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E-Module Based on *Tri Kaya Parisudha* Effectively Improves Science Learning Outcomes

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ABSTRAK

Buku tematik pada pembelajaran IPA di sekolah dasar masih berbentuk cetak sehingga kegiatan pembelajaran belum optimal memfasilitasi berbagai jenis gaya belajar dan belum menginterasikan karakter berbasis kearifan lokal Bali Tri Kaya Parisudha. Penelitian ini bertujuan untuk menciptakan e-modul berbasis Tri Kaya Parisudha pada pembelajaran IPA tema lingkungan sahabatku untuk siswa kelas V SD. Jenis penelitian merupakan penelitian pengembangan dengan model ADDIE. Subjek penelitian adalah ahli media, materi, bahasa. Subjek uji coba 35 orang siswa. Metode pengumpulan data kuesioner dan tes hasil belajar. Instrumen pengumpulan data pada kuesioner. Analisis data dekriptif kuantitatif dan kualitatif. Hasil penelitian ini menunjukkan aspek materi 5.00 sangat baik, aspek media 5.00 sangat baik, aspek bahasa 5.00 sangat baik. Kepraktisan 100% sangat praktis dan hasil uji efektif berdasarkan t-test satu sampel dengan hasil t-hitung 13.45 > t-tabel 2.03 artinya t-hitung lebih besar dari t-tabel dan berdasarkan signifikasni lebih kecil yakni 0.00 < 0.05 artinya terdapat peningkatan rata-rata hasil belajar IPA siswa sekolah dasar menggunakan e-modul berbasis Tri Kaya Parisudha Pada Pembelajaran IPA Tema Lingkungan Sahabatku. Implikasi penelitian ini diharapkan dapat membantu siswa mengatasi kesulitan dalam pembelajaran IPA.

ABSTRACT

Thematic book on science learning in elementary schools is still printed, so learning activities have not been optimal in facilitating various learning styles and have not yet integrated characters based on Balinese local wisdom *Tri Kaya Parisudha*. Therefore, this study aims to produce an e-module to determine its validity, practicality, and effectiveness. The research subjects are media, material, and language experts. The test subjects were 35 students. Questionnaire data collection methods and practicality and learning outcomes test for effectiveness. The data collection instrument in the questionnaire consists of; media instruments, materials, linguists, and learning outcomes instruments in the form of multiple-choice tests—analysis of quantitative and qualitative descriptive data. The results of this study are; E-Module Based on *Tri Kaya Parisudha* in Science Learning with the theme of My Friend's Environment for 5th Grade Elementary School Students through the ADDIE Model. E-Modul validity results; material 5.00 is very good; media 5.00 is very good; language 5.00 is very good. 100% practicality is very practical, and the effective test results are based on one sample t-test with the results of t-count 13.45 > t-table 2.03, meaning that t-count is greater than t-table and based on a smaller significance, namely 0.00 < 0.05, meaning that there is an increase in the average science learning outcomes of elementary school students using e-modules based on *Tri Kaya Parisudha* in the environmental theme of my friend's science learning.

1. INTRODUCTION

During the Covid-19 pandemic, learning is carried out through online activities. During the Covid-19 period, the learning process will be easier using the appropriate media (Diningrat et al., 2020; Prabawa & Restami, 2020). Online learning is very useful for exploring the potential benefits of e-Learning and using the internet to access learning materials (Agustin, 2020; Yulianingsih et al., 2020). In addition, to interact with the material instructors (teachers or lecturers) and other learners to get support during the learning process, which aims to gain knowledge, create understanding, and develop from the learning experience (Rizal et al., 2021;

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Sakti, 2021). Therefore, the most important role of teachers in online learning is to prepare teaching materials that are packaged in teaching materials and can be accessed by the internet.

However, there are obstacles regarding the implementation of science learning because teaching materials are still focused on cognitive aspects, which causes science to be boring for students because they memorize concepts, facts, and laws and do not interact with character education in science learning. After all, character education was only charged with two subjects, religion and civics (Sutarmi & Suarjana, 2017; Sutarningsih, 2022). Based on the results of interviews with classroom teachers on October 12, 2021, the teaching materials used by teachers are still in print, so they do not train students in technology-based skills. It is because student books do not have video features and interesting pictures. Used by fifth graders is the 2013 curriculum book published by the government so that it is not following the characteristics of students, and the contents of the science book do not contain the application of the character values of Balinese local wisdom such as *Tri Kaya Parisudha*. The results of observations of classroom teachers and students when online learning activities took place obtained the results that teachers at SD N 1 Cempaga already had gadgets or computers but had not been able to use these tools in making electronic teaching materials because of age limitations that were not young anymore, causing a lack of practice in use applications to create e-modules and fifth-grade students of SD N 1 Cempaga in online learning are facilitated by gadgets. Some are even facilitated by laptops by their parents so that when the e-module has been created, students can easily use the e-module as teaching material, and) the internet network around Cempaga village is quite stable. Based on the study of documents to obtain an overview of the science learning book, My Friends Environment Theme used by students. It was found that the science learning books for fifth graders of SD N 1 Cempaga were in printed form and had not been able to train 21st-century skills, namely Information and Communication Technology skills and fifth-grade students of SD N 1 Cempaga in online learning facilitated by gadgets and some were even facilitated by laptops by their parents. There are no interesting features that cause students' to lack interest in carrying out scientific literacy activities. The book's contents do not synchronize between cognitive, affective, and psychomotor, so the character values based on Balinese local wisdom such as *Tri Kaya Parisudha* and scientific practices are not yet visible.

One of the steps that teachers need to take is to develop teaching materials. Developing teaching materials during online learning can be packaged into learning modules where the manufacture of E-modules can be designed through various technologies (Tamami, 2021). E-modules are considered important in distance learning as a self-study guide for students because E-modules allow learning to occur not only in the classroom but also outside the classroom (Groth et al., 2018; M. W. A. Pramana et al., 2020). The e-module can control the content being studied because it was designed by the teacher to adapt to the planned curriculum. This e-module is designed to use an electronic format so that it can be used through various devices such as computers, laptops, and smartphones. Learning modules are made easier by the digitalization era in the 21st century (Pinontoan et al., 2021; Suprihatin & Manik, 2019). The material in the e-module can be packaged with character integration. E-learning modules can be inserted positive character values into every aspect of learning (Darmayasa et al., 2018). The character integrated with the e-module can be sourced from local wisdom in the area where the student comes from, such as in Bali, before the character was embedded in a person by applying local wisdom, one of the local wisdom in Bali is *Tri Kaya Parisudha*. Suciani, Suwantra, and Suarjana *Tri Kaya Parisudha* are local wisdom that is closely related to the daily life of students in the culture of thinking, speaking, and behaving properly and correctly (Suciani et al., 2019).

There is a gap between the lack of teaching materials that use technological sophistication in their manufacture and the lack of integrating characters in teaching materials. Previous research findings stated that e-modules in science learning needed to be carried out during the current covid-19 pandemic to help students understand learning (Vitrianingsih et al., 2021). The integrated e-module of Islamic values is suitable for respiratory system learning activities with a very good assessment. The e-module can be accessed anywhere and anytime on an android smartphone (Larasati et al., 2020). The results of module development with the results of validity, practicality, and effectiveness tests, the integrated thematic module developed for fifth-grade elementary school students have been able to meet the feasibility aspect for use (Riwanti & Hidayati, 2019). The difference in the e-module development that will be implemented is the e-module with the ADDIE development model based on *Tri Kaya Parisudha*. The advantages of developing e-modules compared to print modules are that they are easy to use by students because most students already have smartphones through parental assistance. This e-module is interactive, makes navigation easier, can display or load images, audio, video, and animation, and can be supplemented by formative tests that enable immediate automatic feedback activities. In addition to the learning materials contained in e-modules with the advantage of being more interactive, containing images, audio, video, animation, and equipped with tests to measure students' ability to absorb the content of the material, the content of learning materials can also contain good habits. in everyday life as taught in *Tri Kaya Parisudha*. This study aims to create an e-module based on *Tri Kaya Parisudha* in science learning with the theme of my best friend environment for fifth graders at SD N 1 Cempaga using the ADDIE development model.

2. METHOD

Questionnaire data collection methods are used to obtain validity, practicality, and effective learning outcomes tests. The subjects of developing an e-module based on *Tri Kaya Parisudha* in science learning with the theme of my best friend environment for fifth-grade elementary school students consist of experts and students. In more detail, the question expert is an expert in the field of teaching materials to validate the feasibility of the material, language, and media. At the same time, the students consisted of 9 students for the small group test and 35 students to measure the practicality and effectiveness of using the *Tri Kaya Parisudha*-Based e-module in the science learning of My Friends Environment Theme. The development model used is the ADDIE model consisting of five main steps, namely analysis, design, development, implementation, and evaluation (Adán et al., 2020; Mahardika et al., 2021; Wicaksana et al., 2020). An overview of the design for developing an E-Module based on *Tri Kaya Parisudha* in science learning in the My Friends Environment Theme is presented in Figure 1.

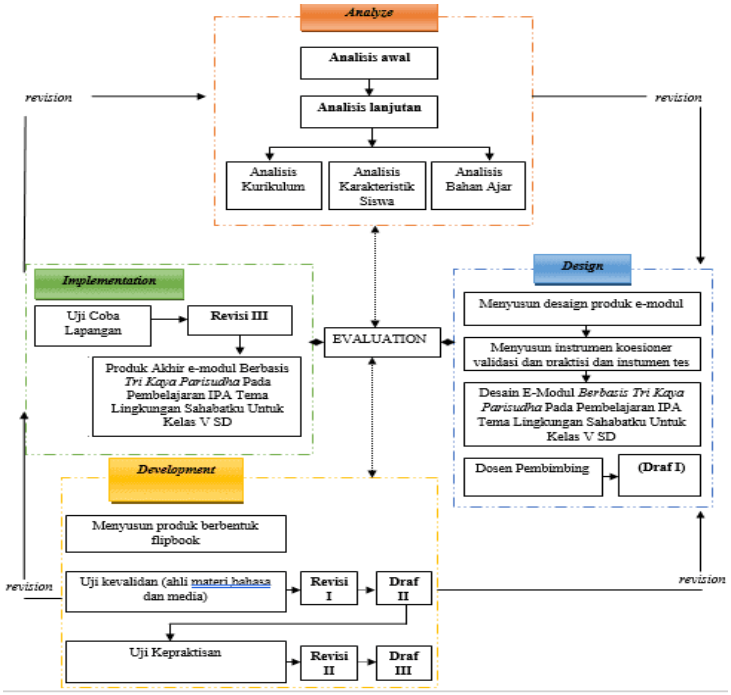

Figure 1. The Research Procedure for Developing an e-Module Based on *Tri Kaya Parisudha* in Science Learning on the Theme of my Friend's Environment

The first stage in the ADDIE model was an initial analysis stage, namely a needs analysis of the e-module based on *Tri Kaya Parisudha* in science learning with the Friends of My Environment Theme for fifth-grade elementary school students. The further analysis consisted of an analysis of the curriculum used, namely the 2013 curriculum, the characteristics of students in fifth grade at SD N 1 Cempaga already have gadgets or computers so that e-modules can be given in learning activities, and the teaching materials used in schools are still in print and not yet loaded with Triads. Kaya Parisudha so that the development of teaching materials in the form of e-modules was held in the two design stages. At this stage, the e-module design is carried out by making the display design of the e-module, making the components contained in the e-module according to basic competencies, competency achievement indicators, learning objectives, teaching materials, and allocation time, compiling a validation and practitioner questionnaire instrument and compiling a learning outcome test instrument (product effectiveness test) will produce the first e-module draft. The three stages of development, this stage is the development stage, which consists of activities to compile a product in the form of an e-module, conduct a validity test (material, language, and media experts), after testing the validity of the first e-module draft, the first revision is carried out, and the draft e-module is submitted. The second module conducts a practicality test. After the practicality test of the second e-module draft, a second revision is carried out, and a third e-module draft is submitted. The four stages of implementation. At this stage, fifth-grade elementary school students carry out the effectiveness test. The five evaluation stages at this evaluation stage, analysis, and refinement activities were carried out on the development of the *Tri Kaya Parisudha*-based learning e-module in science learning with the Environmental Theme of My Friends for the fifth grade of elementary school, resulting in the final product of the *Tri Kaya Parisudha*-based e-module on science learning in the theme My Friend's Environment for the fifth grade of elementary school.

The data collection instrument in the questionnaire consists of; a media instrument consisting of aspects of text message design, picture message design, video message design, and e-module organization (Zaharah & Susilowati, 2020). The material instrument is a questionnaire consisting of aspects of curriculum, material,

language, and evaluation (I. P. A. Pramana et al., 2018). The language instrument in the form of a questionnaire consists of items; language clarity, understanding instructions for using e-modules, ease of reading text, use of punctuation marks, suitability of images with text, compatibility of video with text, clarity of sound with video (Setiawan et al., 2020). The small group test instrument in the form of a questionnaire consists of aspects of media, material, and benefits (Sari & Montessori, 2021). The instrument grid can be seen in Table 1, Table 2, and Table 3.

Table 1. Learning Media Questionnaire

No	Aspect	Indicator	Statement item number
1	Text Message Design	1. The accuracy of the type/size of letters and punctuation. 2. Readability of text 3. The accuracy of word choice 4. Text color accuracy with background	1,2,3,4,5,6
2	Picture Message Design	1. The suitability of the image with the material 2. Availability of image description 3. Images are easy to understand 4. The accuracy of the image layout	7,8,9,10
No	**Aspect**	**Indicator**	**Statement item number**
3	Video Message Design	1. The suitability of the video with the material 2. Videos are easy to understand 3. Clarity of information	11,12,13
4	Organizing E-Modules	1. E-module is easy to use 2. Navigation consistency 3. Clarity of instructions for use	14,15,16

Table 2. Learning Material Questionnaire

No	Aspect	Indicator	Statement item number
1	Curriculum	1. Identity 2. Learning Indicators 3. Learning Objectives	1,2,3,4,5
2	Material	1. The suitability of the material content 2. Material Systematics 3. The level of ease and depth of the material	6,7,8,9,10, 11,12,13
4	Evaluation	1. The difficulty level of questions 2. Clarity of question formulation	14,15,16

Table 3. Language Questionnaire

Aspect	Rated Category
Language	1. Language Clarity 2. Understand the Instructions for Using the E-Module 3. Ease of Reading Text 4. Use of Punctuation 5. Compatibility of Images with Text 6. Video Compatibility with Text 7. Clarity of Voice in the Video

Test the validity of the media, material, language, and small group instruments with the Gregory formula with this instrument in the form of a scale of five, which consists of a score of (1) very poor, (2) less, (3) sufficient, (4) good, and (5) very good (Mukholifah et al., 2020). While the instrument to measure effectiveness is in the form of a multiple choice test whose indicators consist of analyzing the factors that affect the reduced availability of groundwater, analyzing the differences between groundwater and surface water, analyzing activities that can ensure the availability of water, analyzing the impact of the water cycle on life on earth,

analyzing natural disasters related to the water cycle, namely drought, and analyzing how to deal with natural disasters related to the water cycle, namely drought. The results of the instrument validity test can be seen in Table 4. Based on Table 4, the results of the E-Module Instrument Validity Test Based on *Tri Kaya Parisudha* in the Science Learning Theme of My Friends Environment, all instruments are stated to be relevant and are in the very high category.

Table 4. Results of Testing the Validity of E-Module Instruments Based on *Tri Kaya Parisudha* in Science Learning on the Environmental Theme of My Friends

No	Instrument	First Expert		Second Expert		Validity Results	Category
		Number of Relevant Items	Number of Irrelevant Items	Number of Relevant Items	Number of Irrelevant Items		
1	Language	7	-	7	-	1	Very high
2	Learning Media	16	-	16	-	1	Very high
3	Learning Materials	16	-	16	-	1	Very high
4	Multiple Choice Test	20	-	20	-	1	Very high

Tabel 5. Hasil Uji Validitas Instrumen E-Modul Berbasis *Tri Kaya Parisudha* Pada Pembelajaran IPA Tema Lingkungan Sahabatku

No	Instrument	Reliability result	Category
1	Language	100%	Reliable
2	Learning Media	100%	Reliable
3	Learning materials	100%	Reliable
5	Multiple Choice Test	100%	Reliable

Table 5 shows the E-Module Instrument Validity Test results based on *Tri Kaya Parisudha* in Science Learning on the Environmental Theme of My Friends using percentages of agreements (Rahmawati & Trimulyono, 2021). Based on the table above, the language, media, material, and multiple choice instrument obtained 100% reliability in the reliable category. Test the validity and reliability of multiple-choice test items carried out after being declared valid by judges, tested on 75 students in elementary schools. The item validity test uses biserial point analysis techniques, and reliability uses Kuder and Richardson and 20 techniques. The results of item validity stated that 20 multiple choice items were valid or valid because the results of the validity of the r-count items > greater than the r-table, namely 0.188. At the same time, the multiple-choice test reliability results are 0.87, classified as very high test reliability. The data analysis technique in developing this E-module uses qualitative and quantitative descriptive analysis. The qualitative descriptive analysis technique explains and analyses the data expressed in sentences and words (Suharman et al., 2020). Quantitative descriptive analysis in this study was obtained from the results of data collection in the form of multiple-choice tests to test the effectiveness and validity of e-modules consisting of; the media expert test, subject content expert, and linguist, small group test, practicality test, which is then processed in the form of numbers, percentages, and categorized into certain groups.

3. RESULT AND DISCUSSION

Result

The e-module designed is an E-Modul based on *Tri Kaya Parisudha* in science learning on the My Friends Environment Theme. The design is designed with Microsoft Office Word, the next step is to convert it to pdf format, and the final stage is the file that has been completed converted to flip pdf corporate that can be opened on the web. The stages of preparing the E-module product are presented in Figure 2.

The results of the development of an E-module based on *Tri Kaya Parisudha* in Science Learning on the Environmental Theme of My Friends consists of activities in compiling a product in the form of an e-module in the form of a flip-book, conducting a validity test (material, language and media experts). The e-module that has been developed is an E-Modul based on *Tri Kaya Parisudha* in science learning on the My Friends Environment Theme, the next step is to convert it into pdf format, and the final step is to convert the completed file into a corporate flip pdf which can be opened on the web. The results of the *Tri Kaya Parisudha*-Based E-Module Validity test on science learning on the My Friends Environment Theme can be seen in Table 6.

Figure 2. Design of E-Module Development Based on *Tri Kaya Parisudha* in Science Learning on the Environmental Theme of My Friends

Table 6. The Results of the Validity of the *Tri Kaya Parisudha*-Based E-Module in Science Learning on the Environmental Theme of My Friends

No	Aspect	Validity Results	Category
1	Language	5.00	Very good
2	Learning Media	5.00	Very good
3	Learning materials	5.00	Very good

Based on Table 3, the results of the validity of the E-Module Based on *Tri Kaya Parisudha* in the Science Learning Theme of My Friends Environment, on the aspects of language, media, and material, the validity results are 5.00 in the very high category. The small group trial in developing this e-module used nine subjects who answered the contents of the questionnaire. The results of the small group trial were analyzed, with 95.55% being in the very feasible category. The results of the practicality test using the percentage formula with 100% results are in the very practical category. Before testing the effectiveness with a one-sample t-test, a prerequisite analysis test was used to distribute the data normally. The normality test in this study used the Komogorov-Smirnov test assisted by SPSS-20. The criteria for testing data with normal distribution are if the Kolmogorov-Smirnov significance is 0.05, then H0 is accepted (normally distributed data). If the Kolmogorov-Smirnov significance score ≤ 0.05, then H0 is not accepted (abnormal data). The analysis results using the Kolmogorov-Smirnov were 0.063 ≤ 0.05, meaning that H0 is accepted (normally distributed data). This hypothesis test uses the t-test formula. The results of hypothesis testing with a one-sample t-test assisted by SPSS can be seen in Table 7.

Table 7. Results of One Sample T-Test

	T-count	Degrees Of Freedom	Significance	Average Difference
13.453	34	.000	19.57143	

Based on the t-test analysis of one sample obtained, t-count 13.45 > t-table 2.03 means t-count is greater than t-table, so Ha is accepted and based on sig. 2-tailed is smaller, namely 0.00 < 0.05, which means that H0 is rejected and Ha is accepted; there is an increase in the average science learning outcomes of fifth graders at SDN 1 Cempaga by using an e-module based on *Tri Kaya Parisudha*. At this evaluation stage, analysis and improvement activities were carried out on the development of e-modules based on *Tri Kaya Parisudha* learning in science learning on the Environmental Theme of My Friends for the fifth grade of elementary school, resulting in the final product of e-modules based on *Tri Kaya Parisudha* in science learning on the Environmental Theme of My Friends for Fifth-grade elementary school is available on the web: https://emodulipa.wixsite.com/emodulipa.

Discussion

The teaching materials teachers use in science learning in elementary schools are still in print, so they do not train students in technology-based skills. The student books do not have video features or interesting pictures. Besides, the books used by fifth-grade students are 2013 curriculum books published by the government, so they are not following the characteristics of students. Therefore, the development of the *Tri Kaya Parisudha*-Based E-module in science learning on the My Friends Environment Theme for fifth-grade elementary school students was developed using the ADDIE development model (analysis, design, development, implementation, and evaluation). Based on the material's validity results, experts obtained a validity score of 5.00 in the very good category; media experts obtained a validity score of 5.00 in the very good category; linguists obtained a validity score of 5.00 in the very good category. The results of the small group trial obtained results of 95.55 in the very feasible category. The practical test scored 100% in the very practical category. The effectiveness of using one sample t-test with the one-shot case study technique obtained E-module results based on *Tri Kaya Parisudha* In Learning Science on the theme of My Friend's Environment for fifth-grade elementary school students improves science learning outcomes. There is an increase in learning outcomes.

There is an increase in students' science learning outcomes after the implementation of learning with *Tri Kaya Parisudha*-Based E-Modules because science learning material on the benefits of the water cycle for life is packaged attractively through exercises for each basic competency. There are learning videos that students can watch to gain experience in audio-visual learning. These images match the topic of the benefits of the water cycle for life that can train visual learning styles. Learning with E-Modules is one area where technology is taking over and improving the way of learning. For example, Teachers can use different techniques such as film clippings, video clippings, commentary, advertising, and drama. Learning with E-Modules makes learning sessions more interesting than learning styles with books, and E-modules also keep students paying attention during class (Herawati & Muhtadi, 2018; Tharmar & Kalidasan, 2019). Exercise evaluation questions at the end of the sub-theme measure students' understanding and provide life values consisting of three good teachings: think well, say good, and do good (Suwindia & Wati, 2021; Winatha et al., 2018). The existence of this E-module development, of course, in addition to training students' independence in learning, students who take part in online and offline learning remain with moral personalities.

The results of developing an E-module based on *Tri Kaya Parisudha* in science learning on the theme of My Friendship Environment for fifth-grade elementary school students were declared valid, practical, and effective in line with the results of the study, namely, developing an E-module containing local wisdom in thematic learning in fifth-grade elementary schools properly for use in learning. Intensive use of online learning is needed in the era of the COVID-19 pandemic because all teaching and learning activities must be done at home. The use of E-modules can meet the needs of learning activities during a pandemic, which has been proven to increase interest, motivation, cooperation, and achievement of learning outcomes. E-modules can improve learning outcomes because e-modules can generate student interest and participation because of their attractive and simple form. Using audio and video will help for a meaningful learning experience. Images are placed near the text to help students process information (Albeltsa & Ahmad, 2020). Furthermore, the development of the local wisdom E-module is valid, appropriate, and effective. Electronic modules effectively improve learning outcomes (Larasati et al., 2020; Vitrianingsih et al., 2021). The existence of E-modules whenever learning student assignments are determined, and following students' abilities, students achieve results according to their abilities, the subject matter is more evenly distributed in one semester, and the level of education is more efficient because learning materials are arranged according to academic level, and practically accessible through electronic media computers, tablets and others, such as job sheets, video audio tutorials, and an evaluation. The study's results explained that elementary school students' science learning outcomes could surpass the minimum completeness criteria through developing science learning E-modules (Sofyan et al., 2020).

This finding is strengthened by previous research, which states that interactive e-modules on the content of science sub-theme 1 theme 8 for fifth-grade elementary school with water cycle material have very good qualifications (Pratama et al., 2021)—making E-Modules during the current covid-19 pandemic to help students understand learning (Vitrianingsih et al., 2021). The integrated e-module of Islamic values is suitable for respiratory system learning activities with a very good assessment. The e-module can be accessed anywhere and anytime on an android smartphone (Larasati et al., 2020). The existence of an e-module in science learning on the theme of My Friend's Environment for fifth-grade elementary school students, there are obstacles, namely when selecting material and linking it with one of the local wisdom, as well as in designing the E-module design so that the display can be attractive so that students are interested in understanding the material, The solution that can be implemented in the selection of materials is by determining the appropriate basic competencies through documents in the learning implementation plan and for the design of the E-module, consultation with learning media experts is carried out. In addition to the constraints and solutions, in making E-Module Based on *Tri Kaya Parisudha* in science learning on the theme of My Friend's Environment for fifth-grade elementary school students, there are limitations, namely that it is only applied to one research sample, namely the fifth-grade students of SD N 1 Cempaga, totaling 35 people and materials. learning only on science learning. The implications of this research are expected to help students overcome difficulties in learning science.

4. CONCLUSION

The development of a science learning e-module based on *Tri Kaya Parisudha* in science learning on the theme of My Friendship Environment for fifth-grade elementary school students produced through the ADDIE model (analysis, design, development, implementation, and evaluation) was declared effective based on the results of a one-sample t-test with the results t-count because there is an increase in the average science learning outcomes of fifth graders at SDN 1 Cempaga by using an e-module based on *Tri Kaya Parisudha*.

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