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THE EFFECT OF THE RADEC LEARNING MODEL ASSISTED BY E-MODULES ON CULTURAL DIVERSITY ON THE MULTICULTURAL UNDERSTANDING AND TOLERANT ATTITUDES

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Abstract
This study aims to describe the implementation of the RADEC learning model (LM) assisted by e-modules on cultural diversity and to examine its effect on the multicultural understanding and tolerant attitudes attitudes of fourth-grade elementary school students. It also compares the improvement of both variables between students taught using the RADEC LM assisted by e-modules on cultural diversity and those taught using the expository learning model. The study employs a quasi-experimental approach with a Non-equivalent Pretest and Posttest Control Group Design. The participants consist of fourth-grade students from two elementary schools in Waringinkurung District, Serang Regency, Banten Province. Data are collected through observations, questionnaires, and essay tests, and are analyzed using paired-sample t-tests and independent-sample t-tests with the assistance of IBM SPSS Statistics version 29. The results show that the implementation of the RADEC LM assisted by e-modules on cultural diversity is carried out effectively in the experimental group. The paired-sample t-test indicates significant effects on both multicultural understanding and tolerant attitudes attitudes, with significance values of 0.000 (Sig. < 0.05). The independent-sample t-test also demonstrates significant differences between the experimental and control groups in multicultural understanding (Sig. = 0.000 for posttest; Sig. < 0.05 for n-gain) and tolerant attitudes attitudes (Sig. = 0.000 for posttest; Sig. < 0.05 for n-gain). Furthermore, the n-gain scores of the experimental group fall into the high category for multicultural understanding (0.79) and tolerant attitudes attitudes (0.90), while the control group scores fall into the moderate category. These findings indicate that the RADEC LM assisted by e-modules on cultural diversity is effective in enhancing students' multicultural understanding and tolerant attitudes attitudes. The study implies that teachers can employ this model to strengthen literacy in reading and writing as well as digital technology skills.
Keywords: *RADEC LM; E-module; Cultural Diversity; Multicultural Understanding; Tolerant Attitudes Attitudes*

Abstrak
Penelitian ini bertujuan untuk mendeskripsikan penerapan model pembelajaran RADEC yang dibantu e-modul keragaman budaya serta menguji pengaruhnya terhadap pemahaman multikultural dan sikap toleransi siswa kelas IV sekolah dasar. Penelitian ini juga membandingkan peningkatan kedua variabel antara kelompok yang menerapkan model RADEC berbantuan e-modul keragaman budaya dan kelompok yang menggunakan model pembelajaran ekspositori. Penelitian menggunakan pendekatan kuasi eksperimen dengan desain *Non-equivalent Pretest and Posttest Control Group Design*. Partisipan penelitian terdiri atas siswa kelas IV dari dua sekolah dasar di Kecamatan Waringinkurung, Kabupaten Serang, Provinsi Banten. Pengumpulan data dilakukan melalui observasi, angket, dan tes esai, sedangkan analisis data menggunakan *paired-sample t-test* dan *independent-sample t-test* dengan bantuan aplikasi IBM SPSS Statistics versi 29. Hasil penelitian menunjukkan bahwa penerapan model RADEC berbantuan e-modul keragaman budaya terlaksana dengan baik pada kelompok eksperimen. Uji *paired-sample t-test* menunjukkan adanya pengaruh yang signifikan terhadap pemahaman multikultural dan sikap toleransi dengan nilai signifikansi sebesar 0,000 (Sig. < 0,05). Selanjutnya, uji *independent-sample t-test* membuktikan adanya perbedaan yang signifikan antara kelompok eksperimen dan kelompok kontrol baik pada pemahaman multikultural (Sig. = 0,000 untuk posttest; Sig. < 0,05 untuk n-gain) maupun sikap toleransi (Sig. = 0,000 untuk posttest; Sig. < 0,05 untuk n-gain). Selain itu, nilai n-gain kelompok eksperimen berada pada kategori tinggi untuk pemahaman multikultural (0,79) dan sikap toleransi (0,90), sedangkan kelompok kontrol berada pada kategori sedang. Temuan ini menunjukkan bahwa model RADEC berbantuan e-modul keragaman budaya efektif dalam meningkatkan pemahaman multikultural dan sikap toleransi siswa. Implikasi praktis penelitian ini adalah bahwa guru dapat memanfaatkan

model RADEC berbantuan e-modul untuk memperkuat literasi membaca dan menulis serta kemampuan literasi digital siswa.
Kata kunci: Model RADEC; E-modul; Keragaman Budaya; Pemahaman Multikultural; Sikap Toleransi

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Introduction

Indonesia's geographic circumstances are distinct. This distinction results from Indonesia's location between the continents of Asia and Australia, as well as the Pacific and Indian seas on each side. With 17,001 islands, Indonesia is the world's biggest archipelago (BPS, 2024, p. 3). It stretches from Miangas Island in the north to Rote Island in the south, and from Sabang in the west to Merauke in the east (Zakiah & Marini, 2023). This geographical wealth has also created a rich cultural diversity, with more than 1,200 ethnic groups and 694 regional languages recorded in the 2020 Population Census (BPS, 2024, p. 7). This diversity has indeed provided great benefits and elevated Indonesia's reputation in the eyes of the world. However, at the same time, it also poses complex challenges and problems that need to be resolved (Dewantara & Nurgiansah, 2021).

The main challenge of diversity in Indonesia lies in character building in the education sector. The current education system has difficulty equipping students to adapt to a culturally and ethnically diverse society, while also fostering the ability to interact and collaborate with individuals from different cultural backgrounds (Koriakina et al., 2019). Elementary school students, especially those in fourth grade, are at the stage of concrete operational cognitive development according to Piaget, where they begin to understand cause-and-effect relationships and more abstract concepts, but still need real examples and direct experiences to understand them deeply (Rabindran & Madanagopal, 2020). At this stage, learning about cultural diversity that is only theoretical tends to be less effective, because students need concrete, interactive, and contextual learning experiences to foster a strong multicultural understanding. Conventional learning methods that are monotonous and dominated by textbooks are often not interesting enough for students, resulting in their shallow understanding of Indonesia's cultural richness (Fauziah, 2021).

Based on the results of a preliminary study of 79 students in Cluster II, Waringinkurung Subdistrict, Serang Regency, regarding multicultural understanding and tolerant attitudes, it was found that the majority of students achieved the Very Good category in multicultural understanding, with a total of 39 students (49.36%) of the total respondents. In addition, 9 students (11.39%) were in the Good category, while 16 students (20.25%) were in the Fair category. However, there were still 12 students (15.19%) who were in the Poor category, and 3 students (3.79%) were in the Very Poor category. Although the proportion is not too large, the existence of this group still requires special attention because it indicates that there are students who need additional guidance in strengthening their understanding of multicultural values.

The effectiveness of the RADEC LM in learning has been supported by empirical findings from various previous studies. Previous research on the RADEC LM has focused on three main areas: (1) improving critical thinking skills (Kiska et al., 2024), (2) mastery of

science concepts (Fuadi et al., 2021), and (3) character development (religious, nationalistic, independent, integrity, and mutual cooperation) (Sukmawati et al., 2020). However, the application of the RADEC LM to develop multicultural understanding and tolerant attitudes, particularly in Serang Regency, has not been studied. This is a novelty in this study. Although the RADEC LM has been proven effective for various learning contexts, its application to cultural diversity material that requires simultaneous cognitive and affective development has not been empirically tested. Thus, this study contributes to enriching the study of the effectiveness of the RADEC LM, particularly in the context of multicultural learning and the development of tolerant attitudes attitudes.

Based on field findings and supporting data that have been presented, the issues of multicultural understanding and tolerant attitudes among students are the main focus of this study. This study aims to test the application of the RADEC LM assisted by e-modules on cultural diversity in relation to multicultural understanding and tolerant attitudes among fourth-grade elementary school students. Specifically, this study aims to: (1) analyze the effectiveness of the RADEC LM assisted by e-modules on cultural diversity in improving students' multicultural understanding, (2) evaluate the impact of the application of this model on students' attitudes of tolerant attitudes, and (3) compare the differences in multicultural understanding and attitudes of tolerant attitudes between the experimental and control groups. The results of this study are expected to contribute to the development of a digital technology-based multicultural learning model in elementary schools, while also enriching the wealth of multicultural education research in Indonesia.

Research Methods

This study adopts a quantitative approach as the main approach in the research design. One of the quantitative research methods is the experimental method, and the type of experimental research implemented in this study is a quasi-experimental design. The Non-equivalent Control Group Design involves the selection of experimental and control groups that do not use random assignment procedures (without random assignment) (Cresswell, 2023, p. 231). This design was chosen because random assignment was not possible due to the intact class structure in the school setting. The following design illustrates the comparison between the experimental and control groups used to measure the effect of the RADEC LM.

Table 1. Research Design

Kelompok	Pre-test	Treatment	Post-test
Experiment	O_1	X	O_2
Control	O_3		O_4

Description:

X : Treatment in the experimental group by applying the RADEC LM assisted by e-modules on cultural diversity
O1 : Pre-test for the experimental group
O2 : Post-test for the experimental group
O3 : Pre-test for the control group
O4 : Post-test for the control group

The population in this study was all fourth-grade elementary school students in Cluster II of Waringinkurung Subdistrict, Serang Regency. Sample selection in this study was

conducted using a simple random sampling technique. Members of the sample were randomly selected from the population without considering existing strata, as the population was assumed to be homogeneous in terms of age, curriculum, and social background. Students in the fourth grade from two schools in Cluster II, Waringinkurung District, made up the study's sample. The experimental group consisted of 40 students, while the control group consisted of 39 students. Tests were used to get data on intercultural comprehension, questionnaires were used to gather data on tolerant attitudes, and observation sheets and questionnaires were used to gather data on the RADEC LM's implementation with the use of the cultural diversity e-module. Content validity was established using expert judgment from academic lecturers, and item validity was further examined through item analysis. To measure the validity of the research instruments, a validity test was conducted, with 17 out of 20 statements declared valid, and the reliability test of the tolerant attitudes questionnaire is presented in the following table.

Table 2. Reliability Test Results

	Cronbach's alpha	**N of item**
Multicultural Understanding Pretest	.935	10
Multicultural Understanding Posttest	.898	10
Tolerant Attitude Questionnaire	.945	17

(Source: results of pre-test reliability testing using IBM SPSS version 29, 2025)

Data collection was conducted over a period of ten days, during which the experimental group received the treatment across six instructional sessions. Before conducting hypothesis testing, prerequisite analysis testing was first conducted. Data processing in this study used IBM SPSS version 29. Normality testing is a statistical procedure applied to assess whether a group of data follows a normal distribution or not (Ramadani & Siregar, 2024). Then, a homogeneity test was conducted to determine whether the variance of the pre-test, post-test, and N-gain data on students' multicultural understanding and tolerant attitudes was homogeneous or not. A Paired Sample T-test was applied to test the hypothesis with the condition that the data distribution must be normal. If the data did not meet the normality assumption, another option that could be used was to implement the Wilcoxon test. Hypothesis testing was carried out using IBM SPSS version 29. Finally, an N-Gain test was conducted. This test provides a general description of the increase in learning outcomes between the conditions before and after the implementation of the RADEC LM assisted by e-modules on cultural diversity and the expository model. The gain test was carried out on each group, namely the experimental group and the control group. The gain test was carried out with the support of IBM SPSS version 29. The normalized gain test (N-Gain) can be computed using the following formula.

$$N - Gain = \frac{skor\ posttest - skor\ pretest}{skor\ ideal - skor\ pretest}$$

Explanation:

N-Gain = normalized gain from both models
Ideal score = maximum score from pre-test and post-test
Pre-test score = initial test score
Post-test score = final test score

Table 3. Reliability Test Results
Hake's Normalized Gain Criteria (Wahab et al., 2021)

Nilai *N-Gain*	**Keterangan**
0,70 ≤ g ≤ 100	High
0,30 ≤ g ≤ 0,70	Medium
0,00 ≤ g ≤ 0,30	Low
g = 0,00	No increase
-1,00 ≤ g ≤ 0,00	Decrease

Results and Discussion

Implementation of the RADEC LM Assisted by E-modules on Cultural Diversity

This study applied the RADEC (Read, Answer, Discuss, Explain, Create) model assisted by e-modules on cultural diversity to improve the multicultural understanding and tolerant attitudes of fourth-grade elementary school students. The RADEC LM is designed through five systematic learning phases, starting with the reading phase, followed by the responding phase, then the collaborating phase, the explaining phase to deepen the concepts that have been learned, and ending with the innovating phase.

The reading phase (read) is implemented as a pre-learning activity that requires students to search for and explore information related to cultural diversity material, both through the cultural diversity e-module and other relevant sources before classroom learning begins.

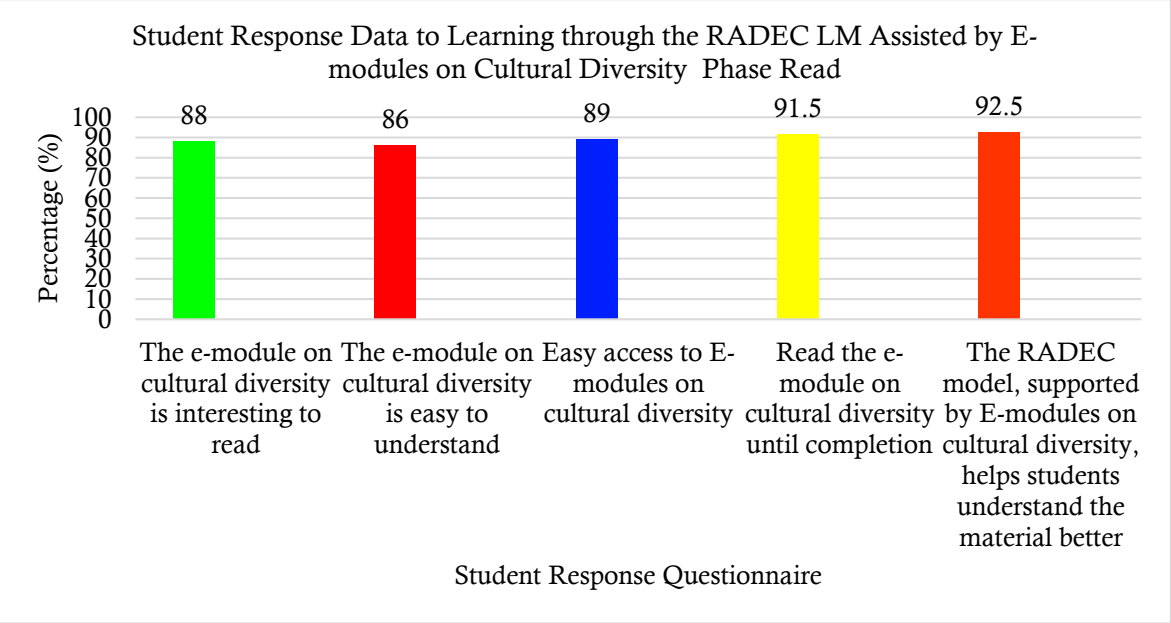

Figure. 1. Student Response Data to Learning through the RADEC LM Assisted by E-modules on Cultural Diversity Phase Read
(Source: Research Results Data, 2025)

The results of the observation show that students demonstrate positive engagement in reading e-modules on cultural diversity. This is reflected in the fig. 1 showing an increase in the percentage of students who read and understand the e-modul in each learning session, although it has not yet reached 100%. This phenomenon underscores the importance of the teacher's role in training and accustoming students to continuous reading activities, as stated by Sopandi (2021) that reading is a skill that can be improved through consistent practice.

Another interesting finding is the decrease in the number of students who seek information from sources other than the cultural diversity e-module. This indicates that the e-module is highly attractive to students (88%), easy to understand (86%), and easy to access (89%). The majority of students also stated that the RADEC LM assisted by the cultural diversity e-module was effective in helping them understand the learning material better. This is in line with the objective of the e-module as a systematic guide that helps students achieve the expected learning competencies (Mahmudah et al., 2022). Students need to be encouraged to explore information related to learning topics in a broader and more varied context from various sources such as textbooks, the internet, and other printed materials, so that their understanding of cultural diversity becomes richer and more multidimensional (Fiteriani et al., 2024; Magfirah et al., 2024).

The response phase (answer) is designed as an independent activity that requires students to complete pre-learning questions at home without the help of others, as stated by Sukardi (2022). In the answer phase, students completed pre-learning questions compiled in the form of Student Worksheets (LKPD) for learning sessions 1 to 5 and Group Worksheets (LKK) for learning session 6. The data showed a significant increase in student engagement in each session, from 87.5% in the first learning session to 97.5% in the sixth learning session. The increase in student engagement was also accompanied by an increase in material comprehension, as measured by the ability to answer pre-learning questions. The percentage of students who were able to answer all pre-learning questions increased from 75% in the first learning session to 85% in the sixth learning session. Correspondingly, there was a decrease in the percentage of students who had difficulty answering pre-learning questions from 77.5% to 45%.

In addition to questionnaires to monitor pre-learning activities (read and answer phases), students also filled out questionnaires on their responses to learning using the RADEC LM assisted by e-modules on cultural diversity. In this section, the discussion focuses on questionnaire findings related to the answer phase. The questionnaires were filled out individually by 40 students who attended the eighth meeting.

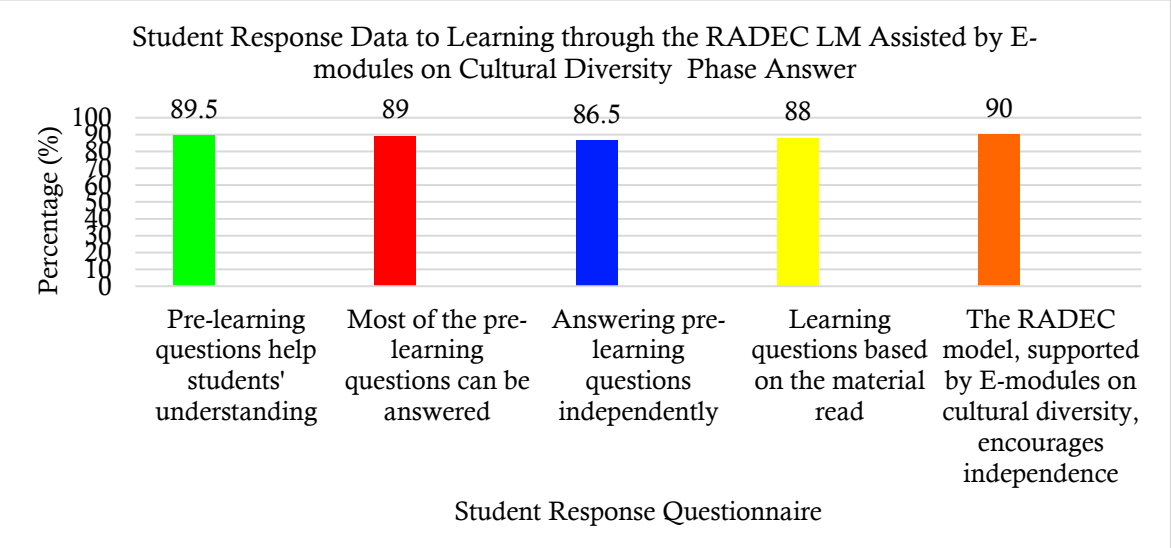

Figure. 2. Student Response Data to Learning through the RADEC LM Assisted by E-modules on Cultural Diversity Phase Answer
(Source: Research Results Data, 2025)

Based on the bar chart in Figure 2, the effectiveness of the answer phase is also supported by questionnaire data showing that 90% of students gave positive responses that the RADEC LM assisted by e-modules on cultural diversity was able to accustom them to independent learning. This finding is in line with the statement that the implementation of this model contributes significantly to increasing students' readiness to participate in learning, both in the classroom and in the laboratory (Sopandi, 2021, p. 23). However, there are challenges that need attention, namely in fostering students' independence in learning (62.5%). Some students still experience difficulties in answering questions that require critical and analytical thinking skills to understand the context of the material in depth.

The collaboration phase (discuss) is the most effective stage in improving students' multicultural understanding and tolerant attitudes. The results of the observation show that each group applied different discussion patterns, but over all they succeeded in actively involving students in the learning process.

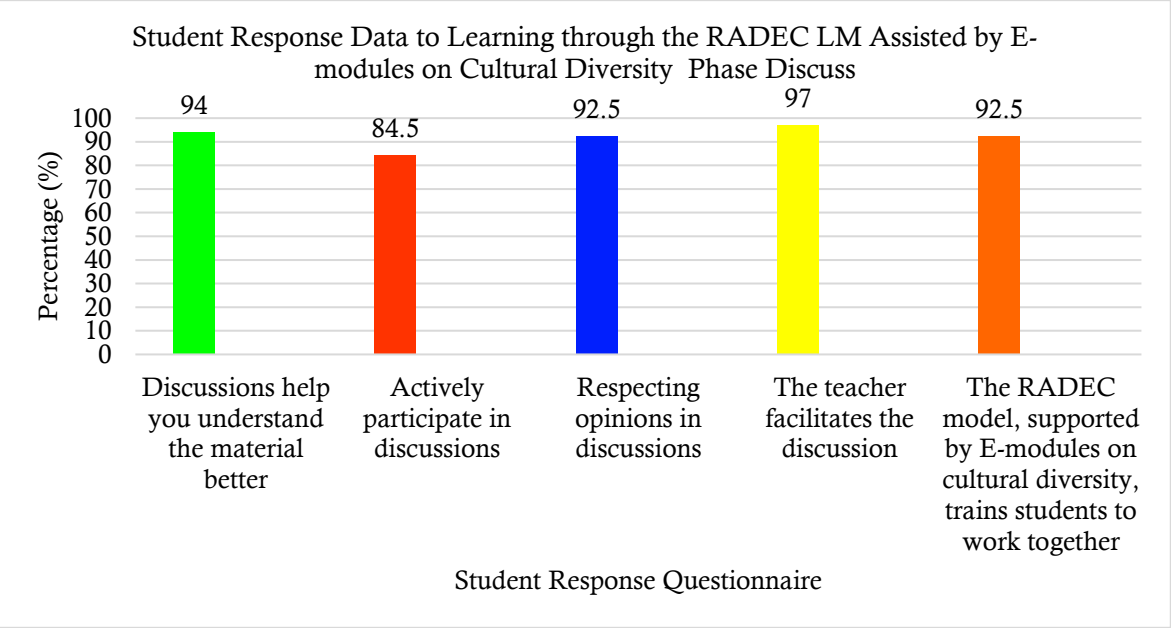

Figure 3. Student Response Data to Learning through the RADEC LM Assisted by E-modules on Cultural Diversity Phase Discuss
(Source: Research Results Data, 2025)

These findings are reinforced by student response survey data in Figure 3, which shows that 92.5% of students stated that discussion activities were effective in training their ability to work together, while 94% of students stated that discussions helped them understand the material better. This is consistent with the social constructivism hypothesis of Vygotsky, which highlights the significance of social interaction in students' cognitive growth (Rohmawatiningsih et al., 2021). However, this phase faces the challenge of the dominance of participation by one particular student or group, which can hinder the involvement of other members. To overcome this problem, a group rotation strategy was implemented in each learning session with the aim of giving all students the opportunity to practice collaborating with different students.

The phase of constructing understanding (explain) provides students with the opportunity to present the results of their group discussions in front of the class through presentations. This activity is in line with the opinion that active learning encourages students to optimize their abilities and deepen their mastery of the learning material (Lestari et al.,

2022; Setiawan et al., 2020; Sopandi, W., & Handayani, 2019). A significant improvement was seen in the data on student activity, which increased from 20% (8 students) in the first learning session to 65% (26 students) in the sixth learning session.

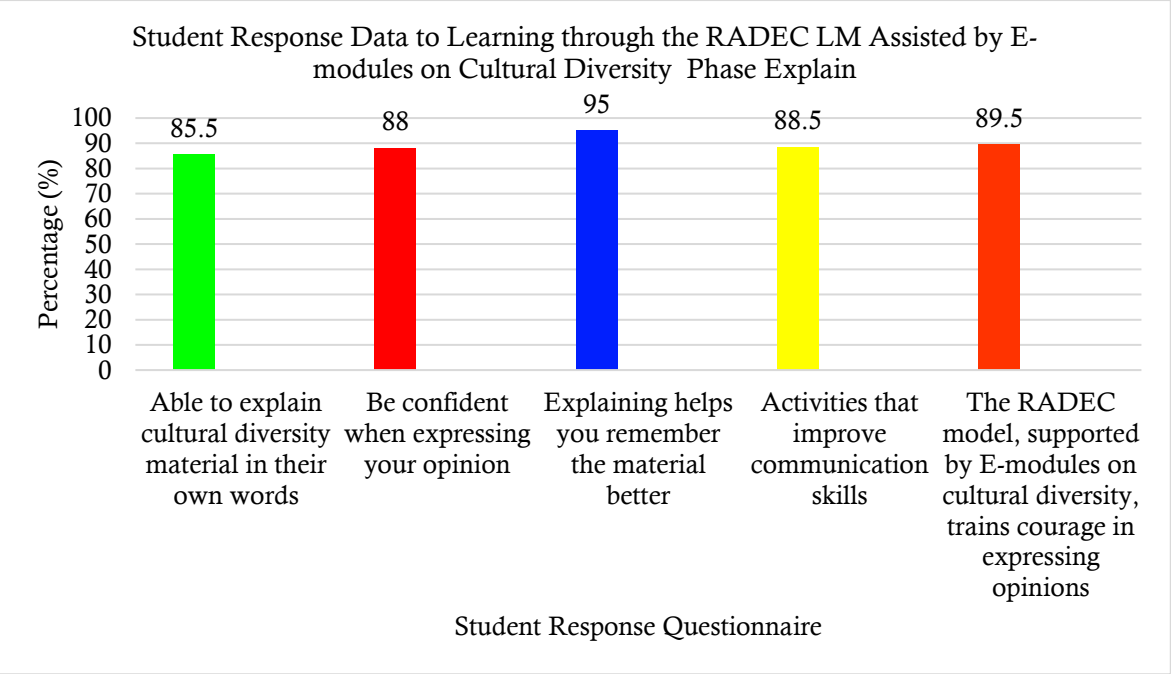

Figure 4. Student Response Data to Learning through the RADEC LM Assisted by E-modules on Cultural Diversity Phase Explain
(Source: Research Results Data, 2025)

The student response questionnaire data in Figure 4 confirms this finding by showing that 89.5% of students stated that the RADEC LM assisted by e-modules on cultural diversity was effective in training them to have the courage to express their opinions. This is in line with the opinion that this model is able to strengthen students' communication skills, both verbally and in writing (Sopandi, 2021, p.23). Although some students still showed shyness in expressing their opinions, 88% of them felt confident when given the opportunity to express their ideas in front of the class.

The innovation phase (create) is the final stage in the RADEC LM, which provides students with the opportunity to apply their understanding of cultural diversity through the creation of creative works in groups. The creative works produced are the result of mutual agreement among all group members, so this phase not only develops creativity but also strengthens students' ability to collaborate. This is evident from the student response questionnaire data, which shows that 91% of students stated that they were able to collaborate with friends in creating works. This finding is in line with the opinion that the create phase encourages students to produce creative products such as posters or short videos based on the understanding constructed in the previous phases (Anugerahwati, 2023). These observation findings are reinforced by student response data to learning through the RADEC LM assisted by the cultural diversity e-module in the create phase, as visualized in Figure 5.

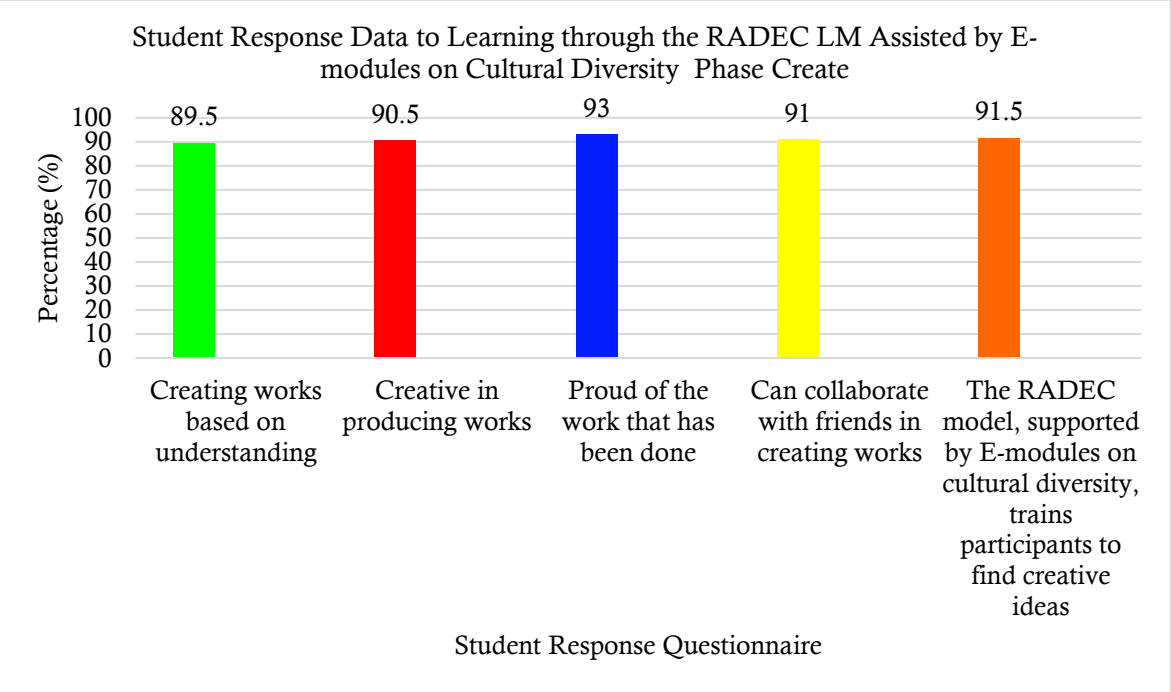

Figure 5. Student Response Data to Learning through the RADEC LM Assisted by E-modules on Cultural Diversity Phase Create
(Source: Research Results Data, 2025)

Students' ability to find and develop creative ideas has also improved, as shown by survey data revealing that 91.5% of students confirmed that the RADEC LM assisted by e-modules on cultural diversity was effective in training them to generate creative ideas. This is in line with the opinion that students are able to generate innovative ideas in accordance with their creativity, which can be realized in the form of real work, solutions to problems, or productive questions (Fauziyyah et al., 2024). Thus, it can be argued that although the create phase in this study still requires assistance from teachers, students have shown positive developments in their creative thinking skills.

Multicultural Understanding of Fourth Grade Elementary School Students

The results demonstrate that fourth grade primary school students' intercultural comprehension improved when the RADEC LM assisted by e-modules on cultural diversity was applied. This can be observed by the increase in the average pre-test score from 57.50 to 91.50 on the post-test. This accomplishment demonstrates how using the RADEC LM in conjunction with e-modules on cultural diversity may enhance students' cognitive abilities linked to intercultural comprehension. These results are in line with the basic principles of the RADEC LM, which emphasizes active student involvement in the learning process, optimization of individual potential, and comprehensive mastery of the material (Lestari et al., 2022; Setiawan et al., 2020; Sopandi, W., & Handayani, 2019).

The Shapiro-Wilk normality test showed a significance value of 0.101 in the pre-test and 0.073 in the post-test, confirming that the distribution of students' multicultural understanding data was normal. The homogeneity of variance test produced a significance value of 0.765, indicating that the variance of scores in the experimental group was homogeneous. The fulfillment of the assumptions of normality and homogeneity is an important prerequisite for continuing the analysis using the Paired Sample T-test.

Table 4. Paired Sample T-test for Multicultural Understanding in the Control Group

Average	*t*	*df*	*Sig.*
Pre-test and Post-test Multicultural Understanding Control Group	-23,170	38	0,000

(Source: Processed Data 2025)

The results of the Paired Sample T-test show a significance value of 0.000 (Sig. < 0.05), which proves that there is a very significant difference between the pre-test and post-test scores. This improvement in learning outcomes is reinforced by an N-gain value of 0.79, which is classified as high according to Hake's classification (Wahab et al., 2021). These results offer empirical proof that students' intercultural awareness may be successfully enhanced by the RADEC LM assisted by e-modules on cultural diversity. The results of this study are in line with data that show that the RADEC LM not only enhances students' conceptual comprehension but also strengthens and deepens their conceptual mastery (Fuadi et al., 2021).

Tolerant Attitudes of Fourth Grade Elementary School Students

According to research, the experimental group students' average tolerant attitudes score increased from 63.53 to 96.47. This notable rise suggests that teaching students about cultural diversity using the RADEC LM assisted by e-modules on cultural diversity has a beneficial impact on their development of attitudes toward tolerant attitudes. The distribution of students' tolerant attitudes scores satisfied the normality assumption in the first stage, according to the Shapiro-Wilk normality test, which yielded significant values of 0.053 for the pre-test data and 0.097 for the post-test data. Furthermore, testing the homogeneity of variance using Levene's Statistic produced a significance value of 0.087, indicating that the variance of the data in the experimental group was homogeneous. The fulfillment of these two parametric assumptions provided a strong basis for further analysis using the Paired Sample T-test.

Table 5. Paired Sample T-test for Tolerant Attitudes in the Experimental Group

Average	*t*	*df*	*Sig.*
Pre-test and Post-test Attitudes Toward Tolerant in the Experimental Group	-32,332	39	0,000

(Source: Processed Data 2025)

The Paired Sample T-test findings in Table 5 demonstrate a highly significant difference between the pre-test and post-test scores of students' attitudes toward tolerant attitudes, with a significance value of 0.000 (Sig. < 0.05). This demonstrates how the RADEC LM assisted by e-modules on cultural diversity enhances students' attitudes toward tolerant attitudes. This result confirms studies showing that using the RADEC LM can help students develop a variety of character traits during the learning process (Sukmawati et al., 2020).

The N-gain score of 0.90, which is classified as high, indicates that learning through the RADEC LM assisted by e-modules on cultural diversity has a significant impact on improving students' tolerant attitudes. This finding reinforces the argument that changes in tolerant attitudes require a complex internalization process, not only depending on information transfer but also involving meaningful emotional experiences and social interactions. According to Piaget's theory of cognitive development, primary school pupils are in the

concrete operational stage (ages 7–12), which explains this phenomena. Despite their limitations in abstract thinking, students in this phase actually show high cognitive flexibility in accepting new information and forming knowledge through direct and concrete experiences (Vessonen et al., 2024).

Differences in the Improvement of Multicultural Understanding of Fourth Grade Elementary School Students Taught Through the RADEC LM Assisted by E-modules on Cultural Diversity and the Expository Model

The results of the study show a significant difference in the improvement of multicultural understanding between the experimental group that applied the RADEC LM assisted by e-modules on cultural diversity and the control group that used the expository model. The experimental group experienced an increase from a score of 23.00 on the pre-test to 36.60 on the post-test, while the control group only increased from 23.00 to 28.92. The experimental group's N-gain value was 0.79 (high category), whereas the control group was 0.34 (middle category). This discrepancy suggests that the RADEC LM assisted by e-modules on cultural diversity is significantly more successful than the expository model at enhancing students' multicultural awareness. A number of methodical statistical investigations supported the veracity of these conclusions. The homogeneity test using Levene's Statistic generated a significance value of 0.679, showing that the variance of the data for both groups was homogenous and fulfilled the conditions for parametric testing. The analysis process used IBM SPSS version 29 and produced the following output.

Table 6. Independent Sample T-test for Multicultural Understanding
Independent Sample T-test and N-Gain

	t	**df**	**Sig.**
Post-test Mean	-17,227	77	0,000
N-Gain	-18,844	77	0,000

(Source: Processed Data 2025)

Table 6 shows that the experimental group's improvement in intercultural awareness was considerably greater than the control group's, with the Independent Sample T-test on the N-gain data yielding a significance value of 0.000 (Sig. < 0.05). This empirical result demonstrates that the use of RADEC LM assisted by e-modules on cultural diversity has a greater impact on students' intercultural comprehension.

The results of this study are in line with research showing that the RADEC LM is successful in helping children develop higher-order thinking abilities (Damayanti et al., 2023). Meanwhile, the effectiveness of the expository model is highly dependent on the individual characteristics of students, particularly their independence in learning and good listening skills (Lumbantoruan, 2022). This indicates that the advantages of the RADEC LM are not only limited to cognitive aspects but also include the affective dimension in the learning process. Thus, students' intercultural awareness is developed more thoroughly when the RADEC LM is applied with the help of e-modules on cultural diversity. This is true in terms of knowledge, attitudes, and skills in a holistic way.

Differences in the Improvement of Tolerant Attitudes of Fourth Grade Elementary School Students Taught Using the RADEC LM Assisted by E-modules on Cultural Diversity and the Expository Model

The experimental group that utilized the RADEC LM assisted by e-modules on cultural diversity and the control group that used the expository approach shown significantly different improvements in tolerant attitudes, according to the results. With an N-gain value of 0.90 (high category), the experimental group's score increased from 54.00 on the pre-test to 82.00 on the post-test. With an N-gain score of 0.47 (middle category), the control group only saw an increase from 54.00 to 68.92. This disparity in performance suggests that the RADEC LM assisted by e-modules on cultural diversity is significantly more successful than the expository model for enhancing students' attitudes toward tolerant attitudes. The validity of these findings is reinforced by a series of systematic statistical analyses. The homogeneity test produced a significance value of 0.586.

Table 7. Independent Sample T-test for Tolerant Attitudes
Independent Sample T-test and N-Gain

	t	df	Sig.
Post-test Mean	30, 189	77	0,000
N-Gain	34,012	77	0,000

(Source: Processed Data 2025)

According to Table 7, the Independent Sample T-test on the N-gain data yielded a significance value of 0.000 (Sig. < 0.05), indicating a statistically significant rise in tolerant attitudes in the experimental group compared to the control group. This empirical result demonstrates that students' tolerant attitudes are significantly improved when the RADEC LM assisted by e-modules on cultural diversity is implemented. The results of this study are in line with studies that confirm that e-modul in learning are able to present information in various multimedia formats that not only improve students' understanding of the material but also develop attitudes of tolerant attitudes through more contextual and meaningful learning experiences (Alyusfitri et al., 2024). Unlike expository models, which tend to be one-way and passive, the RADEC LM develops students' creativity in applying knowledge to find ideas for research, problem solving, or projects that are relevant to everyday life (Sopandi, 2021, p. 23). Thus, each phase in the RADEC LM contributes synergistically in shaping an attitude of tolerant attitudes that is not only understood cognitively but also internalized in students' attitudes and behavior.

In this context, the cultural diversity e-module integrated with the RADEC LM assisted by e-modules on cultural diversity acts as a cognitive and affective bridge that connects theoretical information with students' real lives. The visualization of cultural diversity presented in the e-module becomes an effective emotional stimulus in raising awareness and empathy towards the plurality of Indonesian society. As stated by (Alyusfitri et al., 2024), the integration of various multimedia elements such as text, images, animations, audio, and video in e-modul can accommodate various learning styles of students, whether visual, auditory, or kinesthetic. This diversity of presentation formats provides a richer and more meaningful learning experience compared to expository models that are limited to verbal explanations and static text. Thus, the combination of the RADEC LM and the e-modules on cultural diversity not only improves cognitive understanding but also facilitates the development of the affective dimension that is essential in shaping students' attitudes of tolerant attitudes.

Conclusion

The application of the RADEC LM assisted by e-modules on cultural diversity, has a significant impact on enhancing fourth-grade elementary school students' multicultural understanding and tolerant attitudes, according to the findings of the data analysis and

discussion previously described. Empirical data supports this finding, demonstrating that students in the experimental group who used the RADEC LM assisted by e-modules on cultural diversity learned more than those in the control group who used the expository approach.

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