



Digitalizing Local Wisdom: The Development of Tri Hita Karana-Integrated Hypermedia for Pancasila Education

Dina Fitri Rahayu*, I Nengah Suastika, Desak Putu Parmiti

Elementary Education Study Program, Postgraduate Program

Universitas Pendidikan Ganesha, Indonesia

*Corresponding Author. Email: dinafitrirahayu@gmail.com

Abstract: This study aims to design and develop a Tri Hita Karana-based hypermedia learning resource for sixth-grade elementary school students and to evaluate its validity, practicality, and effectiveness in improving learning achievement in Pancasila Education. This research employed a Research and Development (R&D) approach using the ADDIE model, which consists of the Analysis, Design, Development, Implementation, and Evaluation stages. The validity of the developed product was assessed using the Learning Object Review Instrument (LORI) by media and subject matter experts. Practicality was evaluated through the User Experience Questionnaire (UEQ), while effectiveness was examined using a pre-experimental one-group pretest–posttest design. Data on students' learning achievement in Pancasila Education were collected through achievement tests and analyzed using a one-tailed t-test. The developed hypermedia consists of a cover page, user instructions, learning objectives, developer profile, learning materials, interactive quizzes, student reflection activities, and references. The content integrates the core concepts of Tri Hita Karana—Parhyangan, Pawongan, and Palemahan—through various multimedia elements, including text, images, audio, videos, animations, and interactive Wordwall-based quizzes connected through hyperlinks. The validation results indicated a mean score of 4.60, demonstrating that the product was highly valid. The practicality assessment yielded mean scores of 2.73 from teachers and 2.76 from students, both categorized as very practical. The effectiveness test showed a t-value of 83.467, which exceeded the critical t-value of 1.703, indicating a significant improvement in students' learning achievement after using the Tri Hita Karana-based hypermedia. These findings suggest that the developed hypermedia is valid, practical, and effective for supporting Pancasila Education learning. The study contributes to the integration of Tri Hita Karana values into interactive digital learning media, making Pancasila Education more contextual, meaningful, and relevant to character-based learning in elementary education.

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Introduction

Education plays an important role in producing a quality next generation of the nation. Amidst the rapid development of technology and information in the 21st century, an individual's adaptability and competitiveness have become very important (Mulyasa, 2021; Uno, 2022; Adnyana et al., 2025). In reality, the challenges in the world of education are still quite complex. Initial observations in several elementary schools show that student learning achievement, particularly in the subject of Pancasila Education, still needs to be improved (Asyar, 2019; Mulyasa, 2021; Mertasari, 2022).



In the context of education in Bali, local values such as Tri Hita Karana have great potential to be integrated into learning. Tri Hita Karana, which emphasizes three harmonious relationships: between humans and God (Parhyangan), between humans and others (Pawongan), and between humans and nature (Palemahan), is a life philosophy relevant for shaping student character based on Pancasila values (Suryawan, 2022; Mahendra & Kartika, 2021; Srariani, 2026).

Based on observations at SD No. 3 Kedonganan, learning is still dominated by conventional methods using picture media. The lack of engaging learning media that facilitates the development of a deep understanding of Pancasila values based on Tri Hita Karana is an obstacle. This has an impact on the lack of student enthusiasm for learning and ultimately affects their learning achievement. Based on observations and interviews with a sixth-grade homeroom teacher at SD No. 3 Kedonganan, several problems were found occurring in the learning process, particularly in Pancasila Education lessons. Some of these problems include: the use of innovative media is not yet optimal, thus failing to attract students' attention and interest in understanding the material or answering questions; the media used tends to be monotonous, causing students to feel bored in classroom learning; students are more often presented with material verbally, only through the lecture method, without being given real-life examples related to their daily lives; the use of media at school has not adapted to the curriculum and current technological developments; the use of unattractive media results in a decline in student learning achievement; and the concept of Tri Hita Karana has not yet been integrated into Pancasila Education learning at the school.

The learning achievement in Pancasila Education for sixth-grade students at SD No. 3 Kedonganan shows that 52.43% have not yet reached the minimum mastery level of 75% according to the Learning Objective Achievement Criteria. This low achievement indicates that the ongoing learning process has not been fully effective in improving students' understanding of Pancasila Education material. This problem requires an appropriate solution so that the quality of education, particularly in the subject of Pancasila Education, can continue to improve in line with the evolving needs of students.

Previous studies have shown that Tri Hita Karana-based learning can strengthen students' character, cultural values, environmental awareness, and learning outcomes in elementary education (Setyawati et al., 2022; Sukmawati et al., 2024). Other studies have also developed digital learning media, such as video, Google Sites, and hypermedia, to make elementary learning more interactive and accessible (Hidayatullah et al., 2021; Suardana et al., 2025). However, most previous studies positioned Tri Hita Karana either as a character value or contextual content, while the digital media used generally remained in the form of video, digital comics, Google Sites, or subject-specific digital materials (Setyawati et al., 2022; Sukmawati et al., 2024; Suardana et al., 2025). Research on hypermedia has mostly emphasized the interconnection of text, images, audio, video, animation, and hyperlinks to support students' understanding, but it has not specifically integrated the philosophical structure of Tri Hita Karana into Pancasila Education learning (Hidayatullah et al., 2021; Suardana et al., 2025). Therefore, there is still a research gap in developing Tri Hita Karana-integrated hypermedia that connects Parhyangan, Pawongan, and Palemahan values with interactive Pancasila Education materials for elementary school students. This study addresses that gap by developing hypermedia that combines local wisdom, multimedia interactivity, and character-based Pancasila learning in a digital format suitable for sixth-grade elementary school students.



One effective strategy to improve student learning achievement is through the development of innovative and contextual learning media. This type of media is not only capable of attracting interest but also provides a meaningful learning experience for students (Hamka, 2019; Hidayat, 2020; Zahwa, 2022; Lestari, 2024; Tanjung, 2024). In response to this challenge, the researcher innovated by developing Hypermedia containing Tri Hita Karana. Tri Hita Karana is a Balinese local wisdom concept that teaches profound harmony between humans and God (Parhyangan), humans and others (Pawongan), and humans with nature (Palemahan). These three philosophical elements serve as the main foundation for the content development and learning approach in the Hypermedia that will be developed (Supartyasa, 2022; Widyastama, 2025; Yudiana, 2025).

Effective learning media is capable of clarifying the message, attracting attention, and fostering higher learning motivation (Wahyuni, 2021; Wulandari et al., 2023; Suardana, 2025). This media is also designed to support differentiated learning, allowing students with diverse backgrounds and abilities to learn at their own pace. This study aims to produce a design and produce Tri Hita Karana-based Hypermedia to improve the learning achievement of Pancasila Education for sixth-grade elementary school students that is valid, practical, and effective. The contribution of this study lies in the development of culturally contextual hypermedia that integrates Tri Hita Karana values into Pancasila Education. This study not only provides a valid, practical, and effective digital learning product, but also offers a pedagogical model for connecting local wisdom, multimedia interactivity, and character-based learning in elementary education.

Research Method

This study employed the ADDIE development model (Analyze, Design, Development, Implementation, Evaluation) (Adeoye et al., 2024). In the Analyze stage, the researcher identified students' learning needs, curriculum demands, learning problems, and digital learning facilities through observation and interviews with the sixth-grade homeroom teacher at SD No. 3 Kedonganan. In the Design stage, the researcher designed the structure, navigation flow, learning materials, and interactive features of the hypermedia by integrating Tri Hita Karana values, namely Parhyangan, Pawongan, and Palemahan, into Pancasila Education content. In the Development stage, the hypermedia was created using Canva and connected to supporting platforms such as YouTube, Wordwall, and Padlet, followed by expert validation using the Learning Object Review Instrument (LORI). In the Implementation stage, the product was tested through one-to-one trials, small group trials, practicality tests, and a limited field trial using a one-group pretest-posttest design. In the Evaluation stage, the researcher analyzed the validity, practicality, and effectiveness data, and used the results as the basis for revising and improving the final hypermedia product.

Experts/specialists acted as validators to assess the validity of the media in terms of content and media design. The validators consisted of two expert lecturers and one practitioner (teacher). A total of 10 practitioners/teachers served as subjects for assessing the practicality of the developed media. Twelve sixth-grade students from class VI B at SD No. 3 Kedonganan were involved, divided into 3 students for one-to-one trial subjects and 9 students for small group trial subjects. Twenty-eight students from class VI A at SD No. 3 Kedonganan were used as subjects for the limited trial, which included practicality and effectiveness testing of the Hypermedia containing Tri Hita Karana. The data collection techniques used in this research on the development of Hypermedia containing Tri Hita Karana consisted of observation methods, questionnaires, and test methods.



The data analysis technique uses learning media validity tests, one-to-one tests, small group tests, practicality tests, and effectiveness tests. Product validity was analyzed based on expert judgment using the Learning Object Review Instrument (LORI), with mean scores interpreted into five criteria: 4.21–5.00 = very valid, 3.41–4.20 = valid, 2.61–3.40 = moderately valid, 1.81–2.60 = less valid, and 1.00–1.80 = invalid (Mertasari & Candiasa, 2022). Product practicality was analyzed using the User Experience Questionnaire (UEQ), covering attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. The UEQ mean scores were interpreted as follows: 2.01–3.00 = very good/very practical, 1.01–2.00 = good/practical, 0.01–1.00 = moderate, -0.99–0.00 = poor, and -3.00–1.00 = bad (Mertasari & Candiasa, 2022). Product effectiveness was tested using a paired sample t-test to compare students' pretest and posttest scores at a significance level of 0.05 (Arikunto, 2021). The improvement in students' learning achievement was further analyzed using the N-Gain Score, categorized as high if $g > 0.70$, moderate if $0.30 \leq g \leq 0.70$, and low if $g < 0.30$ (Arikunto, 2021).

Results and Discussion

The needs analysis showed that most sixth-grade students were already familiar with digital devices, particularly mobile phones, but the learning process in Pancasila Education was still dominated by verbal explanation, picture-based media, and teacher-centered instruction. The observation and interview results indicated that students needed learning media that was more visual, interactive, contextual, and easy to access. The required media characteristics included clear navigation, attractive visual presentation, short explanatory videos, interactive quizzes, and examples of Pancasila values connected to students' daily lives and Tri Hita Karana practices at school. Therefore, the developed hypermedia was designed to address these needs by combining text, images, audio, video, animation, hyperlinks, and interactive evaluation in one integrated digital learning environment.

The product designed in this development research is Hypermedia containing Tri Hita Karana to improve student learning achievement in Pancasila Education. Hypermedia containing Tri Hita Karana is a non-linear interactive medium that integrates various types of media, such as text, images, audio, video, and animation, which are interconnected through hyperlinks. The distinct advantage of Hypermedia containing Tri Hita Karana lies in its presentation of data in the form of text, images, videos, and independent practice in the form of interactive quizzes, all interconnected through hyperlinks to make it easier for students to understand the Pancasila Education material being studied. The Hypermedia containing Tri Hita Karana was developed with the assistance of the Canva application. Canva was used in this development because it supports the creation of visually attractive, structured, and accessible learning media for elementary school students. Visual-based digital media can help students understand learning content more easily because information is presented through a combination of text, images, color, icons, videos, and interactive elements (Mayer, 2021; Suardana et al., 2025; Wulandari et al., 2023).

The main medium, Hypermedia, is structured in a non-linear digital format that connects pages through navigation buttons, allowing students to study the material according to the suggested flow or explore specific sections as needed. To ensure the media can be used easily by users, the development product is equipped with user guidelines prepared in two versions: teacher guidelines and student guidelines. The teacher guidelines contain the purpose of using the media, how to access the media URL, an explanation of features and navigation buttons, and suggestions for media-based teaching strategies.

The development product also includes structured teaching materials aligned with the learning objective flow. These materials contain an explanation of the concepts regarding the interrelationship between the principles of Pancasila, the characteristics and meaning of each principle, as well as an explanation of why the practice of one principle cannot be separated from the others.



Figure 1. Hypermedia Cover



Figure 2. Learning Material



Figure 3. Interactive Evaluation

Media validity testing was conducted by a learning media expert, specifically two academics/lecturers with expertise in the field of instructional technology. The results of the media expert's assessment of the developed product are presented in the following table.

Table 1. Results of the Learning Media Expert Assessment

	Assesment		Mean
	Judges 1	Judges 2	
Total Score	35	39	37
Mean Score	4,4	4,9	4,6

Based on the data from the media expert assessment, the average validity score for the developed media was 4.6, with very valid criteria. Media validity testing was conducted by a learning media expert, specifically two academics/lecturers with expertise in the field of instructional technology. The results of the media expert's assessment of the developed product are presented in the following table.

Table 2. Results of the Learning Material Expert Assessment

	Assesment		Mean
	Judges 1	Judges 2	
Total Score	46	47	46,5
Mean Score	4,6	4,7	4,65

Based on the data from the material expert assessment, the average validity score for the developed media was 4.65, with very valid criteria. After the validity test was conducted, the one-to-one test was carried out. The subjects for the one-to-one test were three sixth-grade students from class VI B at SD No. 3 Kedonganan. These three students consisted of one student with high learning achievement, one with medium learning achievement, and one with low learning achievement. The one-to-one test was conducted using the cognitive walkthrough (CW) technique.



Table 3. One-to-One Test Student Responses

No.	Respondent	Feedback
1.	Student 1	This Hypermedia makes an interesting impression because it allows for independent study and the flow is very enjoyable.
2.	Student 2	I really enjoyed watching the real videos filmed at school related to this material and also THK.
3.	Student 3	This media is very interesting and provides a fun and enjoyable learning experience because there are many images and videos that explain the material completely.

The next test was the small group test. In the small group test, the Hypermedia was trialed with 9 sixth-grade students from class VI B at SD No. 3 Kedonganan with the aim of determining whether the Hypermedia could be tested in the classroom. These nine students consisted of three students in the high learning achievement category, three students in the medium learning achievement category, and three students in the low learning achievement category.

Table 4. Small Group Test Student Responses

No.	Student Response	Feedback
1.	Student 1	The created media is very good, connecting the material with Tri Hita Karana which makes this media look quite unique.
2.	Student 2	This media is very good and interesting, learning becomes more enjoyable.
3.	Student 3	This media is good, easy to understand with illustrative images supported by real videos related to the application of the Pancasila principles in daily life.
4.	Student 4	This media makes learning more enjoyable and easy to understand because of the supporting learning videos.
5.	Student 5	This media is creative and innovative, so users become very interested in using it.
6.	Student 6	This media is good, easy to understand with videos of daily activities at school related to THK which greatly support the material in the learning process.
7.	Student 7	This media is interesting and makes it easier for me to understand the material.
8.	Student 8	This media is interesting, easy to understand with videos of THK activities in the application of Pancasila principles in daily life.
9.	Student 9	This media is very good, easy to understand with videos that provide an overview related to the application of Pancasila principles supported by the application of THK within them.

The practicality test of the Hypermedia was conducted through the analysis of response questionnaires from 10 elementary school teachers at SD No. 3 Kedonganan and 28 sixth-grade students from class VI A at SD No. 3 Kedonganan using the User Experience Questionnaire (UEQ) method. The results of the UEQ questionnaire by teachers can be seen in the following table.

Table 5. Results of the UEQ Questionnaire by Teachers

Aspect	Mean	Category
Attractiveness	2,73	Very Good
Perspecuit	2,71	Very Good
Efficiency	2,70	Very Good
Dependability	2,66	Very Good



Aspect	Mean	Category
Stimulation	2,80	Very Good
Novelty	2,75	Very Good
Total Mean	2,73	Very Good

Based on the results obtained with reference to the practicality criteria table, the Hypermedia falls into the very good criteria for use by teachers in supporting the learning process at school. Furthermore, the results of the UEQ questionnaire by students can be seen in the following table 6.

Table 6. Results of the UEQ Questionnaire by Students

Aspect	Mean	Kategori
Attractiveness	2,79	Very Good
Perspecuit	2,80	Very Good
Efficiency	2,79	Very Good
Dependability	2,75	Very Good
Stimulation	2,72	Very Good
Novelty	2,73	Very Good
Total Mean	2,76	Very Good

Based on the results obtained with reference to the Hypermedia practicality criteria table, it falls into the very good criteria for use by students in learning at school. The results of the normality test for the data distribution of the effectiveness test in this study are presented in the following table.

Table 7. Normality Test

Tests of Normality							
	Postnpretest	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Achievement	Pretest	0,112	30	0,200	0,966	30	0,426
Learning	Posttest	0,128	30	0,200	0,963	30	0,358

The significance value of the Shapiro-Wilk normality test using SPSS 26.0 for Windows was 0.426 for the pretest and 0.358 for the posttest. This indicates that both datasets have a significance greater than 0.05, so H0 is accepted and H1 is rejected, with the decision that the pretest and posttest data are normally distributed. The homogeneity of variances test in this study was conducted by grouping the pretest and posttest data, which can be seen in the following table.

Table 8. Homogeneity Test

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Achievement_Posttest	Based on Mean	1,161	3	70	0,331
	Based on Median	0,972	3	70	0,411
	Based on Median and with adjusted df	0,972	3	62,22	0,412
	Based on trimmed mean	1,072	3	70	0,367

The result of the homogeneity of variances test for the pretest and posttest data groups obtained a significance value of 0.331. This proves that the significance value is > 0.05 , so H0 is accepted. Based on this, the variances in each group are equal (homogeneous). After the pretest and posttest data were declared to be normally distributed and homogeneous. This hypothesis test processes the pretest and posttest data using the one-tailed t-test formula to determine whether the implementation of Hypermedia containing Tri Hita Karana is effective



in improving the Pancasila Education learning achievement of sixth-grade elementary school students from the pretest to the posttest results.

Table 9. Hypothesis Test

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Posttest	74,64865	7,69350	0,89435	72,86621	76,43109	83,467	73	0,001

The calculated t-value is 83.467, while the t-table value is 1.703. This proves that the calculated t-value > t-table value, so H₀ is rejected and H₁ is accepted. Therefore, there is an increase in the Pancasila Education learning achievement scores of sixth-grade elementary school students from the pretest to the posttest using Hypermedia containing Tri Hita Karana. Thus, it can be concluded that the application of the Hypermedia product containing Tri Hita Karana is effective in improving Pancasila Education learning achievement for sixth-grade elementary school students.

The N-Gain Score aims to determine the effectiveness of using the learning media by calculating the difference between the posttest score and the pretest score. The results of the N-Gain Score calculation are then classified into low, medium, and high categories to provide a clearer picture of the effectiveness of the developed learning media. The results of the students' N-Gain Score analysis are presented in the following table.

Table 10. N-Gain Score

Respondent	Posttest	Pretest	Post - Pre	Score Ideal (100-Pre)	N-Gain Score	N-Gain Score (%)
RS 1	97	53	43	47	0,93	92,86
RS 2	93	63	30	37	0,82	81,81
RS 3	83	57	27	43	0,62	61,53
RS 4	70	53	17	47	0,36	35,72
RS 5	73	57	17	43	0,38	38,45
RS 6	73	57	17	43	0,38	38,45
RS 7	73	57	17	43	0,38	38,45
RS 8	73	57	17	43	0,38	38,45
RS 9	93	63	30	37	0,82	81,81
RS 10	87	67	20	33	0,60	60,01
RS 11	87	67	20	33	0,60	60,01
RS 12	80	63	17	37	0,45	45,46
RS 13	80	50	30	50	0,60	60,00
RS 14	93	57	37	43	0,85	84,61
RS 15	73	57	17	43	0,38	38,45
RS 16	73	57	17	43	0,38	38,45
RS 17	90	57	33	43	0,77	76,92
RS 18	83	70	13	30	0,44	44,43
RS 19	90	53	37	47	0,79	78,57
RS 20	97	53	43	47	0,93	92,86
RS 21	87	57	30	43	0,69	69,24



Respondent	Posttest	Pretest	Post - Pre	Score Ideal (100-Pre)	N-Gain Score	N-Gain Score (%)
RS 22	70	53	17	47	0,36	35,72
RS 23	73	57	17	43	0,38	38,45
RS 24	83	60	23	40	0,58	58,33
RS 25	93	57	37	43	0,85	84,61
RS 26	80	53	27	47	0,57	57,15
RS 27	87	60	27	40	0,67	66,68
RS 28	73	57	17	43	0,38	38,45
Mean	82	58	25	42	1,0	58%

The average N-Gain Score (%) is 58%, so the use of the learning media is moderately effective. Meanwhile, the average N-Gain Score value is 1.0, which falls into the high category. Based on these calculations, it can be concluded that the use of Hypermedia containing Tri Hita Karana is able to influence students' Pancasila Education learning achievement.

The success of a product can be seen from the effectiveness of Hypermedia containing Tri Hita Karana in improving learning achievement. Hypermedia makes it easier for students to understand abstract material because Hypermedia presents information in an attractive and interactive visual form, such as images, animations, videos, and games. Students can explore the learning material non-linearly, according to their respective interests and learning pace. They can choose which topic to study first, jump between sections of the material, and return to parts they have not yet understood. This flexibility helps students build a deeper understanding.

The findings of this study show that Tri Hita Karana-integrated hypermedia is valid, practical, and effective in improving students' learning achievement in Pancasila Education. These findings are in line with previous studies showing that digital learning media based on local wisdom can improve students' learning engagement, understanding, and learning outcomes in elementary education (Setyawati et al., 2022; Suardana et al., 2025). The results also support Hidayatullah et al. (2021) and Shafira & Wiranda (2022), who found that hypermedia can facilitate students' understanding through the integration of text, images, videos, and interactive navigation.

The effectiveness of the developed hypermedia can be explained through Culturally Responsive Pedagogy because the learning content connects Pancasila values with students' cultural context and daily experiences. The integration of Tri Hita Karana values, namely Parhyangan, Pawongan, and Palemahan, makes learning more meaningful because students do not only memorize Pancasila concepts but also relate them to harmonious relationships with God, other people, and the environment. This is consistent with the principle of culturally responsive learning, which emphasizes the use of students' cultural background as a bridge to strengthen understanding, participation, and character development (Gay, 2018; Patras et al., 2025).

The results can also be interpreted through Cognitive Load Theory in multimedia learning. Hypermedia that combines short text, relevant images, videos, animations, and interactive quizzes can help students process information through visual and verbal channels. When multimedia elements are arranged clearly and connected through simple navigation, students can focus on essential content and reduce unnecessary cognitive load. Therefore, the Canva-based non-linear hypermedia design supports students in learning at their own pace,



revisiting difficult material, and connecting abstract Pancasila values with concrete examples from their school environment (Sweller et al., 2019; Mayer, 2021).

Compared with previous studies, the novelty of this study lies in the integration of Tri Hita Karana values into hypermedia specifically for Pancasila Education in elementary school. Previous studies have commonly discussed Tri Hita Karana as character education, local wisdom, or contextual learning content, while other studies have developed digital media such as video, Google Sites, and hypermedia for various subjects (Setyawati et al., 2022; Sukmawati et al., 2024; Suardana et al., 2025). This study combines both aspects by transforming Tri Hita Karana into an interactive hypermedia structure that supports culturally contextual, character-based, and technology-enhanced Pancasila learning.

Conclusion

The development of Tri Hita Karana-based Hypermedia integrated with Canva, YouTube, Wordwall, and Padlet is highly valid, practical, and effective for primary school Pancasila Education. Evaluation results demonstrated excellent product validity based on media expert assessment ($M = 4.60$ out of 5.00). Furthermore, the media achieved high practicality scores from both teachers ($M = 2.73$ out of 3.00) and students ($M = 2.76$ out of 3.00). The product implementation also significantly enhanced the learning achievement of sixth-grade students.

Recommendation

Based on the research results outlined in the previous chapter, several suggestions can be presented as follows.

For students, it is recommended to utilize Hypermedia containing Tri Hita Karana in classroom learning and to use the facilities provided to access the learning media. For teachers, it is recommended that they use Hypermedia containing Tri Hita Karana as an alternative medium to support the learning process in the classroom, so that the implementation of learning becomes more innovative and engaging, thereby being able to improve student learning achievement. For school principals, it is recommended that they promote the use of Hypermedia containing Tri Hita Karana as a learning medium and can organize training for teachers to enhance their competence in utilizing technology, especially in developing and using Hypermedia.

For other researchers, it is hoped that they can perfect the graphic design aspects and visual layout of the hypermedia to ensure the delivery of material through hypermedia becomes more effective. Furthermore, it is recommended to explore the development of more varied interaction features to minimize users' cognitive load and maximize the function of hypermedia containing Tri Hita Karana as a comprehensive learning instrument.

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