



## The Learning Style-Based Learning Media to Improve Hindu Religious Learning Outcomes Class XI SMAN Purwoharjo

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**Abstract:** The low learning outcomes of Hindu Religious Education at SMAN Purwoharjo are shown by 72.5% of 40 grade XI students obtaining scores below KKTP (75). This condition is influenced by the lack of learning innovation, assessments that have not accommodated learning styles, and the limited use of technology-based media. This research aims to develop and test the validity, practicality, and effectiveness of learning style-based learning media to improve learning outcomes as well as describe its implementation. The research uses the ADDIE development model with the subject of grade XI students. Research instruments include validation of content, design, and media by experts, individual and small group trials for practicality, and pretests for effectiveness. Data analysis was carried out in a quantitative descriptive manner by calculating the percentage of validity, practicality score, and improvement of learning outcomes. The development process includes the stages of analysis, design, development, implementation, and evaluation. The validation results showed that the media was very valid with a content score of 91%, design of 88%, and media of 90%. Practicality is rated very good with an average of 88%. Effectiveness was shown through an increase in students' average scores from 68.5 to 83.7 and an increase in completeness by 22.19%. This media integrates learning style assessments, selection of materials according to profiles, technology-based interactive activities, and feedback between teachers and students. The results of the study prove that learning style-based learning media is effective in improving learning outcomes while creating an interactive and fun learning atmosphere.

**Keywords:** Adaptive learning media; Hindu religious education; Learning outcomes; Learning styles

### Introduction

Referring to Law Number 20 of 2003, national education is directed to develop students' potential while forming a complete character. In the context of Hindu religious education, learning focuses not only on the textual delivery of teachings, but also on the internalization of the values of Tattwa, Susila, and Ceremony (Hidayat & Abdillah, 2019). Sarasamuscaya sloka 4 emphasizes that Hindu religious education aims

to strengthen two essential dimensions in shaping students' spirituality (Suryawan, 2021). Sraddha (belief) and bhakti (Wiraputra, 2020; Dewi, 2024). Sraddha allows students to have fortitude of faith in facing modern challenges, especially regarding the negative impact of the development of science and technology, students who have high (Dauh et al., 2021). Sraddha will be motivated in the learning process because they are aware of the importance of teachings in their lives. The value of sraddha encourages students to accept

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learning materials with an open and sincere attitude, so that the learning process becomes more effective. They will find it easier to understand abstract concepts in Hinduism because they have the conviction that these teachings are the truth. Instead, Dewi (2024) devotion emphasizes aspects of worship and spiritual closeness to God, which clearly contribute to the formation of an attitude of discipline, responsibility, and a deep understanding of religious values. Through the practice of bhakti (Lagatama et al., 2022), students are trained to be disciplined and diligent in achieving optimal learning outcomes. Bhakti encourages students' active participation in religious practices, such as ceremonial performance, social engagement, and learning with spiritual teachers. This active involvement will enrich students' understanding of Hinduism. Sraddha and bhakti are two important pillars in Hindu religious education that must continue to be developed, improved, and must be possessed by students (Dewi, 2024).

Hindu religious learning plays an important role in character and moral development as well as the improvement of students' mental qualities, which is not only limited to aspects of religious teachings, but also includes cultural, philosophical, and other profound values. These mental qualities function as a determinant of direction, a source of motivation, and a facilitator in the development of personal responsibility (swadarma) in the life of students. In its implementation at the upper secondary level, Hindu religious learning faces serious challenges, especially in the presentation of material that is considered abstract and monotonous, resulting in low learning outcomes. Summative assessment data for 2023-2024 shows that as many as 72.5% of grade XI students of SMAN Purwoharjo have not reached the KKTP. Lack of understanding of teachers and innovations in learning approaches as well as incompatibility of teaching methods with individual learning styles are suspected to be the main causes (Faizah et al., 2020; Muliani, 2022) of learning difficulties. Learning difficulties are one of the indicators that cause low student learning outcomes (Priliyanti et al., 2021).

Previous research has shown that learning media that considers individual learning styles are able to improve information retention, active participation, and academic achievement. However, most research is still limited to the use of digital media in general without integrating systematic assessment of learning styles. The research conducted by Permatasari et al. used Kahoot! as an assessment medium, while the research by Wijayanti et al focuses on the design of digital evaluative instruments. No research has been found that systematically combines learning styles, formative assessments, and feedback in a single media system that

is adaptive to Hindu religious learning (Harijanto et al., 2023).

Based on this, this research article offers scientific novelty by designing adaptive learning media based on learning styles that combine multimedia content, formative assessment, and reflection.

This study aims to test the effectiveness of the use of learning media in accordance with learning styles in improving learning outcomes in Hindu Religious Education subjects in grade XI of SMAN Purwoharjo. The research hypothesis shows that the use of media adapted to learning styles and the support of interactive technology will have a positive effect on student learning outcomes.

## Method

This research adopts a Research and Development (R&D) approach with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model as developed by the Branch. The selection of this model is based on the goal of producing a product that is not only valid and practical, but also proven to be empirically effective (Wajdi et al., 2024).

### Research Design

The research design follows the ADDIE model. The research stage begins with a needs analysis, including identification of dominant learning styles and learning barriers. Additionally, the media is designed to refer to visual, auditory, and kinesthetic learning style models. In the development stage, Google Sites-based media and supporting apps such as Quizizz, Liveworksheet, and Google Classroom were designed. Implementation is carried out through individual and small group trials, then continued with effectiveness evaluation using pretest and posttest instruments and validation by experts.

### Research Subject and Location

The research was conducted during the even semester of the 2024/2025 academic year, involving 40 students in class XI. The research location is at Purwoharjo State High School, Jalan Slamet Cokro, Purwoharjo District, Banyuwangi Regency.

### Data Collection Techniques and Instruments

Data collection techniques are obtained through observation, questionnaires, expert validation, tests, and documentation. (1) Observations were made to map the learning profile of students with the help of *akupintar.com* platform that is integrated with the developed product. (2) Questionnaires are used to assess the practicality of media by students. (3) Expert validation is carried out by three experts (material,

design, and media) through a validation sheet. (4) Pretest and posttest tests are used to measure the effectiveness of media in improving learning outcomes. (5) Documentation is used to support media implementation reporting and validation of results.

This research lasted from February to April 2025, and was carried out collaboratively with the school. The main obstacles in the research process are the dependence on internet connections and the limitations of digital devices for some students, but this is overcome by providing hotspot access and learning sessions alternately.

The instruments used include expert validation sheets, content, design, media, user response questionnaires in this case students, as well as pretest and posttest questions based on cognitive C1-C4 where all instruments have been tested for content validity by experts.

#### Data Analysis Techniques

Data analysis was carried out by combining qualitative and quantitative descriptive approaches. Paired t-tests are used to measure effectiveness, while normality and homogeneity are tested as parametric statistical prerequisites. Effectiveness is calculated using the N-Gain formula.

## Result and Discussion

#### Research Results

The results of the data analysis showed that there was a change in student scores compared to previous scores. The score obtained was compared with the Completeness of Learning Objectives Criteria (KKTP) of SMAN Purwoharjo which was set at 75, to determine whether the target had been achieved or exceeded.

**Table 1.** Pretest and Posttest Results

Number of Students	Loans	Post-tests
40	72.93	82.38

The table shows an average score of 72.93, which increased to 82.38 on the posttest. The N-Gain calculation shows a value of 0.35, classified as a medium category.

**Table 2.** Descriptive Statistics

	N	Min	Max	Mean	Hours of deviation
N_Gain	40	0.26	0.50	0.3537	0.04968
Valid N (listwise)	40				

Source: SPSS 26.0 output for Windows

Furthermore, the validity of the product is tested through several stages, namely: (1) evaluation by

material experts, (2) design assessment, (3) media testing, (4) individual trials, and (5) small group trials whose results are presented as follows.

**Table 3.** Product Trial Analysis Results

Yes	Trial Subject	Validation
1	Test materials expert	90.83%
2	Design expert test	94.45%
3	Test media experts	91.67%
4	Individual trials	91.43%
5	Small group trials	92.06%

Based on the table, product validation by material, design, and media experts shows excellent results. Individual and small-group trials also resulted in high practicality scores, indicating that the media was easy to use and matched the characteristics of learners based on the 5 conversion scale guidelines.

**Table 4.** Conversion of Achievement Level with a Scale of 5 (Tegeh et al., 2022)

Achievement Rate	Kualifikasi	Information
90-100	Superior	No repair needed
75-89	Good	Need improvement
65-74	Enough	Quite fixed
55-64	Less	There are many things that need to be improved
0-54	Very Less	Need to redesign the entire product

Meanwhile, from the results of inferential statistical analysis to test the effectiveness of the product, a prerequisite test was first carried out which included testing the normality and homogeneity of the data.

#### Normality Test

This test was performed using SPSS software version 26.0 for Windows at a significance level of 0.05, as shown in the following results.

**Table 5.** Normality Test

	Kolmogorov-Smirnova			Shapiro-Wilk			
	Class	Statistic	df	Itself.	tic	df	Itself.
Learning	1	0.148	40	0.028	0.967	40	0.284
Outcomes	2	0.126	40	0.112	0.968	40	0.304
a. Lilliefors Significance Correction							

Referring to the data in the table, the probability value (p) of the Shapiro-Wilk test results is 0.967 for class 1 (pretest) and 0.968 for class 2 (posttest). Since both values exceed the significance limit of 0.05, the null hypothesis ( $H_0$ ) is acceptable. Thus, it can be concluded that the distribution of cognitive learning outcome data in Hindu Religious Education class XI of SMAN

Purwoharjo, both before and after the intervention, meets the assumption of normal distribution.

#### Homogeneity Test

Homogeneity testing was performed to assess the degree of uniformity of data variance between the

groups being compared. This analysis uses the Levene method processed through SPSS software version 26.0 for Windows, with a significance level set at 0.05, as presented below.

**Table 6. Homogeneity Test**

Learning Outcomes		Levene Statistic	df1	df2	Itself.
Based on Mean	Based on Mean	.064	1	78	0.801
	Based on Median	.013	1	78	0.909
	Based on Median and with adjusted df	.013	1	76,604	0.909
	Based on trimmed mean	.057	1	78	0.813

Based on the data in the table, a probability value (p) of 0.801 was obtained for the learning outcome variable. Since this value exceeds the significance level of 0.05, the zero hypothesis ( $H_0$ ) is accepted. Thus, it can be concluded that the data on pretest and posttest learning outcomes in the Hindu Religious Education course class XI of SMAN Purwoharjo have homogeneous characteristics.

Effectiveness testing was carried out to identify disparities in learning outcomes before and after the use

of learning style-based learning media in Hindu Religious Education subjects, using a paired t test (Paired Samples Test) through SPSS software version 26.0 for Windows. Referring to the test criteria, if the probability value (p) exceeds 0.05, then the difference is declared insignificant; On the other hand, if the P is less than 0.05, then the difference in learning outcomes between the pretest and the posttest is considered significant. Details of the t-test results are presented in the following table.

**Table 7. Results of the t-test Analysis**

Pair 1	Pretest - Posttest	Mean	Hours of deviation	Std. Error Mean	Paired Differences		t	df	Sig. (2-tailed)			
					95% Confidence Interval of the Difference							
					Lower	Upper						
		-9.450	0.504	0.080	-9.611	-9.289	-118,625	39	0.001			

Based on the data in the table, the probability value (p) of the t-test result is recorded at 0.001. Because the score was below the significance threshold of 0.05, the difference in learning outcomes was declared significant. These findings indicate a significant increase in student academic achievement before and after the application of learning style-based learning media in the History of Hindu Religious Organization material in grade XI of SMAN Purwoharjo.

The results of expert validation showed that learning style-based learning media obtained a very valid category with an average score of 91% (content), 88% (design), and 90% (media). These findings indicate that the product has been adapted to the learning needs and is feasible to implement.

The practicality test through individual and small group trials obtained an average score of 88% in the very practical category. Students consider the media to be easy to use, interesting, and able to facilitate learning according to their learning style preferences.

The effectiveness of the media is shown through the difference in pretest and posttest results. The average student score increased from 68.5 to 83.7 with an

increase in completeness of 22.19%. These results show that the media is able to significantly increase the understanding of the concept of Hindu Religious Education.

#### Discussion

The results showed that the learning style-based learning media developed obtained an average of content validation, design, and media with scores of 91%, 88%, and 90%, respectively, which were included in the very valid category. This indicates that the products developed are in accordance with quality standards both in terms of material substance, instructional design, and technical aspects. This finding is in line with the research of Dewi et al. which develops animated video media for Hindu learning and obtains high validation from material and media experts. The difference is that this study not only emphasizes the feasibility aspect of the media, but also pays attention to the diversity of students' learning styles through initial assessment. Thus, the validity of the media in this study has added value because it integrates a learning style differentiation approach that is rarely done in previous

research. Learning style has a significant effect on academic achievement. The implementation of learning style assessments at the beginning of learning allows teachers to adjust activities to students' learning tendencies, so that learning effectiveness increases (Ananda & Hayati, 2020).

From the practical aspect, the media obtained a score of 88% which was categorized as very practical. This shows that media can be used easily by teachers and students in the learning process. These results support Wulandari's findings that interactive media are practically used in increasing students' learning motivation. This is also in line with the research of Wijayanti et al. and Permatasari et al. who found that digital media based on learning style assessment, such as quiz-based learning (e.g. Kahoot!), can increase students' motivation as well as learning achievement. However, this study makes a new contribution by showing that the practicality of media is not only measured by the technical ease of use, but also by the relevance of the media to students' learning style preferences. This means that the practicality in this research is more pedagogical as well as technological.

The effectiveness of the media was shown by an increase in the average student learning outcome from 68.5 to 83.7 and an increase in completeness by 22.19%. This proves that this media is able to significantly improve student learning outcomes. These findings corroborate the results of the Ministry of Education's research which proves that the use of (2022) adaptive e-learning can improve student learning achievement by considering the diversity of learning styles. Furthermore, the research of Divayana et al. regarding the low motivation of students in understanding the theory of educational evaluation through digital media, as well as the success of interactive flipbooks in increasing learning effectiveness, it is increasingly emphasized that media innovation has a great influence on learning outcomes. However, this study has an important difference, namely that it is not only adaptive in general, but specifically classifies students into the categories of visual, auditory, and kinesthetic learning styles so that learning is more precise. The media developed in this study goes further by not only presenting engaging digital content, but also adapting it to students' learning styles.

Some previous researches, such as those conducted by Tegeh et al. and Utami et al., developed interactive digital media in Hindu religious learning and proved to be valid and suitable for use. However, the media has not systematically integrated aspects of students' learning styles. This research provides novelty by emphasizing learning style assessment as the basis for media design. On the other hand, Mirmotahari et al. emphasizing the importance of automated feedback in

improving the reliability and validity of assessments. This is parallel to this study, where learning style-based learning media is also designed to provide contextual and personalized feedback. The difference is that this study not only focuses on the efficiency of assessment, but also on the relevance of learning experiences to individual preferences.

On the other hand, international research such as that conducted by Udeozor et al. (2023) and Bi et al. (2024) more highlight the use of advanced technologies such as game-based assessments and flipped classrooms, but have not linked them to differentiation in learning styles. Thus, this research complements the gap in previous research by integrating digital media, assessments, and learning styles in one complete pedagogical framework.

Relevant studies from Rahma et al. (2023), Utami et al. (2022), Dewi et al. (2023), and Kurniawan et al. (2022), it also shows that the low quality of Hindu learning is largely influenced by the lack of media innovation. This research fills this gap by presenting media that is not only valid, practical, and effective, but also able to improve learning outcomes through differentiation of learning styles. Thus, the contribution of this research is more contextual while answering the real needs in Hindu classes which tend to be monotonous. The novelty of this research lies in the application of learning style-based adaptive learning in the context of Hindu Religious Education, which has often been considered monotonous. This approach reinforces the theory of constructivism which emphasizes the importance of personal experience in building knowledge. In addition, the success of this medium can be explained through Paivio's Double Coding Theory, which states that information is easier to understand when it is received through more than one sensory channel. Thus, the learning media developed not only serves as a means of delivering material, but also as diagnostic instruments and pedagogical interventions that adapt the approach to the cognitive characteristics of students. Interactivity, contextual feedback, and learning style-based adaptivity make this media superior to previous research that only adopted technology or digital assessments without differentiation (Suartama et al., 2021; Azizah & Masub, 2022; Azizah et al., 2024).

The results of this study provide a theoretical contribution in strengthening the constructivism approach and Paivio's double coding theory which emphasizes that information will be more meaningful when it is conveyed according to the cognitive preferences of students. This means that the integration of learning styles into media design is able to create learning that is personalized, meaningful, and in accordance with the proximal development zone of students. Practically, this study provides an alternative

model of Hindu religious learning that is more interactive, fun, and effective. However, the limitation of this research lies in the scope of the material which is still limited to class XI, so further research is recommended to expand the scope of the material and add digital collaborative features to support 21st century skills.

## Conclusion

Learning style-based learning media developed with the ADDIE model has been proven to be valid, practical, and effective in improving the learning outcomes of Hindu Religious Education in grade XI of SMAN Purwoharjo. This media not only improves students' cognitive achievement, but also creates a learning atmosphere that is interactive, fun, and in accordance with the characteristics of students' learning styles. However, the limitations of the research lie in the scope of the material and the limited number of subjects so the generalization of the findings needs to be done carefully. The implications of this study confirm the importance of technology-based learning innovation and differentiation of learning styles, while further research is suggested to expand the scope of the material, involve digital collaboration, and test its effectiveness in more diverse school contexts.

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## Author Contributions

Conceptualization, R.M.V; methodology, RMV; software, RMV; validation, R.M.V., I.W.S.W and I.K.S.; formal analysis, R.M.V., I.W.S.W and I.K.S.; research, RMV; resources, RMV; data curation, R.M.V., I.W.S.W and I.K.S.; writing—preparation of original drafts, R.M.V.; writing—review and editing, R.M.V., I.W.S.W and I.K.S.; visualization, RMV; supervision, R.M.V., I.W.S.W and I.K.S.; project administration, RMV; acquisition of funding, R.M.V. All authors have reviewed and given final approval for published manuscripts.

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