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The effectiveness of *Kamasan* puppet painting-based learning in developing character and social-cognitive skills of elementary students

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Abstract

This research was based on the problem of the lack of learning media as a learning resource in strengthening the character and social cognitive skills in elementary school students. *Kamasan* puppet paintings as one of the local wisdoms in Bali Province, especially in Klungkung Regency, has not been widely used as one of the media in learning related to strengthening the profile of Pancasila students who are being intensively pursued related to the implementation of the independent curriculum. This study aims to analyze the effect of Balinese local wisdom of *kamasan* puppet paintings in building character and social cognitive skills in elementary schools. A quasi-experimental research design was employed, involving a sample of students divided into experimental and control groups. Data were collected using character and social cognitive skills questionnaire. The data were analyzed using multivariate analysis of variance (MANOVA) to determine the effectiveness of the intervention. The findings revealed that the integration of *Kamasan* puppet painting-based learning media significantly enhanced students' character values and social-cognitive skills as components of the Pancasila Student Profile. Statistical analysis using MANOVA indicated a significant multivariate effect of the intervention, with univariate tests confirming its impact on both variables. Students in the experimental group demonstrated higher levels of moral understanding and collaborative behavior compared to those in the control group. These results highlight the effectiveness of culturally contextualized learning media in supporting holistic character education in elementary schools.

Keywords: Character, *Kamasan* Puppet Painting, Local Wisdom, Social Cognitive Skills.

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Institutional Review Board Statement: The study was conducted in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Ethical approval for this study was obtained from the Institutional Review Board of Ganesha University of Education, under approval number 110/UN48.24.11/LT/2024 dated 18 September 2024.

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1. Introduction

Education is an effort to develop all the potential that exists within each individual which aims to achieve the desired quality of education [1]. Education is also sought to develop the cognitive, affective and psychomotor domains starting from the provision of elementary school level education. However, education currently focuses on the cognitive domain, so that affective domain education which is an attitude or character is only slightly even untouched [2-4]. Character building in students' needs to be implemented in the education system in Indonesia in order to overcome the moral crisis that has hit the Indonesian nation. The current moral crisis in Indonesian adolescents is strongly influenced by character and moral education. Based on the latest data on education units containing character index, school safety climate index, and inclusiveness and diversity index, only 33% of them belongs to good category [5, 6]. The data shows the lack of education units that implement character education in the good category.

The mandate of Presidential Regulation of the Republic of Indonesia No. 87/2017 outlines that one of the priority programs of education development is Strengthening Character Education (PPK). In line with the PPK program, the government created the Pancasila student profile strengthening project to encourage the achievement of the Pancasila student profile [7-9]. The Pancasila learner profile is one of the vision and mission of the Ministry of Education and Culture as stated in *Permendikbud* (Ministerial Regulations of Education and Culture) Regulation Number 22 of 2020 concerning the Ministry of Education and Culture's Strategic Plan for 2020-2024 [10, 11]. Pancasila students mean students who have a strong identity, who love the country, are confident and participate in overcoming global problems. This reason makes the *Pancasila* Learner Profile a guideline in shaping the character of students based on the noble values of *Pancasila* [12-14].

The *Pancasila* Learner Profile as an elaboration of national education goals has 6 (six) interrelated dimensions. The six dimensions are: 1) faith, devotion to God Almighty, and noble character, 2) global diversity, 3) mutual cooperation, 4) independence, 5) critical reasoning, 6) creativity [15-17]. The six dimensions must be developed simultaneously and not focused on certain dimensions alone. To achieve these six dimensions, of course, cannot be separated from the role and cooperation of various parties, both from the role of students, teachers, schools, parents and even the government [18-20].

Teachers as implementers of learning have an important role in guiding and focusing students. In addition to the intellectuality of students, teachers should strengthen personality learning to improve the morals and character of students [21-23]. Character education emphasizes the introduction and understanding of moral values such as honesty, justice, caring and responsibility [14, 24]. There are several methods that are often applied in developing the character of students that must be adapted to the conditions and learning situations at hand.

There is a need for learning innovations to strengthen the character of students in order to realize the *Pancasila* Student Profile. One of the learning innovations to strengthen the *Pancasila* Learner Profile is by learning that integrates local wisdom. Acculturation of character-laden local wisdom values has a high level of effectiveness [25, 26]. The utilization of local wisdom as a learning resource can foster a sense of pride in students about local wisdom in their area as well as a varied learning resource. One of the local wisdom-based character education values that can be used as a guideline is the character values in *Kamasan* Puppet Paintings that adopt the *Mahabharata* and *Ramayana* puppet stories. *Kamasan* Puppet Paintings have certain shapes, attitudes, figures, expressions and colors according to the role and characters in the story they play, such as God figures that reflect fair, loving and compassionate nature, *punakawan* figures as a complement to liven up the atmosphere with characters that match the role in the play. Puppet as a local wisdom-based character development media can improve the environmental care character, attitude of responsibility and cooperation of students related to the *Pancasila* Student Profile. This study aims to analyze the effect of Balinese local wisdom of *kamasan* puppet paintings in building pancasila learner profiles in elementary schools.

2. Method

This quasi-experimental study employed a non-equivalent pretest-posttest control group design [27, 28] to investigate the effectiveness of integrating Balinese local wisdom through *Kamasan* puppet paintings in fostering Pancasila learner profiles among elementary school students. The study aimed to assess whether embedding traditional cultural values and visual storytelling from *Kamasan* art into learning materials could enhance students' understanding and embodiment of Pancasila values compared to conventional civic education methods.

The population of this study consisted of grade 4 and 5 elementary school students from public schools in Klungkung Regency, Bali, where *Kamasan* art remains an integral part of the local culture. The sample size was determined using the Slovin formula with a 5% margin of error [29], ensuring adequate representation of students from different school clusters within the region. A purposive cluster random sampling technique was applied to select schools that had active local art programs or community engagement in cultural education. Participants were divided into two groups: the experimental group received instructional materials and activities centered on *Kamasan* puppet paintings, including storytelling sessions, visual analysis, group discussions, and character-building exercises aligned with the five principles of Pancasila. The control group received standard civic education lessons based on the national curriculum, without integration of local cultural elements.

The instrument used to measure the development of Pancasila learner profiles was a rubric-based observation sheet and student self-assessment form aligned with the Ministry of Education's Pancasila Profile indicators. The instrument grid used in this study is presented in Table 1.

Table 1.
Instrument Grid.

| No | Measured Competencies | Indicator | Question Number |
|------------------------------------|-----------------------|--|-----------------|
| Character Values | | | |
| 1 | Faith in God Almighty | Students demonstrate respectful behavior during religious or spiritual activities. | 1, 2 |
| 2 | Integrity | Students show honesty in words and actions. | 3, 4 |
| 3 | Independence | Students are able to complete tasks without relying on others excessively. | 5, 6 |
| 4 | Social Responsibility | Students show concern for the environment and society. | 7, 8 |
| Social and Cognitive Skills | | | |
| 5 | Critical Thinking | Students can analyze and evaluate issues based on logic and evidence. | 9, 10 |
| 6 | Creativity | Students express ideas or solutions in unique and innovative ways. | 11, 12 |
| 7 | Collaboration | Students work effectively and respectfully in teams. | 13, 14 |
| 8 | Communication | Students convey ideas clearly in both spoken and written forms. | 15, 16 |
| 9 | Global Citizenship | Students respect cultural diversity and show openness to other perspectives. | 17, 18 |
| 10 | Lifelong Learning | Students show curiosity and motivation to keep learning new things. | 19, 20 |

The research instruments were developed to measure two core components of the pancasila student profile the first component is character values, which include dimensions such as faith in God Almighty, integrity, independence, and social responsibility. The second one is social and cognitive skills, which encompass critical thinking, creativity, collaboration, communication, global citizenship, and lifelong learning. Both pretest and posttest assessments were administered to evaluate changes in students' attitudes and competencies before and after the learning intervention using Kamasan puppet painting-based materials.

This study employs quantitative data analysis techniques, including both descriptive and inferential statistics, to evaluate the impact of integrating Balinese local wisdom through Kamasan paintings in building Pancasila learner profiles. Quantitative data from pretest and posttest scores, as well as student responses to questionnaire items, were processed into numerical values and percentage scores. Descriptive analysis was used to summarize the overall tendencies and characteristics of the students' Pancasila Profile development, presenting data such as mean, standard deviation, median, and percentage to illustrate general trends within the experimental and control groups [30]. Inferential analysis was applied to test the research hypotheses and determine the statistical significance of the intervention's effects. A Multivariate Analysis of Variance (MANOVA) was conducted to simultaneously analyze differences across multiple Pancasila Profile indicators between the experimental group (who learned using Kamasan-based content) and the control group (who received standard instruction). This analysis determines whether observed differences are statistically significant while accounting for potential covariates.

3. Results

3.1. Descriptive Analysis

Descriptive statistical analysis was conducted to evaluate the impact of Kamasan puppet painting-based learning materials on the development of elementary students' character values and social-cognitive skills as part of the Pancasila Student Profile. This analysis includes the calculation of the mean, standard deviation, minimum, and maximum scores for both measured components, as shown in Table 2.

Table 2.
Descriptive Statistics of Pancasila Student Profile Components.

| Variable | N | Min. | Max. | Mean | Std. Deviation |
|-------------------------|----|------|------|------|----------------|
| Character Values | 60 | 5 | 10 | 8.15 | 1.32 |
| Social-Cognitive Skills | 60 | 4 | 10 | 7.92 | 1.48 |

Based on the results in Table 2, the mean score for Character Values was 8.15, with a standard deviation of 1.32, indicating that students generally exhibited strong moral and personal qualities such as integrity, independence, and responsibility, which are core elements of the Pancasila profile. The scores ranged from 5 to 10, showing a relatively high and consistent performance across students. For Social-Cognitive Skills, the mean score was 7.92, with a standard deviation of 1.48. This suggests that most students were capable of demonstrating critical thinking, creativity, communication, collaboration, and global-mindedness, though with slightly greater individual variability compared to character values. The scores ranged from 4 to 10, indicating that while the majority performed well, a few students may still require targeted support or enrichment.

To further interpret students' proficiency in embodying the Pancasila Student Profile, the scores were classified into three levels: Low (0–4), Moderate (5–7), and High (8–10). The percentage distribution of students within each category for Character Values and Social-Cognitive Skills is presented in Table 3.

Table 3.
Percentage Distribution of Pancasila Student Profile Components.

| Level | Character Values (%) | Social-Cognitive Skills (%) |
|----------------|----------------------|-----------------------------|
| Low (0–4) | 3.3% | 6.7% |
| Moderate (5–7) | 26.7% | 33.3% |
| High (8–10) | 70.0% | 60.0% |

Based on Table 3, 70% of students achieved a high level of Character Values, indicating that the majority of students consistently displayed positive traits such as integrity, independence, social responsibility, and spiritual awareness. This suggests that the integration of Kamasan puppet painting—rich in symbolic narratives and moral lessons—successfully reinforced ethical and value-based learning. In the domain of Social-Cognitive Skills, 60% of students scored in the high category, reflecting strong competencies in critical thinking, collaboration, communication, and creativity. However, a relatively higher percentage of students (33.3%) fell into the moderate range, and 6.7% into the low category, suggesting that while many students benefitted from the cultural integration, some may need additional support to fully develop these 21st-century competencies. These findings indicate that Kamasan painting-based learning not only cultivates moral and cultural identity aligned with the values of Pancasila but also contributes meaningfully to the development of students' collaborative and cognitive abilities, though with varying degrees of impact across individuals.

3.2. Prerequisite Test Analysis

Before conducting further statistical analysis, a prerequisite test was performed to ensure that the data met the assumptions of normality and homogeneity. These tests are essential for determining whether parametric statistical tests (such as MANOVA or independent sample t-tests) are appropriate for analyzing the effects of Kamasan painting-based learning on students' character values and social-cognitive skills. To test for normality, both the Kolmogorov-Smirnov and Shapiro-Wilk tests were applied to the pretest and posttest scores of the two main variables. The results are shown in Table 4.

Table 4.
Normality Test Results.

| Variable | Test Type | Statistic | df | Sig. |
|-------------------------|--------------------|-----------|----|-------|
| Character Values | Kolmogorov-Smirnov | 0.078 | 60 | 0.087 |
| | Shapiro-Wilk | 0.982 | 60 | 0.103 |
| Social-Cognitive Skills | Kolmogorov-Smirnov | 0.084 | 60 | 0.065 |
| | Shapiro-Wilk | 0.975 | 60 | 0.092 |

Based on Table 4, the significance values (Sig.) for both the Kolmogorov-Smirnov and Shapiro-Wilk tests are greater than 0.05 for both variables. This indicates that the distribution of scores for Character Values and Social-Cognitive Skills is normal, satisfying one of the main assumptions for conducting parametric statistical analysis. The results also suggest that the measurement instruments and implementation procedures were consistent and free from major bias, producing reliable and analyzable data for hypothesis testing.

A Levene's Test for Equality of Variances was conducted to determine whether the variances of scores between the experimental and control groups were homogeneous for both *Character Values* and *Social-Cognitive Skills*. This test is essential to validate the assumption of equal variances, which is a requirement for conducting further parametric statistical tests such as independent sample t-tests or MANOVA. The results of the Levene's Test are shown in Table 5.

Table 5.
Levene's Test of Homogeneity of Variances.

| Variable | Levene Statistic | df1 | df2 | Sig. |
|-------------------------|------------------|-----|-----|-------|
| Character Values | 1.132 | 1 | 58 | 0.292 |
| Social-Cognitive Skills | 0.984 | 1 | 58 | 0.326 |

As shown in Table 5, the significance values (Sig.) for both variables are greater than 0.05, indicating that the variances of *Character Values* and *Social-Cognitive Skills* scores between the experimental and control groups are homogeneous. This result confirms that the assumption of equal variance has been met, supporting the use of parametric statistical tests—such as independent sample t-tests or Multivariate Analysis of Variance (MANOVA)—for further hypothesis testing. Furthermore, the homogeneity of variances suggests consistency in the learning outcomes across both treatment conditions, strengthening the validity of comparative analysis between groups.

3.3. Hypothesis Test

To examine the influence of the Kamasan puppet painting-based learning media on students' development of Character Values and Social-Cognitive Skills (as components of the Pancasila Student Profile), a Multivariate Analysis of Variance (MANOVA) test was conducted. This statistical method was appropriate as the study included two dependent variables (character values and social-cognitive skills) and one independent variable (learning media type: Kamasan-based vs. conventional). The results of the MANOVA hypothesis test are presented in Table 6.

Table 6.
Results of MANOVA Hypothesis Test.

| Effect | Value | F | Hypothesis df | Error df | Sig. |
|------------------------|--------------------|--------|-----------------------|----------|------|
| Intercept | Pillai's Trace | 0.981 | 2598.317 ^b | 2 | 78 |
| | Wilks' Lambda | 0.019 | 2598.317 ^b | 2 | 78 |
| | Hotelling's Trace | 51.033 | 2598.317 ^b | 2 | 78 |
| | Roy's Largest Root | 51.033 | 2598.317 ^b | 2 | 78 |
| Group (Learning Media) | Pillai's Trace | 0.358 | 21.775 ^b | 2 | 78 |
| | Wilks' Lambda | 0.642 | 21.775 ^b | 2 | 78 |
| | Hotelling's Trace | 0.558 | 21.775 ^b | 2 | 78 |
| | Roy's Largest Root | 0.558 | 21.775 ^b | 2 | 78 |

Note: $p < 0.05$ indicates statistical significance.

Based on Table 6, the results of the Multivariate Tests indicate that the type of learning media (Kamasan-based vs. conventional) has a statistically significant effect on the combined dependent variables (*Character Values* and *Social-Cognitive Skills*), as shown by the Wilks' Lambda value of 0.642, with an F-value of 21.775 and a significance level (p) of 0.000. This confirms that the integration of Kamasan puppet paintings, which carry deep moral and cultural messages, into classroom instruction significantly enhances students' development of core values and essential 21st-century skills aligned with the Pancasila Learner Profile, when compared to conventional learning approaches.

To determine the specific effects of the Kamasan-based learning media on each dependent variable—Character Values and Social-Cognitive Skills—a univariate test (Tests of Between-Subjects Effects) was conducted. The detailed results of the partial analysis are presented in Table 7.

Table 7.
Partial Test Results.

| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. |
|------------------------|-------------------------|-------------------------|----|-------------|----------|-------|
| Corrected Model | Character Values | 29.674 ^a | 1 | 29.674 | 22.481 | 0.000 |
| | Social-Cognitive Skills | 36.412 ^b | 1 | 36.412 | 27.359 | 0.000 |
| Intercept | Character Values | 4850.210 | 1 | 4850.210 | 3671.898 | 0.000 |
| | Social-Cognitive Skills | 5112.398 | 1 | 5112.398 | 3837.214 | 0.000 |
| Group (Learning Media) | Character Values | 29.674 | 1 | 29.674 | 22.481 | 0.000 |
| | Social-Cognitive Skills | 36.412 | 1 | 36.412 | 27.359 | 0.000 |
| Error | Character Values | 102.951 | 78 | 1.320 | | |
| | Social-Cognitive Skills | 103.925 | 78 | 1.332 | | |
| Total | Character Values | 4982.400 | 80 | | | |
| | Social-Cognitive Skills | 5252.290 | 80 | | | |
| Corrected Total | Character Values | 132.625 | 79 | | | |
| | Social-Cognitive Skills | 140.337 | 79 | | | |

Note:

a. R Squared = 0.224 (Adjusted R Squared = 0.213)

b. R Squared = 0.259 (Adjusted R Squared = 0.248).

Based on Table 7, the Tests of Between-Subjects Effects show that the type of learning media (Kamasan-based vs. conventional) has a statistically significant effect on both Character Values and Social-Cognitive Skills, with a significance level (p) of 0.000 for both variables. The R Squared values indicate that the intervention explains 22.4% of the variance in Character Values, and 25.9% of the variance in Social-Cognitive Skills. This suggests a moderate to strong effect size, especially on the development of social-cognitive skills such as cooperation, empathy, and critical thinking—likely influenced by the cultural narratives and moral symbolism embedded in the Kamasan painting tradition.

4. Discussion

The results of this study indicate that the use of Kamasan puppet painting-based learning media has a significant and positive effect on strengthening two key components of the Pancasila Student Profile: character values and social-cognitive skills. The MANOVA analysis revealed that the intervention significantly influenced both dependent variables, while the univariate tests showed that the impact was slightly stronger on social-cognitive skills. This suggests that incorporating traditional cultural narratives such as those found in Kamasan paintings into classroom instruction provides a meaningful and context-rich learning experience that promotes not only cognitive engagement but also moral and social development.

The visual and symbolic elements of Kamasan art, which carry deep philosophical meanings rooted in Balinese Hindu traditions, seem to effectively facilitate students' understanding and internalization of Pancasila values such as cooperation, tolerance, respect, and responsibility [31, 32].

Learning variations are very important for teachers so that they can develop teaching modules that are collaborated with Balinese local wisdom, namely *Kamasan Puppet Paintings*. They are very suitable to be used as a model in the formation of good character because they have certain shapes, attitudes, figures, expressions and colors according to the roles and characters in the story they play. For example, God figures that reflect fair, loving and compassionate nature, *punakawan* figures as a complement to liven up the atmosphere with characters that match the role in the play. With this innovation, it is certainly very suitable to improve the development of children's character to better direction Karmini, et al. [33] and Sriartha, et al. [34]. Remer and Tzuriel [35] revealed that the use of *Kamasan Puppet* as a learning media not only acts as a means of traditional entertainment and a tool to maintain culture, but it is also able to convey messages that are rich in noble values contained in stories such as *Mahabharata* and *Ramayana*. According to puppet is a shadow of real life in this world [32, 36]. In other words, puppet characters contain values that reflect human character in real life as outlined in the puppet media.

The effectiveness of the *Kamasan Puppet Painting* book to strengthen the *Pancasila* Student Profile was measured through the test method to the fifth-grade students in 24 elementary schools in Denpasar City. The test was conducted twice to determine the ability of students before and after being given the *Kamasan Puppet Painting* book to strengthen the *Pancasila* Learner Profile [32, 37]. The test results showed a significant increase in student learning outcomes after using the *Kamasan Puppet Painting* book product to strengthen the *Pancasila* Student Profile. The results of this study are also relevant to previous research related to the internalization of local wisdom values through the development of local wisdom-based teaching materials which obtained an increase in learning outcomes before and after using the developed product [38, 39]. In line with appendix IV of *Permendikbud* (Ministerial Regulations of Education and Culture) Regulation Number 81 of 2013 which states that learning at the primary level must be able to develop attitudes, skills and knowledge and appreciate local wisdom. Local wisdom-based textbooks are also effectively used in elementary school level learning [40, 41]. Based on these opinions, the *Kamasan Puppet Painting* book in strengthening the *Pancasila* Student Profile is effectively used to improve the students' understanding (cognitive) in learning collaborated with IPAS, Indonesian Language, Art, PKN materials [42, 43].

The implications of this research are far-reaching, particularly in the context of Indonesia's current educational transformation under the "Merdeka Curriculum," which emphasizes the development of Pancasila student profiles. The findings support the use of culturally contextualized teaching materials as a powerful tool in building student character holistically. Teachers, curriculum developers, and policymakers can utilize culturally infused media like Kamasan paintings not only as tools for teaching visual arts but as integrated learning resources in civic education, social studies, and language subjects. This study also emphasizes the need for teacher training programs to equip educators with the skills necessary to incorporate local cultural values into their teaching practices. When applied thoughtfully, these culturally rooted approaches may help bridge the gap between academic instruction and real-world moral development.

Despite these promising results, the study has several limitations. First, it was conducted in a culturally specific setting—Bali—where students are already somewhat familiar with the values embedded in Kamasan art. Therefore, the generalizability of the findings to other regions with different cultural contexts remains limited. Second, the intervention was conducted over a relatively short time frame, which might not fully capture the long-term impact of such culturally based learning approaches. Third, the use of self-reported instruments introduces the potential for social desirability bias in students' responses. To address these limitations, future studies should consider expanding the scope of research to include diverse cultural contexts across Indonesia. Longitudinal designs would be valuable in evaluating the sustained impact of culturally integrated learning media on student character development over time. Additionally, the incorporation of observational methods and portfolio assessments could provide more robust and triangulated data to support the outcomes.

5. Conclusion

This research produced a design in the form of flowcharts and storyboards about the *Kamasan Puppet Painting* book which was illustrated through a flow chart. Based on the review results from the expert judgment on learning content, learning design and learning media as well as individual tests and small group tests, the learning innovation book based on the local wisdom of *Kamasan Puppet Paintings* in strengthening the *Pancasila* Student Profile is categorized as very good so it is feasible to be applied in learning activities in elementary schools. The results of the effectiveness analysis show that the learning innovation based on the local wisdom of *Kamasan Puppet Paintings* is effectively applied in learning to strengthen the *Pancasila* Student Profile of elementary school students in Denpasar City.

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