Pegem Journal of Education and Instruction, Vol. 14, No. 4 , 2024 (pp. 339-350)

Research Article **WWW.PEGEGOG.NET**

Leaflets Media Based on the RADEC Model and the TPACK Approach: Effectiveness on Student Basic Literacy Skills

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Abstract

Low basic literacy is a problem for students in Indonesia, especially students of the Elementary School Teacher Education Study Program at the University of Nusantara PGRI Kediri. This study aims to solve this problem by examining the effectiveness of leaflet media based on the RADEC model and the TPACK approach. This research approach uses a quasi-experimental design with nonequivalent control group design. Besides testing the effectiveness of leaflet media, this study also analyzed the practicality of the media when used by students. The results of the independent t-test it is known that there is a significant difference in the value of students' basic literacy abilities in the experimental group and the control group. From the analysis it is known that the experimental group has an N-gain index score of 0.71, meaning that it is included in the "high" N-gain classification or can be interpreted as "quite effective". Based in this study also it is known that the practicality of Leaflet media based on the RADEC model and the TPACK approach obtained a score of 88% and it can be said that it is very practical for students in the experimental group. From these results it can be the basis that leaflet media based on the RADEC model and the TPACK approach are effective for students' basic literacy skills and can be used as a reference for further research.

Keywords: Leaflet media, RADEC, TPACK, basic literacy skills

Introduction

Literacy according to the National Institute for Literacy is the ability of individuals to read, write, speak, count, and solve problems according to the level of expertise required by work, family, and society (*Public Law 102-73, the National Literacy Act 0f 1991 102nd Congress-1st Session*, n.d.). Good literacy is being able to train the ability to think critically, creatively, innovatively, and cultivate students' character (A. Akbar, 2017).

There are six foundation literacies skills that must be mastered, namely literacy, numeracy, science literacy, digital literacy, financial literacy, and cultural and citizenship literacy (World Economic Forum, 2015). The six principles that serve as a reference in implementing the school literacy movement are as follows: 1) Literacy development proceeds through predictable development stages, 2) Good literacy instruction is balanced, 3) Good literacy instruction occurs across all curricular area, 4) Reading and writing for meaning cannot be overemphasized. 5) Discussions and other oral language strategies are critical. 6) Diversity should be celebrated in classrooms and across the school (Beers et al., 2009).

Based on data from the Program for International Student Assessment (PISA) in 2018 initiated by the Organization for Economic Co-operation and Development (OECD), the literacy skills of Indonesian students are at a score of 371, below Thailand 392, Brunei Darussalam 408, Malaysia 415, and Singapore 550 (Center for Educational Assessment of the Research and Development Agency of the Ministry of Education and Culture, 2019). The low literacy of students in Indonesia compared to surrounding countries is inseparable from the role of the teacher in schools. Universities must collaborate with schools to improve students' literacy skills (Au et al., 2008). However, Literacy is considered a foundational skill for successful academic program, as civic, social, and economic participation (Alsubaie, 2022; Jang & Brutt-Griffler, 2023).

Elementary School Teacher Education Study Program University of Nusantara PGRI Kediri as a producer of

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How to cite this ar ticle: Damariswara R, Aka KA (2024). Leaflets Media Based on the RADEC Model and the TPACK Approach: Effectiveness on Student Basic Literacy Skills. Pegem Journal of Education and Instruction, Vol. 14, No. 4, 2024, 339-350

Source of support: This research was funded by a research grant from University of Nusantara PGRI Kediri

Conflict of interest: None

DOI: 10.47750/pegegog.14.04.31

Received: 13.01.2024

Accepted : 02.05.2024 **Publised :** 01.09.2024

elementary school teachers is required to produce students who are well literate.

In fact, 42% of first year students in Elementary School Teacher Education Study Program still have low literacy skills (observation in November 2022). This can be seen from the low reading culture of students, frequent miscommunication in receiving information, not being able to process data from reading results, difficulty expressing their opinions. Even though these students will become teachers in the future. Can imagine, if the teacher has low literacy skills, what about the students. Therefore, it is necessary to make efforts to improve students' literacy skills in Elementary School Teacher Education Study Program.

Increasing literacy skills can be done with the support of ideal literacy practices and environmental conditions (Fang et al., 2022; Fatmawati et al., 2022; Indrawati, 2020; Tabroni et al., 2022; Yu & Zadorozhnyy, 2022). This conditioning can be done by developing leaflet media. Leaflets are media in the form of sheets of paper with pictures and writing on them (Sabarudin et al., 2020). A good leaflet is using simple language, easy for readers to understand, the title used is interesting to read and a combination of writing and pictures, and the material is in accordance with the intended target (Pratiwi et al., 2019). The advantages of leaflet media are that they are attractive to look at, easy to understand, stimulate imagination in understanding content, and are more concise in conveying information content (Maulana, 2017). Leaflet media is effective in conveying information, thus providing understanding and increasing behavior (Dowse et al., 2011; Jaji, 2020; Piguet, 2013; D. F. Santos et al., 2022; Suriah et al., 2020; Trisnayuni et al., 2020). This media can also improve the literacy of its readers (Kastawi et al., 2022; Minutolo et al., 2022; Portella et al., 2023). This media is easy to store, economical, and can serve as a reminder for readers (Ramadhanti et al., 2019).

Actually the use of leaflet media has been widely used. The difference between this research and previous studies is that the development of this leaflet media was developed based on the read, answer, discuss, explain, and create (RADEC) learning model and a technological, pedagogical, and content knowledge (TPACK) approach.

Based on the survey, the syntax of the RADEC learning model is easily memorized by elementary and secondary education teachers (Sopandi. W, 2017; Sopandi, 2019). The RADEC learning model is a new breakthrough in education that wants to achieve 21st century competence, character, and literacy by schools or colleges (Agustin et al., 2021). This model is quite effective in improving student learning outcomes (Adriana et al., 2022; Samsudin & Firdaus, 2022; Wandani et al., 2022; Yohana et al., 2022)this research is presented as an effort to overcome various obstacles experienced by teachers and students during the COVID-19 pandemic. The researcher offers a model that can be used in virtual learning activities. Beginning with finding out the extent of the influence of the problem-based learning (PBL. This learning model can improve students' reading comprehension skills and continuous awareness (Lestari et al., 2022; Pohan et al., 2020). This model can also improve students' high thinking skills (Tulljanah & Amini, 2021; Yulianti et al., 2022). This means that the RADEC learning model can help improve student literacy skills. Before lectures begin, students are emphasized to make the habit of reading and answering questions. During lectures, students carry out discussions, presentations, and be creative.

The TPACK approach stands for technological, pedagogical, and content knowledge. TPACK is a learning principle that combines material, mastery of technology, and pedagogy (Koehler & Mishra, 2009). Currently, learning is required to use technology in all aspects, whether presenting material, teaching methods, or student activities (Aka, 2017). Media that contains TPACK can be in the form of presenting material from various technology and information sources (Mishra & Koehler, 2009)iPhone, Flickr, blogs, cloud computing, Smart Boards, YouTube, Google Earth, and GPS are just a few examples of new technologies that bombard people from all directions. As individuals people see a new technology and can appreciate its coolness, but as educators they wonder how these tools can be used for teaching. The fact that a technology is innovative and popular does not make it an educational technology. But these technologies have the potential to fundamentally change the way people think about teaching and learning. Repurposing these cool tools for educational purposes, however, is not simple. If educators are to repurpose tools and integrate them into their teaching, they require a specific kind of knowledge that is called technological pedagogical and content knowledge (TPACK, some examples that are often applied are scientific journals, web, social, giving barcodes that contain student activities, as well as practice questions that are presented in the form of Google Form links, Quizizz, and others. TPACK is effective in delivering technology-based learning (Lachner et al., 2021; J. M. Santos & Castro, 2021; Schmid et al., 2021). According to previous research TPACK can increase student activity (Fitriani, 2021). In addition, the TPACK approach can also be used as an effective alternative to online learning (Archambault, 2008; Shafira & Minsih, 2022) and can assist teachers in explaining abstract concepts so that they are more easily understood by students (Wijaya et al., 2020).

Although there have been many studies stating that leaflet media, the RADEC model, and the TPACK

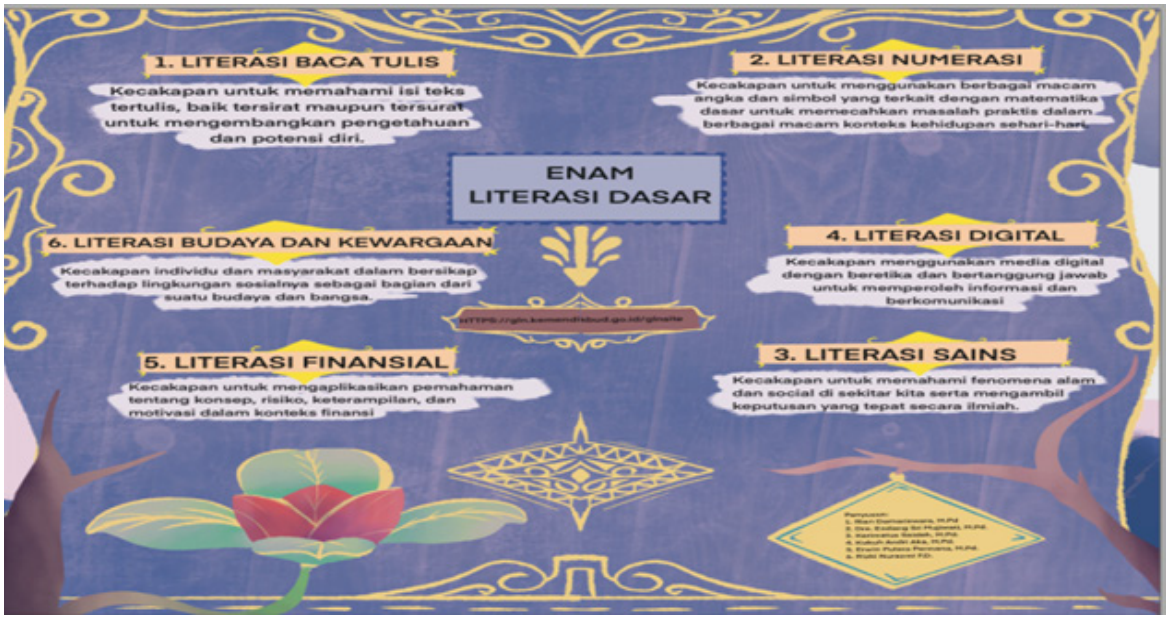

Figure 1*:* Leaflet main View (The sheet above explains the meaning of each basic literacy)

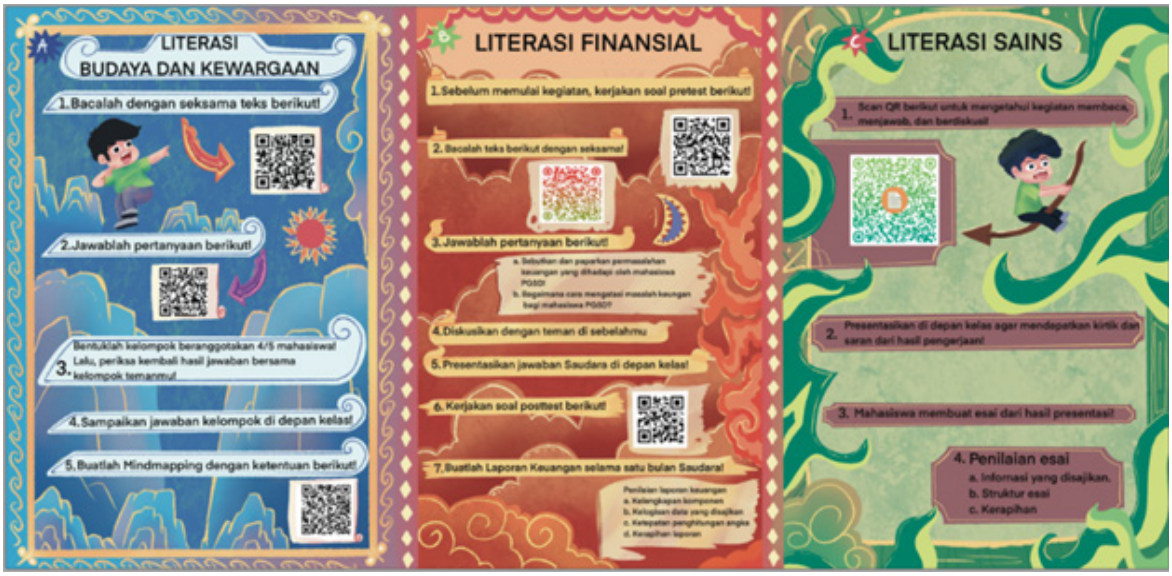

Figure 2. Display the contents of the leaflet

approach are quite effective in learning, these studies are still independent. Therefore, the researcher aims to test the effectiveness of these three variables when combined to solve the problem above. The combination in question is the effectiveness of leaflet media based on the RADEC model and the TPACK approach to students' basic literacy skills, as well as how students respond to this leaflet. It is hoped that this combination can provide benefits to subsequent researchers to carry out learning innovations and solve similar problems. The following is the media leaflet that will be tested.

Figure 2 above shows that there are read, answer, discuss, explain, and create (RADEC) activities on cultural and citizenship literacy, financial literacy, and science literacy. In addition, when reading and working on questions students also carry out literacy skills, numeracy by calculating questions on financial literacy and digital literacy when accessing (Information and Communication Technology) ICT learning resources using barcode scans which directs to internet-based learning resources. Based on the above, alternative research hypothesis is that leaflet media based on the RADEC model and the TPACK approach have an effective effect on students' basic literacy skill.

Method

Research Design

This research approach uses a quasi-experimental design with nonequivalent control group design (Sugiono, 2013; Tuckman & Harper, 2012). Nonequivalent control group design to test the effectiveness of leaflet media based RADEC model and TPACK approach on student literacy skills. Besides that a quantitative descriptive analysis was also carried out to interpret the results of student responses related to the practicality of the media during learning.

The independent variable in this study, which is also called the experimental group, is the learning treatment using leaflet media based on the RADEC model and the TPACK approach. The dependent variable in this study is student learning outcomes on literacy skills which will be measured by questions and student responses to the practicality of media which will be measured by questionnaires.

The control group is a class with a conventional learning approach. Conventional learning is learning that is usually carried out by lecturers, namely learning using power points, lectures, discussions, and questions and answers. The research design is described as follows.

$$\begin{array}{ccc} O_1 & X & O_2 \\ O_3 & & O_4 \end{array}$$

Note :

- X : Learning using leaflet media based on the RADEC Model and the TPACK approach (experimental group)
- O_1 : Pre test experimental group
- O_2 : Post test experimental group
- O_3 : Pre test control group
- O_4 : Post test control group

Participants

The participants for testing the hypothesis in this study were students of the Elementary School Teacher Education Study Program at the University of Nusantara PGRI Kediri level two for the 2022/2023 academic year. Class A for the experimental group and class B for the control group. Group A has 43 students and group B has 45 students. Then, to test the validity and reliability of questions with class C total of 45 students.

Data Collection Tools

There are two types of instruments in this study, namely questions and questionnaires. The question instrument was used to measure students' basic literacy skills and the questionnaire instrument was used to measure student responses regarding the practicality of the media. The development of this instrument begins with Defining basic literacy variables, Describe the variables into the instrument items and questions, validation by experts, then tests the item validity and reliability

The basic literacy theme developed in the item instrument is financial literacy, although the narrative of the question items to test the effectiveness of this media has the theme of financial literacy, the substance contains other basic literacy. In addition to this leaflet media, during the implementation of learning it also asks students to work on other literacy questions (figure. 2). Scoring on question Items using an assessment rubric with a range of 0-100.

There are 10 items in the questionnaire instrument to measure student responses regarding the practicality of the media, each item is measured by a Likert scale with four approval columns, namely "not agree", "less agree", "quite agree ", or "very agree". The following is a grid of questions and questionnaire questions.

Table 1: Grid of Question Items and Questionnaire Questions

No	*Aspect*	*Instrument Type*	*Items or Questions*
1	Student' Basic Literacy Skill (financial literacy)	Question Items	1) Name three financial sources that can be obtained by students!; (2) state the two sections that must exist from a financial report!; (3) Explain what is meant by social cost!; (4) state three benefits of making financial reports!; (5) Mention the order of how to make financial reports!; (6) Make a simple financial report for one month!.
2	Student Responses regarding Media Practicality	Questionnaire	(1) Is the media display attractive?; (2) Is the media size proportional and easy to carry?; (3) Is the media easy to use in lectures?; (4) Is the size and selection of media fonts appropriate?

No	Aspect	Instrument Type	Items or Questions
			(5) Do you agree that the media used is technology-based?
			(6) Is the reading theme presented interesting to read?
			(7) Can the material presented increase your literacy/knowledge?
			(8) Is the reading text relevant to the current situation?
			(9) After reading the material presented, does motivation arise to improve your literacy?
			(10) Are the sentences presented easy to understand?

Then, the test above is tested for validity and reliability. This trial was conducted on second-level students in class C. The validity calculation was carried out using the product moment correlation formula (Arikunto, 2011), if the item scores were significantly correlated with the total score at the 95% confidence level and the r count > 0.294 (n=45 respondents) and a significance value <0.05, it can be said that the question item is valid. To test the reliability using Cronbach's alpha. Based on the calculations, it shows that the two instruments are valid and reliable. Results can be viewed at this link.

Data Collection

Using valid and reliable measuring instruments, then data collection was carried out through pretest and posttest in the experimental group and the control group. The experimental group uses the application of leaflet media based on the RADEC model and the TPACK approach, the control group uses conventional learning. The pre-test questions and post-test questions can be seen in table 1 on aspects of students' basic literacy skills. After the pre-test and post-test data were obtained, the researcher also collected student response data regarding the practicality of the media, the indicators can be seen in table 1 on aspect of student responses regarding media practicality.

Data Analysis

After the data is collected, the next step is data analysis. Before the data is analyzed, the data is tested for prerequisites using normality and homogeneity tests. The normality and homogeneity tests are only for the instrument items. Testing the normality of the data in this study used the Kolmogorov-Smirnov test. For homogeneity testing using the Lavene statistical test. Then proceed with data analysis and hypothesis testing.

Hypothesis testing using the Independent T-test and N-gain. The independent t-test was carried out because the number of samples (n) of the experimental class and the control class was different. This test aimed to analyze the significance of the difference between the control and experimental groups. After knowing the difference between the two group, the N-gain score is calculated. The N-gain score is the difference between the pretest and posttest scores. The difference in scores between the pretest and posttest shows the quality of learning improvement using leaflet media in the experimental group and conventional learning in the control group. The interpretation of N-gain value (g) refers to the classification of Hake (1999) (Hake, 1999).

$$\text{N-gain} = \frac{post\ test\ score - pre\ test\ score}{ideal\ score - pre\ test\ score}$$

Table 2: Classification Normalized Gain

Quality	N_{gain}	Category
Greatly increased	g≥0.7	High
Increased	0.3<g<0.7	Medium
Quite increased	g≤0.3	Low

The N-gain value that has been obtained is then interpreted in percentage form to determine the N-gain effectiveness category. The N-gain score (%) is used as an indicator of the effectiveness of the treatment in the following formula:

$$\text{N-gain Score (\%)} = \frac{post\ test\ score - pre\ test\ score}{ideal\ score - pre\ test\ score} \text{ x } 100\ \%$$

The results of the calculation of the formula above are interpreted using the table below.

Table 3: Interpretation Category of the N-gain Effectiveness

Percentage (%)	Interpretation
<40	Ineffective
40-55	Less Effective
56-75	Quite Effective
> 76	Effective

Finally, to complete the independent test data of the t-test and N-gain, a practical analysis of student responses was carried out using the formula below.

Practicality x 100%

Then interpret using the table below.

Table 4. Interpretation of Student Response Practicality Test

No	*Score Achievement Criteria*	*Practicality Level*
1	81,00 % - 100,00 %	Very practical
2	61,00 % - 80,00 %	Quite practical
3	41,00 % - 60,00 %	Less practical
4	21,00 % - 40,00 %	Not practical
5	00,00 % - 20,00 %	Very impractical

Modification from Akbar (2013) (S. Akbar, 2013)

Findings

The control group uses learning that is usually done by lecturers (conventional learning), namely learning using power points, lectures, discussions, questions and answers. Discussion activities, questions and answers appear according to what is desired by students. Meanwhile, the experimental group used the steps of the RADEC model, namely the read, answer, discuss, explain, and create. Discussion activities are more focused according to the leaflet media guidelines. Another difference is that students have been given reading material on basic literacy and can explore independently using a QR code scan, then answer and discuss questions with the lecturer using directed questions that have been prepared on the media.

Based on the results of the pre-test and post-test of the experimental and control groups, the results of the following descriptive statistics can be presented.

The next step is to test the normality and homogeneity. The normality test uses the Kolmogorov-Smirnov test and the homogeneity test uses the lavender statistic. Here are the data.

From tables 6 and 7, it can be seen that the data collected in this study were normal and homogeneous. This means that the data has fulfilled the prerequisite test and then proceed with the calculation of the independent t-test. The following are the results of the independent t-test.

Based on the results above, it is known that Sig. The Lavene test for equality of variances is 0.023 > 0.05, meaning

Table 5: Results Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
experimental pre test	43	15.00	75.00	41.8605	13.75912
experimental post test	43	30.00	100.00	82.3256	15.32772
control pre test	45	0.00	75.00	35.6667	19.32380
control post test	45	25.00	85.00	50.1111	16.56560

Table 6: Normality Test Results

Aspect	Group	Sig. Kolmogorov-Smirnova	Conclusion
Student' Basic Literacy Skill Results	experimental pre test	0.012	Sig. 0.012 > 0.05, then normal
	experimental post test	0.010	Sig. 0.010 > 0.05, then normal
	control post test	0.200	Sig. 0.200 > 0.05, then normal
	control post test	0.200	Sig. 0.200 > 0.05, then normal

Table 7: Homogeneity Test Results

Aspect	Result	Levene Statistic	Sig.	Conclusion
Student' Basic Literacy Skill Results	Based on Mean	5.382	0.023	Sig. 0.023 > 0.05, then homogeneous

Table 8: Results of The Independent T-Test

		Levene's Test for Equality of Variances		*t-test for Equality of Means*		
F		*Sig.*	*t*	*df*	*Sig. (2-tailed)*	
Student' Basic Literacy Skill Results	Equal variances assumed	5.382	.023	10.847	86	.000
	Equal variances not assumed			10.942	77.350	.000

* Significant at level 5%

Table 8: Results of The Independent T-Test

		Levene's Test for Equality of Variances		*t-test for Equality of Means*		
F		*Sig.*	*t*	*df*	*Sig. (2-tailed)*	
Student' Basic Literacy Skill Results	Equal variances assumed	5.382	.023	10.847	86	.000
	Equal variances not assumed			10.942	77.350	.000

* Significant at level 5%

Table 10: Results of Student Responses to Media Practicality

Question	*Empiric Score*	*Max Score*	*Percentage*
Question Number 1	158	172	92%
Question Number 2	153	172	89%
Question Number 3	152	172	88%
Question Number 4	147	172	85%
Question Number 5	155	172	90%
Question Number 6	147	172	85%
Question Number 7	155	172	90%
Question Number 8	151	172	88%
Question Number 9	149	172	87%
Question Number 10	154	172	90%
Total/Average	1521	1720	88%

that the data variance between the experimental and control groups is homogeneous, so that the interpretation of the table of independent test results above is guided by the values contained in the "equal variances assumed" table. Based on the independent t-test table for the equal variances assumed section, it is known that Sig. (2-tailed) of 0.000 < 0.05, then as the basis for decision making in the independent t-test it can be concluded that there are differences in the values of students' basic literacy skills in the experimental group and the control group.

Once it is known that there is a significant difference between the experimental group and the control group, then proceed to find out the extent of the difference using the Normalized Gain calculation. The following is the data.

From the table above it is known that the experimental group using leaflet media based on the RADEC model and the TPACK approach has an N-gain index score of 0.71, meaning that it is included in the "high" N-gain classification, if converted at N-gain percent or with a score of 71%, including on the interpretation of "quite effective". In contrast to the control group which has an N-gain index score of 0.22, it means that it is included in the "low" N-gain classification, if converted at N-gain percent or with a score of 22%, it is included in the "ineffective" interpretation.

Finally, the research team also collected data related to students' responses to the practicality of this leaflet media, the following is the result data.

Based on table 10 above it is known that the practicality of Leaflet media based on the RADEC model and the TPACK approach obtained a score of 88% and it can be said that it is very practical for students in the experimental group.

Discussion

Prior to the implementation of learning, students were asked to do a pre test. When learning in the experimental class, the learning pattern refers to the RADEC model (Sopandi. W, 2017; Sopandi, 2019). Learning using the RADEC model is guided by using leaflet media. As it is known that practicing reading can improve students' literacy skills (Alexander, 2018; Genlott & Grönlund, 2013; MacArthur, 2014; Miller & Pennycuff, 2008), then learning begins with presenting text to increase student literacy (Read), the text is already available in leaflet media and links to other learning resources that can be accessed using a barcode scan, this adds to the TPACK element in the leaflet media. Media that contains TPACK can be in the form of presenting material from various technologies and information sources (Mishra & Koehler, 2009)iPhone, Flickr, blogs, cloud computing, Smart Boards,

YouTube, Google Earth, and GPS are just a few examples of new technologies that bombard people from all directions. As individuals people see a new technology and can appreciate its coolness, but as educators they wonder how these tools can be used for teaching. The fact that a technology is innovative and popular does not make it an educational technology. But these technologies have the potential to fundamentally change the way people think about teaching and learning. Repurposing these cool tools for educational purposes, however, is not simple. If educators are to repurpose tools and integrate them into their teaching, they require a specific kind of knowledge that is called technological pedagogical and content knowledge (TPACK. In the control group, actually students were also given the opportunity to read the material provided by the lecturer, but because the leaflet media was very practical, only one sheet, students were more interested in exploring further.

After the reading activity, students are directed to work on the questions to find out their understanding related to the reading text (Answer), then students have a discussion (Discuss) to test the answers to the questions, after the discussion students make presentations to share the answers to the questions (Explain), and students follow up on the understanding text in the form of a project (Create). All of these steps are contained in the commands in the leaflet (figure 2). Through these steps improve students' reading comprehension ability, continuous awareness, and students' high thinking skills (Lestari et al., 2022; Pohan et al., 2020; Tulljanah & Amini, 2021; Yulianti et al., 2022). Finally, students are asked to work on post-test questions.

Based on the steps above, it is known that leaflet media based on the RADEC model and the TPACK approach are effective for students' basic literacy skills. Media leaflets are effective in conveying information, thus providing understanding and increasing behavior (Dowse et al., 2011; Jaji, 2020; Piguet, 2013; D. F. Santos et al., 2022; Suriah et al., 2020; Trisnayuni et al., 2020). This media can also improve the literacy of its readers (Kastawi et al., 2022; Minutolo et al., 2022; Portella et al., 2023). This media is easy to store, economical, and can serve as a reminder for readers (Ramadhanti et al., 2019).

Learning was also carried out in the control class, the pre-test was carried out before learning and the post-test was carried out after learning. The difference is that during learning, the lecturer uses a conventional model, namely the usual learning steps (Degeng, 2001). Learning only using power points, lectures, discussions, and questions and answers. In the control class, students were given the opportunity to ask and answer questions with the lecturer, but it seemed they didn't ask many questions. When asked to add other learning resources, it was seen that the experimental class was more focused according to what was provided in the leaflet media, while the control group searched sporadically through Google search.

The use of leaflet media based on the RADEC model and the TPACK approach turned out to have an impact on student basic literacy, apart from the independent t-test test data which showed its significance, according to student response data, students expressed interest in this media. This media does have advantages in combining various information (Rawi et al., 2019) and attract students (Winarso & Yuliyanti, 2017). In this study, leaflet media has been able to combine print media with ICT elements, such as scanning barcodes to read text, questions, and videos. In this process, students are also trained to use digital literacy when using media. Even so, there are some students who are still technologically backward, having difficulty using the media because they are not used to using the barcode scanning application on a smart phone.

During learning, students look enthusiastic when scanning barcodes, they seem happy to discuss (discuss) related to financial literacy questions, enthusiastically listen, respond, and provide feedback when their friends explain answers to questions from financial literacy (explain). Based on the N-gain (%) analysis, it can be seen that the posttest results only increased by 70% or are still "quite effective", this is because students are not careful in mapping important information related to financial literacy. Students rely on basic abilities (past) not from information that has been read from the leaflet media. In fact, reading carefully is a very important process because it is in line with current literacy learning standards (Lapp et al., 2015). Reading literacy is not just understanding and reading texts, but also synthesizing readings to use the information. Reading literacy is a skill that students must continue to develop (Damaianti et al., 2020).

Even though this media only looks like one sheet, because it is based on TPACK, this media is able to store various secondary sources via barcode scanning. Students love designs like this. Students want to explore further related content. This was evident from the media that wanted to be taken home and were not willing to be collected again. Media that contains TPACK can be in the form of presenting material from various technology and information sources (Mishra & Koehler, 2009)iPhone, Flickr, blogs, cloud computing, Smart Boards, YouTube, Google Earth, and GPS are just a few examples of new technologies that bombard people from all directions. As individuals people see a new technology and can appreciate its coolness, but as educators they wonder how these tools can be used for teaching. The fact that a technology is innovative and popular does not

make it an educational technology***. But these technologies have the potential to fundamentally change the way people think about teaching and learning. Repurposing these cool tools for educational purposes, however, is not simple. If educators are to repurpose tools and integrate them into their teaching, they require a specific kind of knowledge that is called technological pedagogical and content knowledge (TPACK.***

Students are still not able to create optimally as a follow-up to activities (create). The project presented is still minimalist, namely in the form of a student financial journal for one month. Students do not make detailed, interesting, and factual. Students tend to work on collecting assignments only. However, the important points in the test item questions, namely the journal in the form of incoming and outgoing cash flows, already exist.

In general, this leaflet media has had a positive impact on student literacy outcomes. Through the use of TPACK by scanning the QR code, students get various alternative ICT-based learning resources and carry out activities that are directed from the sequence of RADEC activities. In discussion activities, students become more knowledgeable in conducting discussions. This is in accordance with the theory that Leaflet media is effective in conveying information, thus providing understanding and increasing behavior (Dowse et al., 2011; Jaji, 2020; Piguet, 2013; D. F. Santos et al., 2022; Suriah et al., 2020; Trisnayuni et al., 2020). This media can also improve the literacy of its readers (Kastawi et al., 2022; Minutolo et al., 2022; Portella et al., 2023)

This media is here as a solution to increase literacy related to the world of students which is packaged in a practical, interesting way, and accommodates basic literacy skills. This media contains a sequence of activities that refers to the RADEC model and contains barcodes as an embodiment of the TPACK approach. In addition, the content presented is close to the world of students.

Conclusion

This study aims to solve this problem by examining the effectiveness of leaflet media based on the RADEC model and the TPACK approach. This research approach uses a quasi-experimental design with nonequivalent control group design. The control group uses learning that is usually done by lecturers with using power points, lectures, discussions, questions and answers. The experimental group used the steps of the RADEC model, namely the read, answer, discuss, explain, and create.

The average student' literacy skills in the control group was 50.11, while in the experimental group it was 82.33. The results of the independent t-test it is known that Sig. (2-tailed) of 0.000 <0.05, so it can be concluded that there is a significant difference in the value of students' basic literacy abilities in the experimental group and the control group. From the analysis it is known that the experimental group using leaflet media based on the RADEC model and the TPACK approach has an N-gain index score of 0.71, meaning that it is included in the "high" N-gain classification or can be interpreted as "quite effective". Based in this study also it is known that the practicality of Leaflet media based on the RADEC model and the TPACK approach obtained a score of 88% and it can be said that it is very practical for students in the experimental group.

The RADEC model and the TPACK approach embedded in leaflet media make this media very effective. Through the RADEC model, students' basic literacy is trained through reading, answering, discussing, explaining, and creating activities in the leaflet (figure 2). Through the TPACK approach, students are trained to explore leaflet media using a barcode scan which then leads to various ICT-based learning resources, so that even though this media seems to be only in the form of one sheet, it can accommodate a variety of other learning resources.

Even so, lecturers must anticipate if there are problems with students not having adequate internet access, because this leaflet media requires internet access to open learning resources and the sequence of learning steps.

Suggestion

From these results it can be the basis that leaflet media based on the RADEC model and the TPACK approach are effective for students' basic literacy skills and can be used as a reference for further research. This leaflet media is very flexible, so in further research other researcher can use other variables, such as problem-based learning or project-based learning as the steps. However, for the TPACK variable it is highly recommended to always be present in various media, including this leaflet media. In order for the reading material to be more contextual and meaningful for students, future researchers are expected to be able to add various learning resources that are in line with student trends. Currently, technology is increasingly sophisticated, instead of using TPACK, only scanning barcodes that point to sources on the internet, it is better if the next researcher can innovate on the concept of augmented reality. The next researcher is also expected to be able to pay attention to the size of the barcode scan so that it is easier for users to access.

Limitation

The limitations of this study are the research design which only uses the Pre-test-Post-test one group design, the

narrative of pre-test and post-test questions only uses the theme of financial literacy, and the use of barcode scans on leaflet media can be effective if students have internet data quota.

Acknowledgement

Thanks are conveyed to all parties who have contributed to this research and in particular to the University of Nusantara PGRI Kediri which has provided funding for this research grant.

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