



# Interactive Electronic Learning Materials in Civic Education: A Technology-Based Approach with Flip PDF Professional

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## ABSTRAK

Pengembangan bahan ajar interaktif elektronik dalam pembelajaran PPKn dengan memanfaatkan Flip PDF Professional dilakukan sebagai solusi untuk meningkatkan minat belajar siswa dan mengoptimalkan penggunaan teknologi di kelas. Penelitian ini bertujuan untuk mengembangkan bahan ajar elektronik yang memenuhi kriteria validitas, praktikalitas, dan efektivitas dalam meningkatkan hasil belajar siswa. Penelitian ini menggunakan metode Research and Development (R&D) dengan model 4-D (Define, Design, Develop, Disseminate). Instrumen pengumpulan data terdiri atas lembar validasi oleh ahli materi, media, dan bahasa; lembar praktikalitas dari guru dan siswa; serta uji efektivitas melalui pre-test dan post-test. Hasil validasi menunjukkan bahwa bahan ajar interaktif yang dikembangkan sangat valid dengan tingkat validitas 95% dari ahli materi, 85% dari ahli media, dan 91% dari ahli bahasa. Praktikalitas bahan ajar juga dinilai sangat tinggi dengan skor 98,33% dari guru dan 93,5% dari siswa. Uji efektivitas menggunakan N-Gain score menghasilkan rata-rata 0,4455 yang tergolong dalam kategori peningkatan sedang, dengan nilai pre-test rata-rata 60,53 meningkat menjadi 78,78 pada post-test. Temuan ini menunjukkan bahwa bahan ajar interaktif elektronik berbasis Flip PDF Professional tergolong valid, sangat praktis, dan cukup efektif dalam meningkatkan hasil belajar siswa. Oleh karena itu, bahan ajar ini dapat menjadi alternatif inovatif bagi guru untuk mengoptimalkan pembelajaran PPKn berbasis teknologi di sekolah dasar.

## ABSTRACT

The development of interactive electronic teaching materials in Civic Education (PPKn) using Flip PDF Professional aims to enhance student engagement and optimize the use of technology in elementary classrooms. This study seeks to develop electronic teaching materials that are valid, practical, and effective in improving students' learning outcomes. The research method used is Research and Development (R&D) with the Four-D Model (Define, Design, Develop, Disseminate). Data collection instruments include validation sheets from subject matter experts, media experts, and language experts; practicality sheets from teachers and students; and effectiveness tests through pre-test and post-test assessments. The validation results indicate that the developed teaching materials are highly valid, with 95% from subject matter experts, 85% from media experts, and 91% from language experts. The practicality of the teaching materials is rated as very high, with 98.33% from teachers and 93.5% from students. The effectiveness test using the N-Gain score shows an average of 0.4455, categorized as moderate improvement, with the pre-test average score of 60.53 increasing to 78.78 in the post-test. These findings demonstrate that the interactive electronic teaching materials developed using Flip PDF Professional are valid, highly practical, and moderately effective for use in Civic Education learning at the elementary school level. Therefore, this teaching material can serve as an innovative solution for teachers to optimize technology-based learning in classrooms.

## 1. INTRODUCTION

Education is an important thing in life, because by having education we can educate the nation's children, have achievements, have a good personality and moral values, think wisely and guide in achieving a desired goal. Simply put, education is defined as a human effort in fostering his personality in accordance with the values in society (Alkhasawneh & Alqahtani, 2019; Rahimi & Yadollahi, 2017). The world of education, especially in elementary schools, there are several lessons, one of which is learning Pancasila and Civic Education (PPKn). Pancasila and Civic Education in elementary school is very important in learning about citizenship including diversity in Indonesia. Good education will give birth to qualified

humans and love the country. One of the education that gives birth to quality human beings is through learning Pancasila and Civic Education (PPKn) (Dirgantari & Cahyani, 2023; Octavia & Rube'i, 2017).

According to previous study, Pancasila and civic education is a democratic education that aims to educate young people to become democratic and participatory citizens through global education (Ainsiyah & Ginting, 2020). Pancasila and civic education teaches about the diversity of Indonesia, one of which is mutual work. Of course this is related to the cooperation of multicultural Indonesian society, so PPKn learning is used as a reference for the foundation of learning development in elementary schools regarding cooperation (Dewantara et al., 2019; Retnasari et al., 2021). In producing quality human resources, the Country is also very concerned about the quality or quality of education. The quality of education itself is influenced by various factors such as the competence of teachers or educators, the availability of facilities and infrastructure and the curriculum. The curriculum is a guide for educators to carry out the learning process, starting from planning, implementation, to evaluating learning which must be in accordance with the applicable curriculum. One of the learning tools that need to be completed by an educational institution is the curriculum (Malik, 2018; Mufarola & Murbowo, 2019).

Furthermore, to find out the conditions in the field, researchers conducted observations and found that the learning process was not effective because the civics learning book used by students was not complete in terms of presenting the material and was also less interesting in the book (Kurniawan, 2013; Sakman et al., 2024). In the learning process, teachers tend to use teaching materials provided by the school such as the independent curriculum grade V Civics learning book and student worksheets (LKPD). And it is also seen that in learning the teacher has not designed a teaching material other than teaching materials that are already available at school, while other teaching materials such as printed teaching materials (modules / handouts), Audio visual (videos / films), Visual (pictures / photos) have not been used by the teacher as teaching materials in the learning process (Amanda et al., 2022; Faris Yudiana Putra & Rezanita, 2023). So that in the learning process students only focus on the learning books that have been provided, and the learning books used are not in accordance with the characteristics of students.

Based on the results of interviews and preliminary studies with fifth grade teachers, information was obtained that (1) the use of package books and LKPD was not optimal due to the lack of coloring and images that attracted students in reading and there were still students who were confused in doing the questions according to the steps presented in the book and LKPD. (2) Lack of interest and motivation to learn from students in using books and LKPD due to lack of coloring and pictures related to the material. (3) The guidebook used does not attract students' interest and it seems that students feel bored and lack enthusiasm for learning, especially the Civics material presented by the teacher in the form of long text presentations. (4) Schools and teachers have not provided electronic-based Civics learning modules or teaching materials, but only use Teacher and Learner guidebooks (Nurchotimah et al., 2022; Sakman et al., 2024). This results in low student learning outcomes that can be on daily assessments, and teachers have also never designed electronic teaching materials that can make students learn independently and can learn anywhere and anytime. Therefore, other teaching materials are needed such as electronic teaching materials that can make students interested in learning and in accordance with the characteristics of students such as teaching materials that researchers will develop (Marlani & Prawiyogi, 2019; Munawaroh & Prasetyaningtyas, 2023).

Based on these problems, it is necessary to solve the problem by designing learning media that is interesting and according to the characteristics of students, one of the media that can be developed is electronic teaching materials (Aprilliyah, 2014; Sukerti & Susana, 2019). This electronic teaching material is in the form of an application that students can access on their respective cellphones, this electronic teaching material is expected to make students able to learn independently and learn creatively, increase curiosity, increase student learning motivation and can develop student learning abilities and outcomes (Rahayu et al., 2023; Uygurer & Uzunboylu, 2017). Improving the quality of learning in schools must be in line with the development of information and communication technology today, especially as advances in digital information technology accelerate and facilitate education. Education is expected to build the insights, knowledge, skills and characters needed to realize social, peace and collaboration in diversity in learners. The utilization of technology must certainly be utilized in the teaching and learning process (Bojko, 2013; Lyon et al., 2021). Teachers are required to be able to use technology-based facilities that have been provided by schools to support teaching and learning activities. In addition to being able to use the tools available, teachers are also required to be able to develop learning media using information technology (Akhmad et al., 2018; Putri & Dafit, 2021).

In this study, researchers chose to use the Flip PDF Professional application in developing electronic teaching materials. This application is a software or application software that is used to process or transform material from books into a form of reading material that can be opened via electronic devices such as smartphones and computers (Karakaita Putri et al., 2019; Kurnianto, 2022). This application allows teachers to create teaching materials or reading materials that are presented to students with attractive displays which are not only in the form of writing in it but also have videos so that the process of delivering

material to students can occur in a fun and interactive way. Flip PDF Professional is a software that has the ability to convert PDF documents into digital rotating pages, which allows the creation of interactive learning content with a variety of supporting features (Nurbaiti et al., 2021; Nurjayadi et al., 2021). The Flip PDF Professional application has several advantages, namely its attractive appearance, containing a variety of templates, themes, scenes, and backgrounds. The novelty of this research introduces the use of Flip PDF Professional software as an innovative solution for presenting citizenship education learning materials in an interactive, attractive and user-friendly format. This is a new approach to providing an immersive learning experience in a field that previously tended to use conventional methods. Therefore, this study seeks to develop electronic teaching materials that are valid, practical, and effective in improving students' learning outcomes.

## 2. METHOD

The method used in this research is research and development (R&D). (R&D) is a research method that produces innovations either a new product or develops existing products to be more attractive in accordance with the learning objectives of a particular subject matter (Jonsson & Panadero, 2016). This research uses the 4-D development model (Four-D Models). Four-D device development model, this model consists of 4 stages, namely; Define, Design, Develop, and Disseminate, as show in Figure 1.

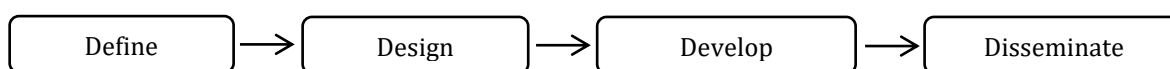


Figure 1. Development Stages

At the first stage researcher determined what needs are needed in the learning process, collecting data and information needed for development. The purpose of this stage is to establish and define the requirements for developing electronic teaching materials using professional flip pdf in Civics subjects. Conducted an interview with the fifth grade teacher at SDN 05 Alang Rambah, Pesisir Selatan. This interview was conducted to bring out and determine the basic problems faced in the implementation of learning. Observation, in this observation stage, an analysis of the syllabus and teaching materials used is carried out. At the design stage continue by prepare instrument preparation, storyboard, material collection, creation, and finishing. The results of the development of teaching materials using professional flip pdf in Civics subjects before use must go through the validation stage, media, material and language experts. After further validation, the practicality test or product trial stage is carried out. The practicality test was carried out in grade 5 Elementary School 05 Alang Rambah South Pesisir. Then at last stage of development research which aims to disseminate Civics electronic teaching materials using professional flip pdf. This stage was carried out at Elementary School 05 Alang Rambah, South Pesisir and also to the Teacher Group Work forum (KKG). After the electronic teaching materials are declared effective, the electronic teaching materials are promoted so that users can use them, both to students and teachers and other schools.

Teaching Material Development Research using Professional Flip Pdf in Civics subjects was conducted at Elementary School 05 Alang Rambah, South Pesisir in the odd semester of the 2024/2025 school year. The subjects of this research trial were Grade 5A students totaling 20 people and 5B students totaling 16 people at Elementary School 05 Alang Rambah, South Pesisir. The types of data used in this development research are quantitative and qualitative data. This research uses primary data. The primary data was obtained directly from lecturers, teachers, and students using validity and practicality test questionnaires and questionnaires given to students. The data collection instruments used consist of various forms, such as validation sheets (Material, Language, and Media) and practicality sheets (Teachers and Students). The test sheet aims to determine whether the learning outcomes of students have increased or not and to find out whether the Electronic Teaching Materials using Flip PDF Professional are effective. The data analysis technique used in analyzing data from the validity test results obtained from validators is to use a Likert scale. The criterion for validity test of electronic teaching material is show in Table 1.

Table 1. Criteria for Validity Test of Electronic Teaching Materials

(%) Score	Category
90%-100%	Very Valid
80%-89%	Valid
65%-79%	Valid Enough
55%-64%	Less Valid
≤54%	Very Invalid

The data analysis technique used in analyzing data from the practicality test results obtained from student assessments also uses a Likert scale. The practical guidelines for electronic teaching material is show in [Table 2](#).

**Table 2. Practicality Guidelines for Electronic Teaching Materials**

(%) Validation	Category
90-100	Very Practical
80-89	Practical
65-79	Practical Enough
55-64	Less Practical
≤54	Not Very Practical

The effectiveness of the products that researchers develop is from the analysis of the test results given to students. The product effectiveness test was carried out with a one group pretest-posttest design research design. The research design method is by distributing an initial test (pretest) to students, then given treatment after that given a final test (posttest). The initial test is a test question of student learning outcomes given to students before being given learning treatment using Electronic Teaching Materials using Flip PDF Professional. After treatment using Electronic Teaching Materials, students are again given a final test with the same questions. The results of the two tests were analyzed and found to be effective with N-Gain Score. N-Gain Score is done to determine the effectiveness seen from the difference in Pretest results and posttest results. First, the test subjects were given an initial test (pretest) and at the end of the students' higher order thinking skills from the pretest and posttest using the N-Gain score. N-gain score assessment criteria is show in [Table 3](#).

**Table 3. N-Gain Score Assessment Criteria**

Interval	Category
$g \geq 0.7$	High
$0.3 \leq g < 0.7$	Medium
$g < 0.3$	Low

The improvement in student learning outcomes through pretests and posttests can be seen from the acquisition of student N-Gain according to table 3.9, if the acquisition of student N-Gain is equal to or more than 0.7, it means that the improvement in student learning outcomes is high, if the acquisition of student N-Gain is equal to 0.3 and less than 0.7, it means that the improvement in student learning outcomes is moderate, and if the acquisition of student N-Gain is less than 0.3, it means that the improvement in student learning outcomes is low. The results of the treatment are carried out to obtain accurate data in determining the success of students after participating in the learning process by using electronic teaching materials using Flip PDF Professional and the effectiveness of these teaching materials in the learning process. The criteria for the level of learning effectiveness of learning outcomes using electronic teaching materials using Flip PDF Professional can be seen in [Table 4](#).

**Table 4. Learning Effectiveness Criteria from Learning Outcomes**

Interval	Category
91-100	A (Very Good)
81-90	B (Good)
70-80	C (Fair)
< 70	D (Poor)

### 3. RESULT AND DISCUSSION

#### Result

Based on the research that the researchers have done, namely about the Development of Electronic Interactive Teaching Materials on Civics Learning by Using Professional Flip Pdf in Class V Elementary School, the results of research and discussion are obtained with the 4-D development model which produces Interactive Electronic Teaching Materials that are valid, practical and effective. The research results are divided into four stages of each research and development stage as follows.

**Define Stage**

The defining stage is carried out by analyzing several aspects including, initial analysis/needs analysis, and curriculum analysis. Initial analysis is one of the steps in the defining stage, in the initial analysis the researcher determines the problems faced according to the initial observations made in Grade 5A and 4B Elementary School 05 Alang Rambah, Basa Ampek Balai Tapan District, South Pesisir Regency. Initial analysis was carried out by observing the implementation of the learning process. researchers also conducted interviews with class teachers. The results of observations of the Civics learning process show that teachers have not optimized the use of technology that is available in the school environment, including laptops and projection equipment, which can be very effective support in the learning process. Furthermore, observations of the use of electronic teaching materials in class V show that teachers have not utilized electronic teaching materials that support learning apart from student handbooks and educators. This causes the media used by teachers to be less attractive to students because it has not formed an interactive learning environment. As a result, students are less active and less motivated in learning. In addition, students' learning outcomes are still low, indicating that students do not understand the material taught by the teacher. The curriculum analysis stage is carried out by analyzing the Learning Outcomes to determine the material and formulate learning objectives. The learning outcomes used are the achievements in learning Civics class V of the independent curriculum. Based on the learning outcomes, the learning objectives to be achieved by students are formulated. Furthermore, the formulation of learning objectives is used for materials in the development of interactive electronic teaching materials using Flip PDF Professional. CHAPTER I Learning Units 4-6 Mutual work which consists of according to semester 1 material in grade 5 of the independent curriculum elementary school.

**Design Stage**

Based on the results of the previous defining stage, in this second stage, interactive electronic teaching materials using Flip PDF Professional in grade 5 Elementary School were designed. Researchers designed the instruments needed to develop electronic teaching materials using Flip PDF Professional in Civics subjects. The following are some of the instruments prepared in the research and development of interactive electronic teaching materials using Flip PDF Professional in Civics subjects in elementary schools. Validity questionnaire, the validity sheet is used to measure how feasible electronic teaching materials using Flip PDF Professional can be used for the learning process. Practicality Questionnaire, used to find out how practical electronic teaching materials using Flip PDF Professional in Civics subjects that are developed can be used during the learning process. Researchers made student questionnaires and teacher questionnaires to measure the practicality of electronic teaching materials using Flip PDF Professional. Post-test and Pre-test questions, researchers compiled test questions to measure how effective electronic teaching materials using Flip PDF Professional in Civics subjects in increasing the activities and learning outcomes of grade V elementary school students.

**Development Stage**

At the development stage, all materials that have been submitted at the design stage will be developed into electronic teaching materials using Flip PDF Professional in grade V elementary school. The purpose of this development stage is to produce the final form of electronic teaching materials developed after going through revisions based on expert input. Before conducting field trials, it is necessary to validate the electronic teaching materials developed. Validation is an activity of collecting data or information from experts in their fields (validators) to determine whether the developed media are valid (feasible) or invalid. The purpose of validation is to measure the feasibility level of the media developed, namely in the form of electronic teaching materials using Flip PDF Professional in grade V elementary school before the electronic teaching materials are used in general. The validation of the developed product was carried out by four expert validators consisting of one linguist validator, one Media expert validator, and two Content expert validators where one practitioner validator came from an elementary school teacher. The following are the names of expert validators in the development of interactive electronic teaching materials using Flip PDF Professional in Civics subjects. Then the recapitulating the validity assessment as show in [Table 5](#).

**Table 5. Recapitulation of Material, Media, and Language Validation Results**

No	Assessment Aspect	Validity score(%)	Category
1.	Content	95	Very Valid
2.	Design	85	Valid
3.	Language	91	Very Valid
<b>Total</b>		<b>271</b>	
<b>Average</b>		<b>90</b>	<b>Very Valid</b>

Referring to [Table 5](#), the results of the validity of the development of electronic teaching materials using Flip PDF Professional on Civics subjects in elementary schools are included in the category of very feasible on material, media / design and language. At the end of the use of teaching materials, the next stage is to test the practicality of using the product. Practicality is the level of use and use of electronic teaching materials using Flip PDF Professional by students and teachers. The development results are used in learning to determine the effect on aspects of ease of use, usefulness, appearance and time of use of electronic teaching materials using Flip PDF Professional in learning Civics. The practicality test was carried out using a practicality questionnaire filled out by teachers and students. Data on the practicality trial of electronic teaching materials using Flip PDF Professional is obtained from primary data. Teachers fill out a questionnaire after using electronic teaching materials using Flip PDF Professional in Civics learning. The aspects assessed from the practicality test of electronic teaching materials using Flip PDF Professional are the practicality of presentation and practicality of use. [Table 6](#) recapitulating the results of the practicality test conducted on teachers at SDN 05 Alang Rambah, Baso Ampek Balai Tapan District, Pesisir Selatan.

**Table 6. Recapitulation of Practicality Test Results by Teachers**

No	Class Teacher	Practicality Assessment Aspects															Total	Percentage (%)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1	VA	5	5	5	5	5	5	5	4	5	5	5	5	5	5	74	98.66%	
2	VB	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75	100%	
<b>Total</b>																	<b>149</b>	<b>198.66%</b>
<b>Average</b>																	<b>74.5</b>	<b>98.33%</b>
<b>Category</b>																	<b>Very Practical</b>	

Based on [Table 6](#), it can be seen that the average acquisition of practicality scores by teachers is 98.33% with a very practical category. Data on the practicality trial of electronic teaching materials using Flip PDF Professional in the form of primary data obtained directly from students using a student practicality questionnaire instrument. As the test subjects, namely grade V A and V B students of SDN 05 Alang Rambah, Baso Ampek Balai Tapan District, Pesisir Selatan. Aspects of testing the practicality of electronic teaching materials using Flip PDF Professional for students include the presentation and process of using electronic teaching materials. The recapitulation of the results of the student practicality test assessment can be seen in the following [Table 7](#).

**Table 7. Recapitulation of Practicality Test Results by Students**

No	Class	Total Students	Percentage(%)
1	VA	20	95%
2	VB	16	92%
<b>Average</b>			<b>93.5%</b>
<b>Category</b>			<b>Very Practical</b>

Based on [Table 7](#), it can be seen that the average practicality score of students in class V A and V B of SD Negeri 05 Alang Rambah is 93.5% with a very practical category. Based on the results of the practicality test, the use of electronic teaching materials using Flip PDF Professional received a positive response from teachers and students. In addition, the use of electronic teaching materials using Flip PDF Professional can be used easily so that in general this electronic teaching material does not need to be revised and can be used in learning.

**Effectiveness Test**

This stage is carried out through 3 (three) stages, including the initial stage, namely giving the Pre-test, the second stage, namely the learning process where students are given teaching materials while the third or final stage is giving the Post-test with the same questions as the pre-test questions. The three stages are carried out face-to-face. The following is the Pre-test and Post-test data of Grade V A and V B students of Elementary School 05 Alang Rambah, South Pesisir along with the results of the N-Gain Score analysis which can be seen in [Table 8](#).

**Table 8. Recapitulation of Pre-Test and Post Test Score Analysis Results**

No.	Class	Average Score Pre-Test	Average Score Post-Test	Category	N-Gain Score	Category
1	VA	60.75	79.75	Fair	0.4751	Medium
2	VB	60.31	77.81	Fair	0.4159	Medium
<b>Total</b>		<b>12.06</b>	<b>157.56</b>		<b>0.891</b>	
<b>Average</b>		<b>60.53</b>	<b>78.78</b>	<b>Fair</b>	<b>0.4455</b>	<b>Medium</b>

Based on [Table 8](#), it can be seen that the increase in student learning outcomes from before using the development of electronic teaching materials to after using the developed electronic teaching materials. For the results obtained before using electronic teaching materials (Pre-test) obtained an average value of 60.75 then increased after using electronic teaching materials (Post-test) obtained an average value of 79.75. As for the N-Gain score, the average value is 0.4455 with a moderate improvement category, which means that electronic teaching materials using Flip PDF Professional in grade V elementary schools are effective enough to improve student learning outcomes. The final stage of dissemination in research and development where the developed product is promoted or distributed so that it can be accepted by users. This stage was carried out in class V A and V B of SD Negeri 05 Alang Rambah which is the core school in cluster 3, Baso Ampek Balai Tapan District, Pesisir Selatan Regency and the dissemination was also carried out in the teacher forum or Teacher Working Group in Gugus 3 there are 4 schools in Baso Ampek Balai Tapan District.

## Discussion

This study aims to develop electronic teaching materials using Flip PDF Professional in grade V elementary school, test the feasibility level of electronic teaching materials, practicality and determine the effectiveness and learning outcomes of students after using electronic teaching materials using Flip PDF Professional in grade V elementary school. The discussion of the research results emphasizes the problem points that have been presented in the formulation of the problem which are discussed one by one by looking at the data obtained.

Validity comes from the word validity which means validity / truth. Validity means the extent to which the accuracy and accuracy of a measuring instrument is able to perform its measuring function ([Hong et al., 2019](#); [Torbat & Zarei, 2018](#)). A development result is said to be valid if the product is based on adequate theory (content validity) and all components of the learning product are consistently related to each other (construct validity) ([Rutta et al., 2021](#)). The results of validation in the media/design aspect show valid criteria. This can be seen in terms of appearance and programming in electronic teaching materials using Flip PDF Professional in grade V elementary school. Teaching materials are several collections of learning devices that contain several important components such as material, objectives, basic competencies, methods, evaluations, which are arranged in stages and structured in an attractive package and can make it easier for students when learning ([Mubar, 2015](#); [Rahimi & Yadollahi, 2017](#)).

The material aspect shows the results of validation with very valid criteria, the aspects assessed include: content and learning. The results of the assessment from the validator show that the electronic teaching materials using Flip PDF Professional in grade V elementary school in terms of material are very valid. Electronic teaching materials have a positive impact on teachers and students. With the teaching materials can help teachers in the learning process. Teaching materials that are made perfectly, in the sense that they have appropriate media elements and teaching materials can affect the learning atmosphere so that the learning process becomes more optimal ([Cohen et al., 2020](#); [Gupta et al., 2022](#)). In terms of language, the validation results were also obtained at 90.66%, which showed very valid criteria. The assessment on the language aspect includes aspects of text readability, straightforwardness, conformity with language rules and effective and efficient use of language. The value is given by the validator because the use of language is in accordance with the correct Indonesian language rules and in accordance with the General Guidelines for Indonesian Spelling (PUEBI), the language used is clear, easy to understand and communicative. Language use is something that needs to be considered in developing good learning media ([Fahmi et al., 2019](#); [Suniyasih et al., 2020](#)).

Based on the results of the validity of the development of electronic teaching materials using Flip PDF Professional in grade V elementary school is included in the very valid category and can be used in the learning process. This is reinforced by the results of previous research. The results of previous research show that the development of teaching materials is very feasible to use based on the assessment of the material validity validator 95% with a very valid category, media validity 92.5% with a very valid category, and language validity 92.85% with a very valid category ([Yulkifli et al., 2020](#)).

Practicality is something that has a practical meaning, which means that it can make it easier for someone to apply or use the product and the person becomes happy during the process of using it. Practicality means the use of media, easy to use and use ([Nurhayati & Rahardi, 2021](#); [Wu et al., 2022](#)). The practicality test of electronic teaching materials using Flip PDF Professional in grade V elementary school uses an instrument in the form of a questionnaire filled in by teachers and students later. The questionnaire sheet for the practicality test by the teacher consists of 15 statement items. The practicality test conducted by 2 teachers obtained an average score of 98.33% with a very practical category, and the questionnaire sheet for the practicality test by students consisted of 12 statement items. The results of the practicality test by 36 students obtained an average score of 93.5% with a very practical category. The assessment results show that the practicality of electronic teaching materials using Flip PDF Professional is included in the very practical category used by students and teachers in learning ([Lestari et al., 2022](#); [Nisa et al., 2020](#)).

The effectiveness of electronic teaching materials using Flip PDF Professional in grade V elementary schools is carried out after the validity test and practicality test. The effectiveness of electronic teaching materials products using Flip PDF Professional is seen from the value of student learning outcomes that have increased after using Flip PDF Professional-based electronic teaching materials. The results of the effectiveness test on student learning outcomes based on pretest and posttest data for the results obtained before using electronic teaching materials (Pre-test) obtained an average value of 60.53 then increased after using electronic teaching materials (Post-test) obtained an average value of 78.78. As for the N-Gain score, the average value is 0.4455 with a category of more than 0.3, which means that the increase in student learning outcomes has increased moderately. From these results, it shows that electronic teaching materials using Flip PDF Professional in grade V elementary schools are effective enough to improve student learning outcomes.

The implications of the results of this research indicate that using Flip PDF Professional as an interactive electronic learning tool can increase student involvement in learning Citizenship Education. Interactive material is able to attract students' attention, making them more focused and active in the learning process. The implementation of this technology supports the development of students' digital literacy, which is an important skill in the digital era. They not only learn Citizenship Education content but also hone technology navigation skills. However, this research also has limitations, the application of technology-based learning materials is very dependent on the existence of adequate internet connectivity, hardware and software. Technical problems can hinder the smooth learning process. Additionally, this study may only evaluate the impact of using Flip PDF Professional in the short term. Long-term effects on students' learning or their study habits cannot be determined.

#### 4. CONCLUSION

This research is a development research that produces interactive electronic teaching materials using Flip PDF Professional. Based on the development, validity test, practicality test and effectiveness test that have been carried out, the following conclusions can be drawn: 1) The validity test of electronic teaching materials using Flip PDF Professional in grade V elementary schools showed very valid results. These results indicate that the teaching materials are feasible and can be used as electronic teaching materials in grade V elementary schools. 2) The results of the practicality of electronic teaching materials using Flip PDF Professional in grade V elementary schools show "very practical" criteria from teachers. This shows that the teaching materials are very practical to be applied in elementary schools. 3) The results of the effectiveness test of electronic teaching materials using Flip PDF Professional in grade V elementary school show that this teaching material is effective in improving student learning outcomes. This shows that the electronic teaching materials are effective in improving student learning outcomes.

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