of research used in this research is development research (research and development) by applying the ADDIE development model (analysis, design, development, implementation, and evaluation), thus the product resulting from the series of implementation of this research is a level German e-module A1.1 assisted by liveworksheet. The aim of this development research is to develop an A1.1 level German language e-module with the help of a liveworksheet for high school students and find out the feasibility of an A1.1 level German language e-module with the help of a liveworksheet for high school students and find out the effectiveness of the level German e-module. A1.1 assisted by live worksheet for high school students. The implementation of the entire procedure in detail is described as follows:

3.1 Research result

3.1.1 Description of Analysis Stage Results

At this stage analysis is carried out related to material analysis, analysis of student needs, and analysis of student characteristics. In the material analysis, the curriculum is reviewed related to the deepening of learning outcomes and learning objectives in the Identity material for level A1.1. Analysis of students' needs based on interviews conducted during pre-research shows that students have never used e-modules in the teaching and learning process and are only limited to notebooks (packages) provided by the school. The book is less attractive to use and cannot accommodate the learning needs of German students, so students cannot study independently with the books they have and this has an impact on student learning outcomes. Many students do not pass the KKM in the teaching and learning process.

Analysis of student characteristics in general in class XI students of SMA N 1 Kotapinang has high learning activity. Students are also accustomed to using computers and gadgets, so it is very possible to use interactive teaching materials. This is also based on the fact that students have carried out online learning during the pandemic via their devices/cellphones, so this has become their daily habit of using their cellphones/devices in the learning process, especially German.

Based on the analysis above, teaching materials are designed that suit needs, learning outcomes and learning objectives by reviewing the curriculum. The teaching materials developed are in the form of German language e-modules assisted by live worksheets which contain animations, audio, video and interesting evaluation questions that can accommodate students' learning needs.

3.1.2 Description of the results of the Design and Development Phase

The process of producing teaching materials in this study uses a platform liveworksheet. Before the e-module was converted into liveworksheet form, during this design period, various German learning materials were compiled. the characteristics of product design and development are as follows: (1) teaching materials or e-modules developed are adapted to CP (Learning Outcomes) and ATP (Learning Goals Flow). In this case the selected learning outcomes are to listen (hören) students can understand everyday communicative expressions, speak (sprechen) students can express ideas, thoughts verbally about everyday life, to read (lesen) understand information related to communicative expressions in everyday life, while writing (schreiben) expresses ideas, thoughts or feelings in writing about everyday life. The flow of learning objectives chosen to be used as material for the German language e-module level A1.1 with the help of this liveworksheet is ATP 11.1 which is related to everyday life (Altagsleben) and the material chosen is sich vorstellen. (2) Teaching materials in the form of interactive e-modules that are developed contain learning outcomes, learning objectives, materials, images, animations, videos, audio, self-evaluation questions, (3) presentation of teaching materials developed e-modules equipped with explanatory instructions material and work on explicit questions, so that students can learn wherever and whenever, (4) the developed e-module teaching materials are loaded in simple language and are easy for students to understand, (5) in this e-module teaching materials are presented with videos , audio, animation, and interesting evaluation questions, so as to stimulate students' interest and attention to learning.

Basically, the use of German language e-modules at level A1.1 with the help of live worksheets for high school students aims to create comfortable, active, interactive, interesting learning conditions, increase students' interest and motivation to learn so that students are able to learn independently. The initial design of the A1.1 level German language e-module assisted by a liveworksheet for high school students can be seen in the following figure:

a. The cover display of the Level A1.1 German E-module can be seen in Figure 1.

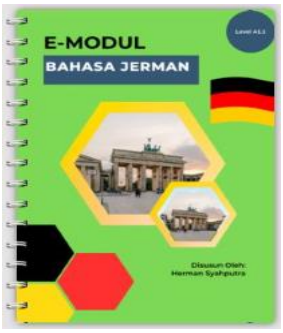


Fig. 1. Cover of the Level A1.1 German E-module

b. Initial Appearance in Level A1.1 German E-module which contains learning objectives, learning outcomes and materials, as shown in Figure 2

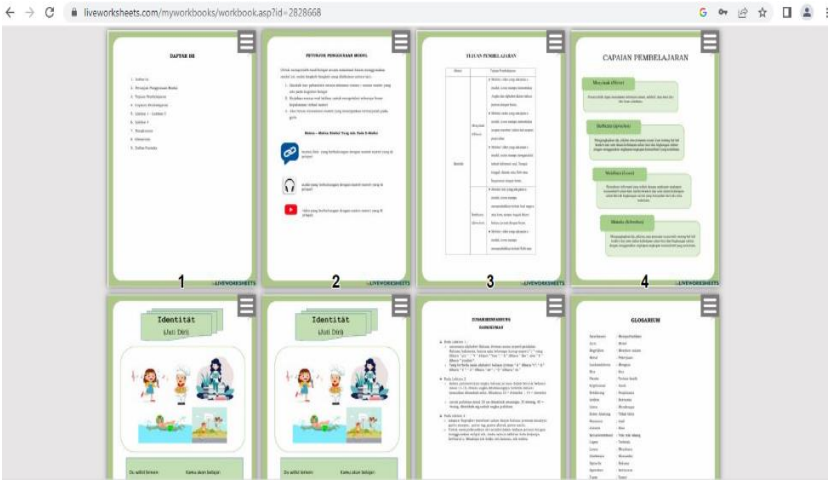


Fig. 2. Initial Appearance in Level A1.1 German E-module

c. Display of material in German Level A1.1 E-module. In the e-module the material is made with video as shown in Figure 3, audio as shown in Figure 4, animation as shown in Figure 5.

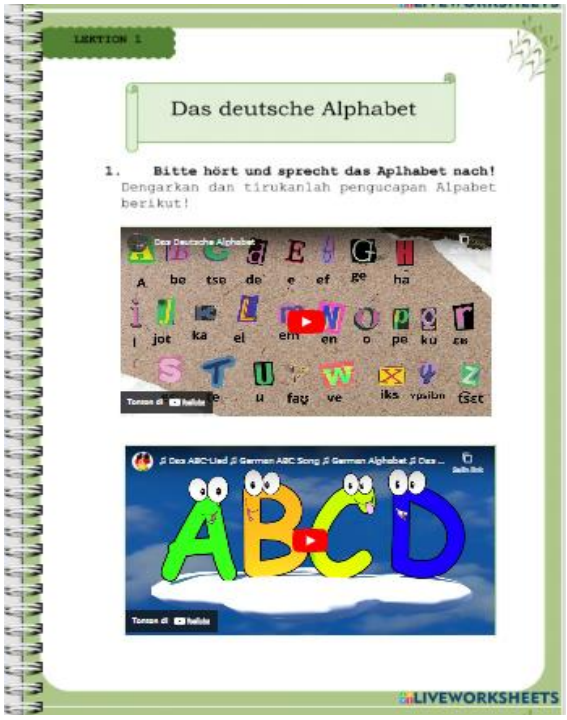
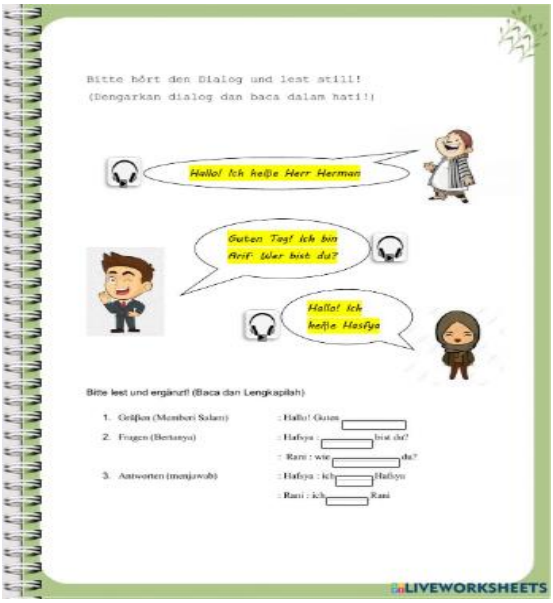


Fig. 3 . Material using video



F**ig. 1 .** Cover of the Level A1.1 German E-module

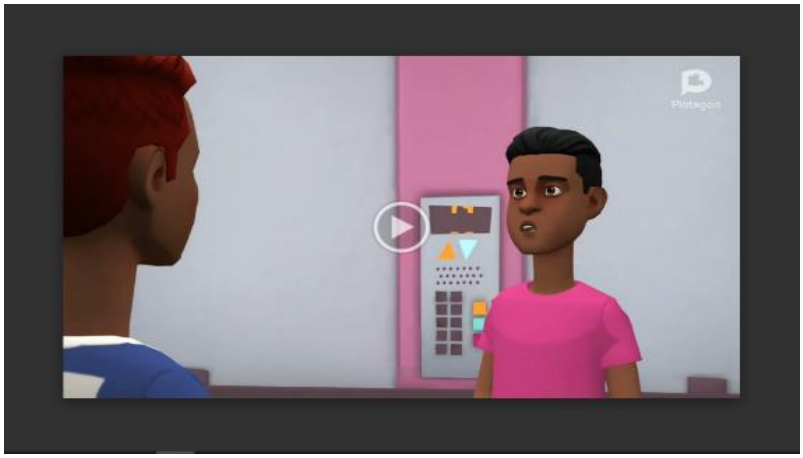


Fig. 5 . Material using animation

d. Display of independent questions in the German E-module Level A1.1 e-module. There are several types of independent questions in the e-module, for example matching like in Figure 6 or essay questions like in Figure 7.

Fig. 6 . Matching questions

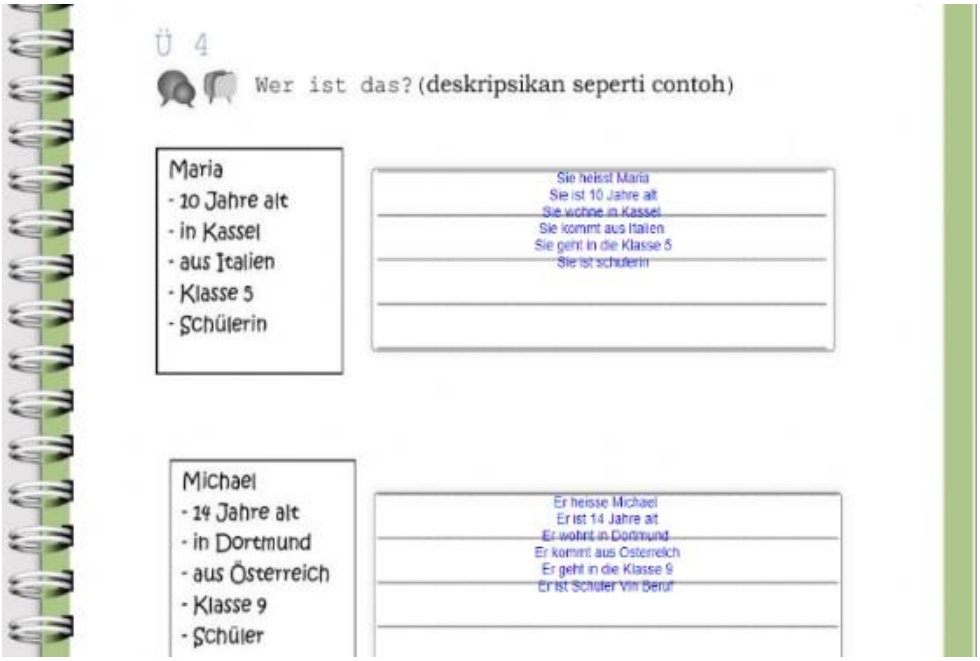


Fig. 7 . Essay questions

e. The display of student scores in the Level A1.1 German E-module can be seen in Figure 8

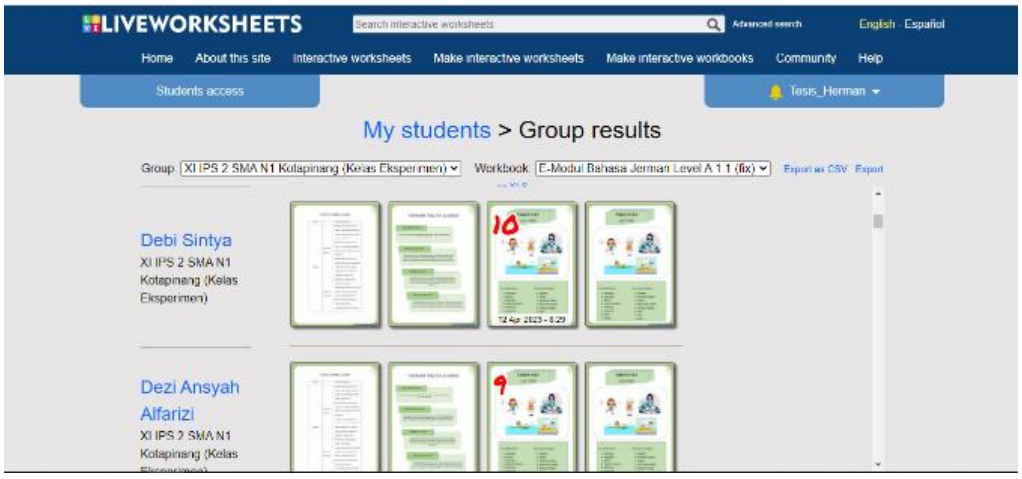


Fig. 8 . Display of student grades

Based on the results of the design and development, validation was carried out as a refinement of the teaching materials (e-modules) being developed. Validation was carried out by several validators, including: 1 material expert, 1 learning media expert, 1 learning design expert. Teaching materials (e-modules) will also be seen from the suitability of the learning designs implemented in the classroom. Once it is valid and declared suitable for implementation, the effectiveness of the e-module developed will be tested through student learning outcomes tests.

3.1.3 Data Validation Results

Expert validation focuses on the appropriateness of content, presentation, language and graphics. The results of the expert validation are in the form of validation scores, corrections, suggestions and criticism as a basis for revising and perfecting the e-module teaching materials being developed. The results of the revision determined that the teaching materials met the valid criteria.

Material expert validation of the development of German language e-module teaching materials at level A1.1 with the help of live worksheets was carried out by the selected validator, namely Mrs. Dr. Phill Suci Pujiastuti, S.Pd., MA, a lecturer at Medan State University, German Language Education Study Program, FBS. Based on the results of the material expert validation, the total results of the material expert assessment were obtained with an average score of 4.59 (92%) in the very appropriate category. So it can be concluded that the A1.1 level German language e-module with the help of live worksheets for high school students which was developed is "feasible" to be implemented in learning. The suggestion from the material validator is that in the section on filling out the kreuzworträtsel, it is best to write instructions for working in Indonesian because this e-module is intended for the initial level in learning German.

Media expert validation of the development of A1.1 level German language e-module teaching materials with the help of live worksheets was carried out by the selected media validator, namely Mr. Kana Saputra S, S.Pd., M.Kom, one of the lecturers at Medan State

University, Computer Science Study Program, FMIPA. Based on the media expert validation results, the total results of the media expert assessment were obtained with an average score of 4.40 (88%) in the very appropriate category. So it can be concluded that the A1.1 level German language e-module with the help of live worksheets for high school students which was developed is "feasible" to be implemented in learning. The suggestion from the media validator is that the play button for audio on the e-module should be enlarged so that users know that the button can be clicked and will produce sound.

Instructional Design expert validation of the development of German language e-module teaching materials at level A1.1 with the help of live worksheets was carried out by the selected learning design validator, namely Mr. Dr. R. Mursid, M.Pd, one of the lecturers and also the Head. Educational Technology Study Program, Postgraduate Faculty, Medan State University. Based on the validation results of Instructional Design experts in Table 4.4 above, the total results of the Instructional Design assessment were obtained with an average score of 4.18 (84%) in the good or valid category. So it can be concluded that the A1.1 level German language e-module with the help of live worksheets for high school students which was developed is "feasible" to be implemented in learning. The advice from the instructional design validator was that he was asked to make sure the video had text in German and translated into Indonesian so that students could understand and be interested in learning German, then asked to add reading material to increase students' German literacy.

3.1.4 Trial Result Data

3.1.4.1 Small Group Trial

Small group trials were carried out at SMA N 1 Kotapinang. Small group trials were carried out on 5 students of class XII Science who were chosen randomly. The purpose of this trial is to obtain information regarding the shortcomings of the learning product in the form of German language e-modules at level A1.1 assisted by Liveworksheets after being reviewed by expert validators. Based on observations related to small group trials, it can be seen that aspects of the appropriateness of appearance, presentation and overall usefulness of the indicator items are rated as "very good". However, there were some students who found problems when using the e-module, that in filling in the crossword puzzle there was one box that could not be filled in, but overall the media aspect was rated by students as users, namely 4.62 (92%) and included very good category.

3.1.4.2 Medium Group Trial

Group trials are being carried out after receiving input from small group trials. Group trials are being carried out at SMA N 1 Kotapinang. Group trials are being carried out by selecting more respondents than small group trials, namely 15 class XII Science students who are randomly selected. The purpose of this trial is to obtain information regarding the shortcomings of the learning product in the form of German language e-modules at level A1.1 assisted by Liveworksheets after being tested with small groups. At this stage, information was obtained that there was 1 student who could not access the e-module with the ID and password provided by the researcher. This happens because there are letters in the researcher's settings that are different from the user's name. Based on observations of the results from the medium group trial, it can be seen that aspects of the appropriateness of appearance, presentation and

overall usefulness of the indicator items are rated as "very good". Thus the overall aspect of the media is rated 4.69 (94%) in the "very good" category by the respondents.

3.1.4.3 Field Trials

The field trial was carried out after making revisions in the form of input received in the medium group trial. The field trial was carried out on 36 students of class XII Science who were randomly selected. The aim of conducting this field trial is to obtain information regarding the shortcomings of learning products in the form of German language e-modules at level A1.1 assisted by Liveworksheets by applying them to a larger number of respondents. This was done in order to have a full picture of the use of the e-module before it was implemented with almost the same number of students as this field trial. At this stage, respondents did not find any difficulties in accessing the e-module being developed, all features could be used. Based on observations related to field trials that have been carried out, it can be seen that the feasibility aspects of appearance, presentation, and the overall benefits of the indicator items are considered "very good" and have a positive response from users. Thus the overall aspect of the media is rated 4.73 (95%) with the "very good" category used by respondents.

3.1.5 E-Module Effectiveness Test Results

The effectiveness of the e-module being developed is assessed by assessing students' mastery in learning. Student learning outcomes were obtained through a pre-test before learning using the A1.1 level German e-module assisted by a liveworksheet for high school students, with posttest results after learning using the A1.1 level German e-module assisted by a liveworksheet for high school students. Learning outcomes were obtained by testing in the form of multiple choice questions of 20 questions for listening and reading skills, then 1 question for responding to e-mails for writing skills and 2 types of command questions for speaking skills. The questions used are reference questions from the Goethe Institute (official German language institute) which have been tested to be valid, reliable, difficulty index, discriminatory power, and problem distractors.

3.1.5.1 Student learning outcomes

The German Language E-Module Level A1.1 is assessed for its effectiveness in the learning process by assessing the results before using the e-module with a Pretest and after using the e-module, namely Posttest.

Based on research data obtained from research results with a sample size of 68 students, the average and standard deviation of learning outcomes for German language subjects at level A1.1 for students in the control class and experimental class are shown in Table 3.

Table .3 Descriptive Research Data on German Language Learning Outcomes Level A1.1

Control Class Posttest		**Experiment Class Posttest**	
Average	**SD**	**Average**	**SD**
78.17	2.85	86.16	3.99

From the data in Table 1, it can be seen that in the control class which had carried out the posttest, the average student score was 78.17 with a standard deviation of 2.85. Whereas in the

experimental class, the average posttest score of students was higher, namely 86.16 with a standard deviation of 3.99.

In Table 4 it can be seen the difference in student learning outcomes in German language subjects at level A1.1 between the control class and the experimental class.

Table 4 . The difference in the average scores of students in German subjects at level A1.1 between the control class and the experimental class.

Information	Average Score
Control Class	78.17
Experiment Class	86.16
Difference	7.86

From Table 2 it can be seen that the sample's knowledge of the German language material Level A1.1 increased with a difference of 7.87%.

3.1.5.2 Prerequisite Test of Learning Outcomes Analysis

a. Normality test

The normality test is carried out to obtain information regarding whether the research data is normally distributed or not. This test was carried out using the chi-square test formula in the experimental and control classes. From the results of the analysis, it was found that the learning outcomes of students who did not use the A1.1 level German e-module with the help of *Liveworksheet* (control class) were $\chi^2_{\text{arithmetic}} = 8.49$ with χ^2_{table} = at dk (6-1) = 5 at a 5% significance level of 11 .07 then $\chi^2_{\text{calculate}} < \chi^2_{\text{table}}$ namely (8.49 <11.07) so that it can be concluded that the distribution of data on student learning outcomes in the control class is normally distributed. Then the results of student learning using the German language e-module level A1.1 with the help of *Liveworksheet* (experimental class) are $\chi^2_{\text{calculated}} = 8.99$ with χ^2_{table} = at dk (6-1) = 5 at a 5% significance level of 11.07 then $\chi^2_{\text{calculated}} < \chi^2_{\text{table}}$, namely (8.99 <11.07) so that it can be concluded that the distribution of data on student learning outcomes in the experimental class is normally distributed.

b. Homogeneity Test

The homogeneity test is intended to determine differences in the variance of the data for each class. To determine the homogeneity of student learning outcomes, it was carried out using the Barlett test. From the results of the analysis, information was obtained that after carrying out the Barlett test on the learning outcomes of control class and experimental class students, the $_{\text{calculated F}} = 1.34$ and $F_{\text{table were obtained.}} = 3.84$ at a significance level of 0.05 with dk = 2-1 = 1. From the calculation results it is found that $F_{\text{count}} < F_{\text{table}}$ which means that the learning outcomes of control and experimental class students have a homogeneous variance. This means that each treatment group in this study has empirically the same characteristics regarding the problems studied.

c. Test the difference in mean pretest scores

To see the difference in students' average pretest scores, the t-test was used to test whether there was a significant difference between the two groups. In this study, a t-test was conducted to determine whether there were differences in the results of the control class students' pretest with the experimental class. After the t-test was carried out on the results of *the pretest of*

students in the control class and experimental class, it was obtained $t_{count} = 4.26$ and $F_{table} = 2.00$ at a significance level of 0.05 with dk = 68 -2 = 66. From the calculation results it is found that $t_{count} > t_{table}$ which means that there are differences in the results of *the pretest of* control and experimental class students.

Because the pretest results of the two groups were significantly different, Gain was used for further analysis by looking at the number of learning outcomes

3.1.6 Feasibility and Effectiveness Test

Hypothesis testing consists of testing the feasibility and effectiveness of the product being developed.

3.1.6.1 Feasibility Test of Developed Products

Testing the feasibility of the product developed is analyzed through validation of the feasibility of experts and trials conducted on students. The results of the expert feasibility validation trial can be seen in Table 5 .

Table 5 . Feasibility Validation Test Results by Expert Validators

No	Expert Assessment	Validation value	Percentage	Criteria
1	Materials Expert	4.59	92 %	Very worth it
2	Media Expert	4.40	88 %	Very worth it
3	Instructional Design Expert Learner n	4.18	84 %	Worthy
	Average	4.39	88 %	Very worth it

Based on Table 3 , it can be concluded that the A1.1 level German language e-module product developed using Liveworksheets is included in the very feasible criteria, which means that the product developed is very suitable for use and can meet the needs for implementing German language learning.

The evaluation of the German language e-module product at level A1.1 assisted by Liveworksheet in the field test conducted concluded that the teaching materials developed included very good criteria for use by the respondents. Based on the results of the feasibility validation by experts and field tests conducted on students it proves that the teaching material product in the form of an A1.1 level German language e-module assisted by a liveworksheet developed includes very valid criteria (good) and responses from users (respondents) related to field trials Very good. This means that the e-module developed is suitable for use to improve students' German language learning outcomes.

3.1.6.2 Test the Effectiveness of Developed Products

The effectiveness of the developed e-module was tested based on the gains from the learning outcomes of the experimental class and the learning outcomes of the control class. Based on the results of the analysis through the t-test, the gain value of the two groups was searched as a basis for determining the effectiveness of the product being developed. The gain results were obtained as in table 6.

Table 6 . Gain Score

Information	Control Class	Experiment Class

Pretest average	57.65	56.5
Posttest average	78.17	86.16
Gain average	20.4	29.6

Based on table 4, the average pretest and posttest for students in the control and experimental classes was 57.65 and 56.50 for the pretest and 78.17 and 86.16 for the posttest. For the average gain of the two groups, namely the control class 20.4 and the experimental class 29.6. Because the average gain score from the experimental group is greater than the control group (29.6 > 20.4), it can be interpreted or concluded that the use of teaching materials in the form of German language e-modules at level A1.1 assisted by live worksheets is used effectively in the process. learning in German language subjects in high school.

3.2 Discussion of Research Results

Tests were carried out on German language e-module teaching materials at level A1.1 with the help of Liveworksheets which were developed through several stages of testing. Based on the results of the tests carried out on the development of the German language e-module level A1.1 assisted by Liveworksheet, the following discussion can be put forward:

3.2.1 Teaching materials in the form of German level A1.1 e-modules assisted by Liveworksheets are appropriate for use.

After going through various validation and trial stages as stated previously, the teaching materials in the form of German language e-modules at level A1.1 assisted by Liveworksheets based on the development results are suitable for use. This is illustrated by all the assessments carried out at each stage showing the results in the very decent category. Based on observations and studies carried out during the research, information was obtained that German language e-modules at level A1.1 using live worksheets can increase students' interest in studying German language subjects. This is shown in the students' enthusiasm in working on and being directly involved in using the German language e-module level A1.1 using live worksheets. Unknowingly, because this e-module is loaded with animations, videos, audio in it, it makes students happy to use it, not only at school, but at home they can do each task without extra guidance from the teacher concerned.

E-modules can accommodate different student learning speeds, e-modules as teaching materials are also capable of making students learn independently and the teacher's role can be less dominant in learning, so that student-centered learning in learning can be applied. In addition, student learning outcomes have also increased from before.

The statement above is in line with research conducted which states that the presence of e-modules can facilitate different student learning speeds [28], this statement is also supported by research conducted which states that besides facilitating student learning speed, the presence of e-modules is intended to train students to be able to learn independently [29], other research also states that using e-modules allows students to learn independently, the teacher's role is no longer dominant in learning [30].

Previous research is also in line with this research regarding improving student learning outcomes through e-modules that have been developed that are suitable for application in the learning process. and also affect student learning outcomes [31].

Based on some of the opinions and research results stated above, it can be concluded that the quality of learning can be realized by an effective learning process. This means that the teaching and learning process can take place smoothly, directed and in accordance with learning objectives. There are several factors that influence the learning process, both from the students themselves and from other factors such as teachers, infrastructure, environment, and teaching materials used. Students who are actively and independently involved are supported by facilities and teachers who master the material and effective delivery strategies will further enhance the quality of learning.

3.2.2 Teaching materials in the form of German language e-modules at level A1.1 assisted by live worksheets are effectively used in the learning process.

Analysis of student learning outcomes to measure the effectiveness of teaching materials in the form of German language e-modules at level A1.1 with the help of live worksheets developed to improve student learning outcomes using N-gain. N-gain analysis is by making a comparison of students' pretest scores before being treated with students' posttests after using teaching materials (media) [32]. The results in this study indicate that there is an effectiveness in the use of teaching materials in the form of developed e-modules. This can be seen from the increase in student learning outcomes after using teaching materials in the form of German language e-modules with an N-gain score of 0.7 in the medium category. The N-gain interpretation category as a reference for effective or ineffective teaching materials used obtained a gain score of 70% in the "effective" category.

The results of this study are in accordance with or in line with previous research which concluded that the use of the Liveworksheet application improves student learning outcomes [33], this research is also in line with research which states that Liveworksheets can facilitate students to learn more effectively, support student activities in learning and increase students' interest in learning, as well as increase their ability to solve learning problems, so that students experience improved learning outcomes [34]. This is further confirmed by research which states that students enjoy using the liveworksheet application in doing assignments, the liveworksheet application can be opened anywhere and at any time, so this application is felt to be very suitable for the learning style of today's millennial children. They can open interesting learning materials anytime and anywhere and student learning outcomes have also improved compared to before [35].

3.3 Research Limitations

Developing teaching materials in the form of German language e-modules level A1.1 assisted by liveworksheets for high school students, the researchers found several limitations in the research conducted, including:

1. In the product trial in the form of German language e-module teaching materials level A1.1 assisted by a liveworksheet \, each student has their own ID and password, there are several students who forget their passwords and this takes quite a bit of time for the teacher to be able to look back at the passwords that have been given.
2. The teaching materials in the form of German language e-modules were developed only focusing on level A1.1.
3. The teaching materials in the form of e-modules developed are in web format, so they require a stable internet network.

4 Conclusion

Based on the results of the research and product development carried out, it can be concluded that the results of the feasibility test carried out on the German language e-module level A1.1 with the help of a live work sheet, obtained validation results from material expert validators, design experts and media experts who declared it suitable for use. The average research result was 4.39 (88%) and was included in the very valid/good category. This research consisted of material experts getting an assessment of 4.59 (92%), media experts getting an assessment of 4.40 (88%), and learning design experts getting an assessment of 4.18 (84%), this means that that the product developed is valid/fit for use. The effectiveness of the e-module being developed was tested based on the learning outcomes of the experimental class and the learning outcomes of the control class. The average gain score from the experimental group is greater than the control group (29.6 > 20.4). So it can be converted or concluded that the use of teaching materials in the form of German language e-modules at level A1.1 assisted by live worksheets is used effectively in the learning process in German language subjects in high school.

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