



The Effect of Using Live Worksheet-Based Electronic Worksheets to Measure Cognitive Learning Outcomes

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Abstract: This study aimed to determine the effect of using live worksheet-based Electronic Student Worksheets (LKPD) to measure cognitive learning outcomes. This research approach uses quantitative research. The subjects in this study were students at Cimanggung State Senior High School class XI for the 2022/2023 academic year, totalling 72 respondents. The data collection method used in this research is a questionnaire method by giving questionnaires and tests to respondents as assessment material. The data analysis used was univariate and bivariate analysis through SPSS software. The results showed that the average value of the group given live worksheet-based LKPD was higher than the group that was not given live worksheet-based LKPD. The average value of the control class is 40.8 (low) to 66.7 (high). At the same time, the average value of the class given the treatment of giving Live Worksheet-based LKPD with a pre-test score (of 41.3), which means low, and a post-test score (of 75.7), which means very high. There is a significant difference in the effect of pre-test and post-test learning outcomes on students who use Live Worksheet-based LKPD in PPKn class XI SMA N Cimanggung lessons.

Abstrak: Tujuan dari penelitian ini adalah mengetahui pengaruh penggunaan Lembar Kerja Peserta Didik (LKPD) Elektronik berbasis *live worksheet* untuk mengukur capaian hasil belajar kognitif. Pendekatan penelitian ini menggunakan penelitian kuantitatif. Subjek dalam penelitian ini adalah peserta didik di SMA Negeri Cimanggung kelas XI tahun ajaran 2022/2023 yang berjumlah sebanyak 72 responden. Teknik pengumpulan data yang digunakan dalam penelitian ini adalah tes dan kuesioner. Analisis data yang digunakan adalah analisis univariate dan bivariate melalui *software* SPSS. Hasil penelitian diperoleh bahwa nilai rata-rata kelompok yang diberikan LKPD berbasis *liveworksheet* lebih tinggi dibandingkan kelompok yang tidak diberikan LKPD berbasis *liveworksheet*. Rata-rata nilai kelas kontrol yaitu 40,8 (rendah) menjadi 66,7 (tinggi). Sedangkan rata-rata nilai kelas yang diberikan perlakuan pemberian LKPD berbasis *Live Worksheet* dengan nilai pre-test (41,3) yang berartikan rendah dan nilai post-test (75,7) yang berartikan sangat tinggi. Dapat disimpulkan terdapat perbedaan pengaruh yang signifikan antara hasil belajar *pre-test* dan *post-test* pada siswa yang menggunakan LKPD berbasis *Live Worksheet* pada pelajaran PPKn siswa kelas XI SMA N Cimanggung. Penelitian lebih lanjut dapat menggunakan dan mengembangkan LKPD berbasis *Live Worksheet* pada materi dan mata pelajaran lain untuk meningkatkan hasil belajar kognitif.

A. Introduction

Indeed, since the beginning of the 21st century, information technology has become one of the reasons the process of globalization is accelerating until the ease of everything in different human life crosses the dimensions of space and time in all areas of life, especially elements of reality that occur in all daily issues such as belief systems, legislative issues, financial issues and especially in the field of education. According to [Salim \(2014\)](#), globalization is mainly driven by technology for information and communication. Information and communication technology (ICT) is rapidly developing into various forms and interests that can spread globally in today's world. As a result, globalization is inevitable, especially in education ([Agustian & Salsabila, 2021](#); [Amalia & Najicha, 2022](#)). Technology influences education, for example, the ease of obtaining data that can be used as learning material or the stage as a delegate to deliver the material. [Lestari \(2018\)](#) also argues that learning in the digital era can take advantage of technological educational advances. [Izzudin \(2013\)](#) stated that interactive multimedia can improve learning by increasing student learning outcomes. The field of education is one of the essential focuses of the development of globalization, where education is also needed to instil social values that must continue to be built in rapid advances in information technology accompanied by modernization; of course, this is a portrait of the resilience of a national value during the rapid flow of globalization ([Khuluq et al., 2021](#)).

Indonesia has the ideology of Pancasila, which is full of the values of a nation that should be strong in facing the challenges of globalization, reflecting an honourable nation in the world, not the other way around ([Yudanegara, 2015](#)). Creating citizens who understand and animate Pancasila as the nation's ideology is undoubtedly the primary function of the subjects of Pancasila and Civic Education (PPKn) ([Abdulatif & Dewi, 2021](#); [Suharyanto, 2013](#)). Even further, PPKn not only functions to form citizens who animate the ideology of Pancasila but also to form citizens with character by the mandate of the 1945 Constitution. This is as explained by the Ministry of National Education, stating that citizenship education aims to educate Indonesian people about their rights and obligations to produce intelligent, skilled, and moral citizens per Pancasila and the 1945 Constitution ([Ananda, 2017](#)). Then further, [Winaputra \(2016\)](#) stated that PPKn is a vehicle for character education with a complete vision and mission, namely developing civic competence, which includes civic knowledge, civic *dispositions*, civic skills, *civic competence*, civic *confidence* and *commitment*. PPKn means framing and recognizing young citizens (students) to have a sense of identity and love for the homeland by the precepts of Pancasila, the norms of the 1945 Constitution, and commitment to Bhinneka Tunggal Ika ([Prihatiningsih, 2021](#)).

In the context of schools, PPKn is undoubtedly included in compulsory subjects. The learning process usually determines whether the learning objectives are achieved. Learning is the interaction process between students, educators, and learning resources in a learning environment to achieve specific educational goals. From this explanation, the core of the learning process is the interaction between students, educators and learning resources. Before starting learning, teachers certainly need to make lesson plans. Well-planned

learning will likely result in positive interactions between learners, educators and learning resources. Teachers in planning learning must consider learning components, including learning objectives, learning resources, learning media, learning strategies, and learning evaluation. These components of learning are a unified whole. [Rusman \(2015\)](#) suggests that learning components are interdependent and interpenetrative. The learning process only sometimes runs smoothly because various obstacles related to these components can occur. One is the need for student learning motivation caused by boring learning and dulling students with what is delivered.

Less engaging learning can also be caused by teachers needing to be better at managing learning strategies, thus affecting the cognitive outcomes of students ([Nakulanang, 2022](#); [Syarofa, 2022](#); [Wahyudi & Azizah, 2016](#)). Similarly, SMAN Cimanggung also has the same problem related to the lack of motivation to learn with students because the PPKn teaching method used tends to be dominated by conventional methods in the form of lectures or just conveying what is in the book and still lacks the use of technology that can support the learning process. Based on the interviews with several students, information was obtained that in addition to the frequent use of the lecture method, the saturation of PPKn learning was also due to the lack of use of learning media. [Mukti & Nurcahyo \(2017\)](#) suggest that learning media is very important to be appropriately utilized by teachers in supporting the learning process to increase the interest and understanding of students. One alternative learning media that can be used is LKPD (Student Worksheet). LKPD is a learning medium used by students to support the learning process. According to ([Putra & Iryani, 2019](#)), student learning outcomes can be improved with the help of LKPD. LKPD is a guide for students to learn a concept so that students can solve a problem ([Yulia et al., 2018](#)). Through problem-solving, students can think critically and systematically to draw conclusions based on their understanding ([Saharsa et al, 2018](#)).

One of the 1945 constitutions mandates Indonesian citizens to participate in implementing world order or, in other words, maintaining world peace. In practice, one form of effort to maintain world peace is carried out by our country by conducting international relations. One of the materials relevant to the mandate of the 1945 Constitution regarding the spirit of world peace is at the class XI high school level in the chapter on the dynamics of Indonesia's role in world peace. Reviewing several textbooks on this chapter at the same level, the discussion in this material needs to be thoroughly discussed and the need for more presentation of current facts related to world peace issues. This material is essential to educate students about the role or position of Indonesia in world politics and its relation to world peace. Presenting more interesting and varied material will arouse more interest and a better understanding of students. Efforts to make learning on this material more interesting can also be made through using LKPD.

LKPD is educational content that has been arranged in such a way that it can be learned independently by students ([Putri, 2016](#)). The results of the PPKn learning observation at SMAN Cimanggung show that educators still need to optimize the use of LKPD in teaching and learning activities. The LKPD found at SMAN Cimanggung is still

very straightforward, which usually only contains components in the form of questions without any review of the material that has been submitted, then only a few LKPD provide direction in the form of guiding questions to assist students in analyzing and interpreting data so that they can draw valid conclusions based on the data that has been obtained without Provide material explanations or invite students to make predictions.

Other shortcomings of LKPD were also found by [Sari et al \(2015\)](#), who stated that the existing LKPD needed more space for students to express themselves and meet the needs of teachers and students. The lack of unattractive images and letters makes reading dull, so the writing and images must be more exciting and relevant. This is in line with [Nareswari et al \(2021\)](#), stating that one of the areas for improvement of existing LKPD is using sentences that still need to be better structured, making it difficult for students to understand them. Based on this, the use of LKPD needs to be presented attractively so that it is more varied, and activities that have been running need to emphasize more on finding information through analysis activities rather than just presenting the information.

[Fauziah & Hamdu \(2022\)](#) stated that digital transformation requires the application of science and technology to create digital transformation in the field of education. At the same time, in the 21st century, LKPD has positively made progress in performance, one of which is coordinated with electronic media, known as E-LKPD ([Zahroh & Yuliani, 2021](#)). Furthermore, revealed that along with technological developments, LKPD was converted into electronic LKPD (e-LKPD). E-LKPD has audio, images, and videos to support learning activities.

One of the sites that can be accessed for making e-LKPD is *the liveworksheet.com site*. The use of E-LKPD based on live worksheet sites in PPKN material has been carried out by [Wati et al \(2021\)](#), where the results of the research are that the E-LKPD based on the *live worksheet* is considered suitable for use as teaching material. In addition to its feasibility as teaching material, LKPD is effective in improving completeness and learning outcomes as [Putra & Hidayat \(2019\)](#) stated that LKPD is effectively used in the learning process, it is shown by increasing mastery of knowledge, individual completeness and completeness of psychomotor learning outcomes ([Putra & Hidayat, 2019](#)). Sudjana in ([Sutrisno, 2013](#)) states that learning outcomes result from the learning process using measurement tools in the form of tests that are arranged in a planned manner, such as written tests, oral tests and action tests.

Live worksheets are suitable for educational purposes because of their advantages. They include the ability to correct errors automatically and turn conventional printable worksheets (such as documents, pdf, jpg, or PNG) into interactive online exercises. According to ([Arsyad, 2014](#)), using visuals in the form of images and videos plays an essential role in the learning process because it can facilitate students' understanding and strengthen memory. The app provides worksheet designs that educators can use or create themselves. Students can quickly complete the worksheets online and send the answers to their teachers *online*. E-LKPD can be completed in person and *online* ([Putra & Agustiana, 2021](#)). With this, using E-LKPD using the *live worksheet* application makes learning

successful and more accessible for educators and students to understand the material being studied. The use of E-LKPD also upholds the creation of applicative and actual model recordings by adding connections, voices, and various types of decision questions that are many, short parts, *drop* and *down*, so that learning becomes very interesting, can be given by task instructors to students, without correction because direct worksheet applications can automatically correct grade results. This saves time and paper and can be a suitable learning medium and teaching material for direct and distance learning (Nissa et al., 2021).

Based on the results of an interview with a PPKn teacher at SMAN Cimanggung, he said that he had never used e-LKPD in his learning process. Therefore, research was carried out using e-LKPD based on *live worksheets* on Indonesia's role in world peace class XI SMAN Cimanggung. This study aims to explain whether or not there is an influence of the use of LKPD *live worksheets* on the achievement of cognitive learning outcomes of students.

B. Method

This research approach uses quantitative research. Quantitative research can be interpreted as a research method based on the philosophy of positivism, used to examine specific populations or samples, data collection using research instruments, and quantitative/statistical data analysis, to test hypotheses that have been determined (Sugiyono, 2018). The research design used was quasi-experimental. *Quasi-Experimental Design* has a control group but cannot function fully to control outside variables that affect the conduct of experiments (Sugiyono, 2018). This study used *the matching-only pretest-posttest control group design*. The two classes were given different treatments, so this difference can be seen from the difference in achievement between the control class and the experimental class with the following Design:

Table 1. *Pretest-Posttest Group Control Pattern*

Class	Pretest	Treatment	Posttest
Eksperimen	Y1	X1	Y2
Kontrol	Y1	-	Y2

Information:

Y1 = control and experiment class pre-test scores

Y2 = control and experiment post-test values

X1 = experimental class treatment (using *live worksheet*)

The research began on March 7, 2023, and began with giving questionnaires to students, then on March 15, 2023, withdrawing the questionnaire results. Moreover, on March 29, 2023, data processing and writing of research results will be carried out. This research was conducted at SMA Negeri Cimanggung, Sumedang Regency, West Java Province.

The subjects were grade XI students of SMA Negeri Cimanggung for the 2023/2024 academic year as many as 72 respondents. The form of sampling in this study uses total sampling, where all samples are tested in the study.

In this study, questionnaires and tests were given to respondents as assessment material for data collection purposes. Google Forms are used to distribute questionnaires. Primary data or data obtained directly from the main source, students, and then processed with the help of SPSS software.

SPSS software is used for univariate and bivariate data analysis. The univariate analysis applied to existing variables aims to determine and calculate table frequency and frequency distribution. Univariate analysis in this study will look for each variable's maximum minimum value, frequency distribution, mean value, and standard deviation. After the normality test and the data results are normally distributed, a parametric test will be carried out in one group or paired with a *paired sample t-test*.

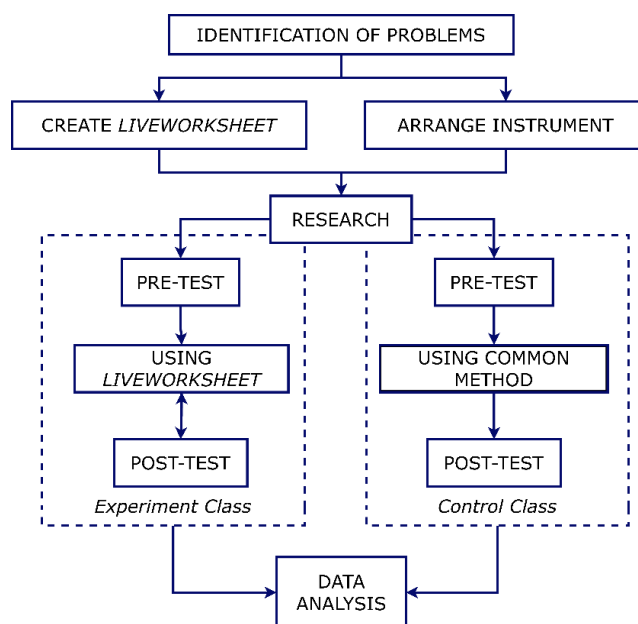


Figure 1. Research Flow

C. Result and Discussion

Result

Before conducting the study, researchers independently designed LKPD teaching materials on the *live worksheet site*. The material chosen was the dynamics of Indonesia's role in world peace; this material was given to class XI. The following is a view of the live worksheet-based LKPD created by researchers.



Figure 2. Multiple Page Views of a Liveworksheet

In implementing the research, students in the control and experimental classes were given *pre-test* questions first. After that, after some time, the treatment in the form of *giving live worksheets* was carried out in the experimental class, while the control class was only given the lecture method.



Figure 3. Students Working on a Liver-Worksheet

After the treatment is given, as in Figure 3, the *post-test* questions are given to the students. After that, the *pre-test* and *post-test* values were analyzed for the contrast between

before the implementation of live worksheet-based LKPD and after the implementation of *live worksheet-based* LKPD. The results of the analysis obtained are shown in table 2.

Table 2. Description of Student Learning Outcomes Using Liveworksheet-Based LKPD

Descriptive statistics	Experiment Group	Control Group
Sample Size	36	36
Lowest Value	50	20
The highest score	90	85
Average value	73,16	60,02
Median	70,00	57,50
Standard Deviation	10,970	10,722

Table 2 shows that the average score of the group given live worksheet-based LKPD was higher than the group that was not given live worksheet-based LKPD, which was 73.16 for the experimental class and 60.02 for the control class. This difference shows that using live worksheet-based LKPD positively impacts student learning outcomes. The experimental group, which received *live worksheet-based* LKPD, achieved a higher average value than the control group that did not use the LKPD.

This shows that live worksheet-based LKPD can increase the learning process's effectiveness and help students gain a better understanding. *Live worksheet-based* LKPD allows students to practice interactively, apply the concepts learned, and deepen their understanding through direct experience with the material.

Cognitive learning outcomes products describe students' mastery of theory and understanding of concepts (teaching materials) delivered before and after the learning process through *pre* and *post-test* questions. Table 3 provides a summary of learner learning outcomes.

Table 3. Liveworksheet-Based LKPD Learning Outcomes

Information	Control Class		Intervention Class	
	<i>Pre-test</i>	<i>Post-test</i>	<i>Pre-test</i>	<i>Post-test</i>
Percentage	40,8	66,7	41,3	75,7
	40,8%	66,7%	41,3%	75,7%
Category	Low	Tall	Low	Very high

Control and intervention classes have different pre-test and post-test values, as shown in table 3. Control class values are 40.8 (low) to 66.7 (high). While the average score of the class given LKPD treatment was based on *the live worksheet*, with a pre-test score of 41.3 which indicates a low score, and a posted score of 75.7 which indicates a very high score.

Researchers first conduct a normality test to determine whether or not it is necessary to continue with a t-test to test the research hypothesis. According to Quraysh (2020), the normality test is a way to determine whether data comes from a normally distributed population. The normality test is based on the fact that residual values are normally

distributed if the significant value is greater than 0.05, while the residual value is not generally distributed if the significant value is smaller than 0.05. Because one group had fewer than 50 respondents, researchers used the normality test with Shapiro-Wilk in the study.

Table 4. Normality Test Results

Tests of Normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig
Nilai_Pre	.106	74	.187	.965	74	.039
Nilai_Post	.077	74	.200	.970	74	.079

The data above explains that the value of data analysis using SPSS 26 *software* obtained a pre-test value of 0.039 and a post-test value of 0.079, which means a value of >0.05 and means that the data is normally distributed so that then a hypothesis test can be carried out using *the Paired Sample T-Test*.

The t-test performed with SPSS 26 is the next step. According to Satyahadewi & Perdana (2002), hypothesis testing uses paired sample test analysis because testing aims to find the difference between two paired data involving the same subject who received two different treatments. The reason for determining the choice for the *paired samples* test hypothesis test is that if the critical value (2-tailed) is <0.05 , there is a significant difference between the initial and final variables. Conversely, suppose the significant value (*2-tailed*) is greater than 0.05. In that case, there is no significant difference between the initial and final variables, so it can be concluded that there is no significant effect on the difference in treatment given. The results of the SPSS 26 data analysis table used to test the paired sample test hypothesis are listed below.

Table 5. Hypothesis Test Results (T-Test)

One-Sample Test						
Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Nilai_Pre	46.165	73	.000	57.541	55.06	60.02
Nilai_Post	55.378	73	.000	70.622	68.08	73.16

From table 5, it can be concluded that there is a significant difference in influence between pre-test and *post-test* learning outcomes in students who use Live Worksheet-based LKPD in PPKn lessons for grade XI students of SMA N Cimanggung. This is evidenced by the t-test result of 0.000, which means the sig value <0.05 . If the value of $\text{Sig} < 0.05$, then H_0 is rejected so that it can be concluded in this study that giving Live Worksheet-based LKPD affects the scores of grade XI students in PPKn subjects.

In addition to using test instruments, further data collection was also carried out using questionnaires in the form of statement questionnaires. Students were asked to give affirmative, strongly agree, disagree or disagree responses to ten statements related to using *live worksheets*. The statement is prepared based on four main aspects: technical use, media and material, appearance and completeness of tasks. The processing of results of filling out the questionnaire was converted into a Likert scale where the statement strongly agreed to occupy a score of 4, agreed to occupy a score of 3, disagreed with occupying a score of 2 and disagreed with occupying a score of 1. The results of filling out the questionnaire are depicted in the bar graph below.

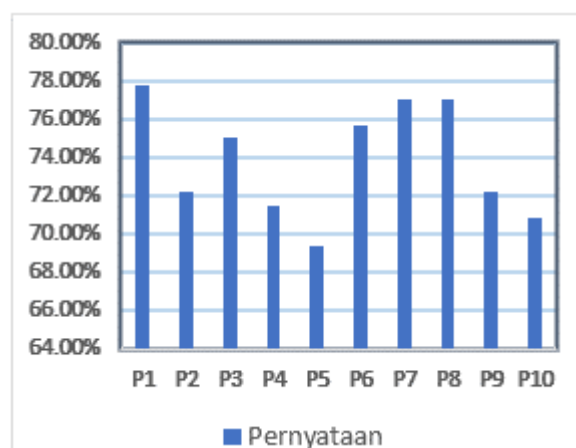


Figure 4. Results of Questionnaire Data Processing

Based on the results of filling out the questionnaire, bringing data obtained in the technical aspects of use, 77.08% of students agreed that the instructions for use on the live worksheet were clear and easy to understand, 72.02% of students also agreed with the ease of using the *live worksheet*. Then in the aspect of media and material, all statements received affirmative interpretation from the students, with details 75% of students stated that the video explanation of the material presented on the live worksheet was clear, 71.5% of students agreed that the video explanation material was interesting, 69.4% of students agreed that the material presented on the *live worksheet* Easy to understand, then 75.7% of students said they agreed that audio media sounds clear. In the aspect of live worksheet display, 77.08% of students agreed that it looks attractive, 77.08% of students agreed that all writing in the live worksheet could be read clearly, 72.2% of students agreed that the size of the letters on the *live worksheet* is comfortable to read. While in the aspect of task completeness in the live worksheet itself, around 70.83% of students agreed that they could complete all the tasks on the *live worksheet*.

Some of the advantages of using liveworksheets are (a) interactive and engaging, *liveworksheets* offer a more interactive and fun learning experience, because students can interact directly with learning content in a variety of exciting and fun formats; (b) personalized, *liveworksheets* allow teachers to create learning activities tailored to the needs and level of understanding of students, so that each student can learn in the most effective

and efficient way; (c) self-directed learning, *liveworksheets* allow students to learn independently, as learning activities can be accessed from anywhere and anytime, as well as provide immediate feedback on student performance; (d) facilitate examination, *liveworksheets* make it easier for teachers to check and evaluate student performance quickly and easily, because learning activities can be evaluated automatically; (e) time and cost savings, *liveworksheets* can help save time and costs, because teachers no longer need to print and copy learning materials manually (Damayanti & Lestyanto, 2021). Thus, *live worksheets* can assist teachers and students in improving the quality of learning and achieving better learning outcomes.

Discussion

According to Fauzi et al (2021), a *live worksheet* is a website that can be used to create interactive materials and worksheets online. *Liveworksheet* contains material that contains recordings, mp3, exciting pictures and images that can broaden students' interest in understanding the material and doing assignments so that student learning outcomes can improve. Students can do questions in various formats in this live worksheet-based E-LKPD, including multiple-choice, tick columns, matchmaking, and drawing lines, depending on the appropriate subject matter and the maker's creativity. In addition to the materials and questions displayed in LKPD, teachers can directly enter answers into the application so that students can immediately see their scores or grades after doing the questions (Sadewa et al., 2020). According to Lestari (2018), *live worksheet-based e-LKPD* is built by LKPD feasibility indicators, which include inactivity requirements, construction requirements, technical requirements and formats, and writing requirements according to the curriculum.

Researchers used experimental groups and control groups using pre-test and post-test. The analysis showed that the experimental group given live worksheet-based LKPD had a higher average value than the control group not given *live worksheet-based* LKPD, 73.16 for the experimental group and 60.02 for the control group.

Student learning outcomes are measured using pre-test and post-test questions. The product of cognitive learning outcomes is calculated by describing students' mastery of theory and understanding of concepts (teaching materials) delivered before and after the learning process. Table 3 shows that after the implementation of live worksheet-based LKPD, the control class and intervention class have different pre-test and post-test values. Control class scores varied between 40.8 to 66.7, while the average scores of classes treated with *live worksheet-based* LKPD, with a pre-test score of 41.3 and a post-test score of 75.7, showed a significant improvement in learning outcomes.

To test the research hypothesis, researchers conducted a normality test with Shapiro-Wilk. The results of data analysis using SPSS 26 software showed a pre-test value of 0.039 and a post-test value of 0.079, which showed that the data was normally distributed. Next, a hypothesis test was carried out using the Paired Sample T-Test. The results showed a significant difference between pre-test and post-test scores in the experimental group given live worksheet-based LKPD.

Previous research conducted by Raudatul Mispa (2022) in his research entitled "The Use of Electronic Student Worksheets (E-LKPD) Live Worksheets on the Protist Concept on the Learning Outcomes of Class X Students of SMAN 7 Banjarmasin". The study used experimental research with a quantitative approach. The difference between previous research and this study is that the focus in previous research was the use of the E-LKPD live worksheet on the Protist concept on student learning outcomes. At the same time, this study focuses on the influence of E-LKPD based on live worksheets to measure the achievement of cognitive learning outcomes of students. In addition, this study's uniqueness lies in how students access *live worksheets*, where researchers use *barcode scans*. Students *scan the barcode* that has been provided, and students can immediately access and work on the questions available in the *live worksheet*. This has proven effective in attracting students, where students are enthusiastic about doing questions in E-LKPD because humans, as social creatures, always feel curious about something new related to themselves. This curiosity will cause humans to desire to pursue, lead and have memorable experiences (Garrosa et al, 2016).

D. Conclusion

Based on the results of research that has been conducted on the effect of using *live worksheet-based* Electronic Student Worksheets (LKPD) to measure the achievement of cognitive learning outcomes, it was found that the average score of the group given *live worksheet-based* LKPD was higher than the group that was not given live-worksheet-based LKPD. In addition, from the results of the hypothesis test using the t-test, it was found that there was a significant difference in influence between pre-test and *post-test* learning outcomes on students who used Live Worksheet-based LKPD; this was evidenced by the results of the t-test of 0.000 which means the sig value <0.05 . If the value of $\text{Sig} < 0.05$, then H_0 is rejected so that it can be concluded in this study that giving Live Worksheet-based LKPD affects the scores of grade XI students in PPKn subjects.

The use of Live Worksheet-based Student Worksheets (LKPD) can be used as alternative learning media or digital teaching materials for both teachers and students in supporting the PPKn learning process; this *Live Worksheet-based* LKPD also allows students to access learning media in several presentation formats, such as text, images, audio, and video in complete unity so that it can accommodate several learning styles and student interests. LKPD *Live Worksheet* can be more interesting for students because it is designed as attractive as possible using digital technology.

In future studies, researchers are expected to use alternative comparison media to determine which media is more effective for PPKn learning in students. In addition, it is also expected that this LKPD *Live Worksheet* can be developed in various other subjects to support the learning process.

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