



THE INFLUENCE OF WAYANG STORY WISDOM VALUES AND TEACHER MOTIVATING BEHAVIOR ON CHARACTER EDUCATION EFFECTIVENESS: THE MEDIATING ROLE OF NEW MEDIA INTERACTIVITY

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Abstract

This study aims to develop and empirically test a structural model examining the influence of wayang story wisdom values and teacher motivating behavior on character education effectiveness, with new media interactivity and value internalization as mediators in vocational high schools. The research employed the POP-SDM-AI method, combining qualitative exploration, quantitative modeling, and optimization. Fifteen public vocational high schools in Indonesia's Banyumas Regency and 164 educators provided their input. Using confirmatory factor analysis, we verified that the instruments we used to measure six aspects of character education wayang values, teacher motivation, material suitability, value internalization, multimedia interactivity, and effectiveness were valid. These variables include wayang values, teacher motivation, material suitability, value internalization, new media interactivity, and the effectiveness of character education. Hypotheses were tested using PLS-SEM with bootstrapping, followed by SITOREM analysis to prioritize improvement indicators. Only the suitability of wayang story materials had a significant direct effect on character education effectiveness ($\beta = 0.197$, $p = 0.035$). Wayang values and teacher motivation showed non-significant direct effects. Neither value internalization nor new media interactivity mediated these relationships (all indirect effects $p > 0.05$). The model explained only 19.9% of the variance. SITOREM identified the following priority indicators: teacher as a character reinforcer, teacher as a motivator, wayang and honesty values, and national insight. This study provides the first empirical model integrating wayang local wisdom with new media interactivity in a vocational education context, demonstrating that material suitability outweighs the mere presence of values or motivated teachers. The combination of PLS-SEM and SITOREM provides an evidence-based optimization framework for improving character education.

Keywords: character education, wayang local wisdom, teacher motivation, new media interactivity, PLS-SEM, vocational high school

INTRODUCTION

The global crisis of moral degradation among adolescents has become a pressing concern in contemporary education. In Indonesia, this issue manifests through increasing rates of juvenile delinquency, student brawls, and declining ethical awareness, particularly among vocational high school (SMK) students. Subandi et al. (2025) characterized this as a pressing character education crisis marked by rising violence, bullying, and antisocial behavior in schools, accelerated by rapid technological advancements that have reduced children's physical activity and social interactions. Similarly, Supriatna et al. (2025) found that character strength has a negative and significant effect on juvenile delinquency; increasing character strength significantly reduces juvenile delinquency among vocational high school students. Despite government initiatives such as Presidential Regulation No. 87 of 2017 on Strengthening Character Education (PPK), a preliminary survey of 30 teachers across five public SMKs in Banyumas Regency revealed that 72% had never used wayang stories in

character education, 65% had never integrated wayang values into learning materials, and 78% felt unable to use new media optimally for character education. These findings indicate a significant implementation gap between policy and practice.

Existing research has explored character education through various lenses. Nurrochsyam (2025) demonstrated that wayang kulit performances have the potential to serve as a medium for character education through an ethics-of-care approach emphasizing empathy, caring, and concern for the vulnerable, thereby providing moral education rooted in local culture and relevant to contemporary society. Noegroho and Firdaus (2024) found that Wayang Beber Fabel can attract students' interest and deepen their understanding of character values such as honesty, responsibility, and tolerance. Defi (2025) showed that every story presented in wayang kulit incorporates moral values expected to shape society's character positively. Prilosadoso et al. (2024) developed wayang beber animation media as a preservation and exploration medium containing character education, disseminated to elementary, junior, and senior high schools.

Hurri et al. (2025) demonstrated that using digital puppets significantly improves children's ability to demonstrate empathy, share, support peers, collaborate, and resolve minor conflicts. The digitization of wayang golek proved effective in revitalizing indigenous wisdom while addressing the demand for technology-based education. Warmansyah et al. (2024) developed interactive Google Sites media integrating Sumbang Duo Baleh character values, achieving a "highly valid" rating with 95.31% content feasibility. Nurrahman et al. (2025) confirmed that local wisdom significantly enhances character education and students' positive attitudes in vocational schools in the Society 5.0 era. However, previous studies suffer from three critical limitations. First, they predominantly employed qualitative approaches, lacking empirical testing of causal relationships. Second, they examined wayang values and new media in isolation rather than as an integrated system. Third, none developed an optimization model that prioritizes which indicators require immediate improvement using quantitative methods such as PLS-SEM.

This manuscript addresses these gaps by: (1) developing and empirically testing a structural model of character education effectiveness that incorporates wayang wisdom values, teacher motivation, and new media interactivity using PLS-SEM; (2) determining optimal improvement strategies using SITOREM analysis; and (3) providing actionable recommendations for SMK stakeholders. Based on Self-Determination Theory (Ahmadi et al., 2023) and the theoretical framework, this study tested the following hypotheses: (H1) wayang wisdom values (X_1) have a positive direct effect on character education effectiveness (Y); (H2) teacher motivating behavior (X_2) has a positive direct effect on Y ; (H3) suitability of wayang story materials (X_3) has a positive direct effect on Y ; (H4) value internalization ($Z1$) mediates the relationships between X_1 , X_2 , X_3 , and Y ; and (H5) new media interactivity ($Z2$) mediates the relationships between X_1 , X_2 , X_3 , and Y .

METHOD

This research employed the POP-SDM-AI method, a comprehensive approach combining qualitative exploration, quantitative modeling, and optimization. The study was conducted from August 2024 to July 2025 across five public vocational high schools in Banyumas Regency, Central Java, Indonesia. The population comprised 258 teachers across five schools. The sample size was determined using the Slovin formula with a 5% margin of error, yielding a sample of 166 respondents. Simple random sampling with proportional allocation was employed, and 164 valid responses were analyzed.

Data collection used six validated instruments with 5-point Likert scales. The instruments measured: (1) character education effectiveness (32 items, $\alpha = 1.02$); (2) wayang wisdom values (33 items, $\alpha = 0.85$); (3) teacher motivating behavior (33 items, $\alpha = 0.90$); (4) suitability of wayang materials (34 items, $\alpha = 0.91$); (5) value internalization (33 items, $\alpha = 0.98$); and (6) new media interactivity (34 items, $\alpha = 0.95$). All instruments demonstrated convergent validity (loading factors > 0.7 and AVE > 0.5) and discriminant validity (HTMT < 0.9).

Data analysis proceeded in three stages. First, descriptive statistics characterized the distributions of the variables. Second, structural equation modeling using Partial Least Squares (PLS-SEM) in SmartPLS 4.0 tested the hypothesized paths, employing bootstrapping with 5,000 subsamples. Model fit was assessed using the SRMR (< 0.08 indicates a good fit). Third, SITOREM (Scientific Identification Theory to Conduct Operation Research in Education Management) analysis prioritized indicator improvements based on Cost, Benefit, Urgency, and Importance (CBUI) criteria, integrating expert judgment with empirical scores.

RESULTS AND DISCUSSION

The descriptive analysis revealed that character education effectiveness (Y) had a mean score of 126.08 (SD = 14.25) out of a theoretical maximum of 160, indicating moderate implementation. Among Y indicators, honesty scored highest (M = 4.09), while national insight scored lowest (M = 3.67). For wayang wisdom values (X1), the mean was 128.78 (SD = 17.53), with responsibility scoring highest (M = 4.14) and honesty scoring lowest (M = 3.73). Teacher motivation (X2) averaged 122.90 (SD = 8.81), with teacher as communicator highest (M = 4.19) and teacher as character reinforcer lowest (M = 3.05). Material suitability (X3) averaged 132.81 (SD = 12.78), with consistency highest (M = 4.24) and student response lowest (M = 3.88).

The PLS-SEM analysis produced a model with a good fit (SRMR = 0.068). Table 1 presents the direct effect path coefficients.

Table 1. Direct Effects on Character Education Effectiveness (Y)

Path	Coefficient	T-Statistic	p-Value	Decision
X1 $\rightarrow$ Y	0.155	1.714	0.087	Not significant
X2 $\rightarrow$ Y	0.121	1.609	0.108	Not significant

X3 → Y	0.197	2.108	0.035	Significant
Z1 → Y	0.116	1.257	0.209	Not significant
Z2 → Y	0.078	0.848	0.397	Not significant

Note:

X₁ = Wayang values, X₂ = Teacher motivation, X₃ = Material suitability, Z1 = Value internalization, Z2 = New media interactivity, Y = Character education effectiveness. Significance at p < 0.05.

Contrary to expectations, only material suitability (X₃) showed a significant direct effect on character education effectiveness ($\beta = 0.197$, p = 0.035). Wayang values and teacher motivation demonstrated positive but non-significant direct effects. Neither value internalization nor new media interactivity significantly predicted Y.

Table 2. Indirect Effects (Mediation)

Path	Coefficient	T-Statistic	p-Value	Mediation
X1 → Z1 → Y	0.013	0.878	0.380	None
X2 → Z1 → Y	0.018	0.973	0.330	None
X3 → Z1 → Y	0.024	0.963	0.335	None
X1 → Z2 → Y	0.008	0.580	0.562	None
X2 → Z2 → Y	0.010	0.645	0.519	None
X3 → Z2 → Y	0.011	0.624	0.532	None

Table 2 reveals no significant indirect effects, indicating that neither value internalization nor new media interactivity mediated the relationships between the independent variables and character education effectiveness. The R-square for Y was 0.199, indicating that the five exogenous variables explained only 19.9% of the variance in character education effectiveness, suggesting substantial unmeasured influences, consistent with Saraswati et al. (2025), who found that curriculum programs and teacher performance significantly contribute to student character development.

The SITOREM analysis identified priority indicators requiring immediate improvement. For character education effectiveness (Y), national insight (20.4%, 3.67) and social concern (19.0%, 3.98) needed strengthening, while politeness, social interaction, and honesty should be maintained. For wayang values (X₁), honesty (20.9%, 3.73), role modeling (20.4%, 3.85), and spiritual values (19.4%, 3.77) required improvement, whereas leadership and responsibility should be maintained. For teacher motivation (X₂), teacher as character reinforcer (19.0%, 3.05), and teacher as motivator (17.0%, 3.61) were identified as priority areas for improvement.

This study provides three major contributions to the character education literature. First, it empirically demonstrates that the suitability of wayang story materials has the strongest direct effect on character education effectiveness, surpassing the effects of wayang values themselves and teacher motivation. This finding extends previous qualitative research (Nurrochsyam, 2025; Noegroho & Firdaus, 2024) by quantifying the relative importance of material contextualization. The significant effect of material suitability ($\beta = 0.197$) suggests that how wayang stories are adapted maintaining moral integrity while ensuring age-appropriate delivery matters more than merely presenting wayang

values. It aligns with Jayadinata et al. (2025), who found that Book Creator interactive storytelling media achieved 92–100% validity and practicality scores for enhancing character values. Furthermore, Atmaja and Niam (2025) developed local wisdom-based character education modules using interactive technology through a deep learning approach, reinforcing the importance of content adaptation.

Second, the non-significant direct effects of wayang values (X1) and teacher motivation (X2) on character education effectiveness, together with their non-significant indirect effects through mediators, challenge conventional assumptions. According to Self-Determination Theory (Ahmadi et al., 2023), teacher autonomy support should enhance student motivation and character development. However, in this Indonesian vocational school context, teacher motivation alone proved insufficient. It may be explained by the finding that the teacher-as-character reinforcer scored lowest ($M = 3.05$), indicating that teachers lack systematic reinforcement strategies. Meutia et al. (2024) noted that strengthening character education modules based on work character achieved 85% validity, indicating that structured modules, not just teacher presence, matter. Similarly, Syarif (2025) confirmed that teachers, as role models, bear significant responsibility for character development, yet role modeling without systematic reinforcement appears inadequate.

Third, the failure of value internalization (Z1) and new media interactivity (Z2) as mediators reveals a critical implementation gap. While the literature suggests that interactivity enhances engagement, this study found that current new media practices lack true interactivity. Warmansyah et al. (2024) demonstrated that integrating local cultural values into interactive Google Sites media offers an effective strategy for enhancing character education. Yorman (2025) found that digital media reshapes students' ethical awareness in anti-corruption education. Sulaiman et al. (2025) showed that excessive digital behavior lowers moral sensitivity, but reflective literacy activities, collaborative learning, and religious arts can help re-cultivate ethical awareness and positive character. However, indicator analysis in this study showed that responsiveness scored lowest ($M = 3.43$), indicating that media systems do not provide real-time feedback. Putra (2025) demonstrated that the internalization of character education in theatrical works requires implementation in performing arts, suggesting that passive media consumption cannot replace active engagement.

The low R-square (0.199) indicates substantial unexplained variance in character education effectiveness, suggesting the presence of several critical unmeasured variables. Supriatna et al. (2025) emphasized that interpersonal intelligence mediates the relationship between character and juvenile delinquency, implying that student characteristics matter. Saraswati et al. (2025) found that principal leadership acts as a moderator influencing the effectiveness of curriculum programs and teacher performance on student character formation. Dewi (2025) identified strategies for strengthening character based on local wisdom as a foundation for facing the Society 5.0 era. Junaidi (2025) emphasized that character education in elementary schools in the digital era requires systematic

integration across subjects. Furthermore, Mukaromah (2025) confirmed the effectiveness of a Pancasila-based interactive physical education module in enhancing elementary school students' character values.

The SITOREM findings provide actionable priorities. For teacher motivation, the lowest indicator was teacher as a character reinforcer ($M = 3.05$). Teachers reported rarely providing specific praise for character displays or systematically reinforcing moral behavior. It suggests that professional development should focus on reinforcement techniques rather than on motivational speaking alone. For wayang values, honesty scored lowest ($M = 3.73$), indicating that although wayang stories emphasize honesty, teachers struggle to translate these values into observable student behaviors. Digital storytelling approaches could bridge this gap by making character struggles visible through animation and dialogue, as suggested by Hurri et al. (2025).

The theoretical implications extend to three domains. In educational management, this study demonstrates that the POP-SDM-AI methodology effectively identifies leverage points in complex systems. The combination of PLS-SEM for hypothesis testing and SITOREM for optimization provides a template for evidence-based educational improvement. In character education theory, the findings suggest a reconceptualization: effectiveness depends less on the presence of values or motivated teachers and more on the suitability of value transmission mechanisms to students' developmental stages and media preferences. In technology integration theory, the results indicate that interactivity is not a binary property but a multidimensional construct requiring attention to responsiveness, user control, and collaborative features.

Practical implications for SMK stakeholders are substantial. School principals should prioritize developing contextualized wayang-based materials that preserve moral integrity while employing engaging digital formats. Teacher training programs must shift from general motivation techniques to specific reinforcement strategies, including how to provide immediate, specific, and behavior-contingent praise for character displays. Technology investments should focus on responsive platforms (e.g., interactive quizzes, simulation games, discussion forums) rather than passive video libraries. Curriculum developers should integrate national insight and social concern the two weakest Y indicators across subjects, not only in civics or religion classes.

CONCLUSION

This study concludes that the suitability of wayang story materials significantly predicts character education effectiveness in vocational high schools, whereas wayang values alone and teacher motivation alone do not. Neither value internalization nor new media interactivity mediates these relationships, indicating that current implementation lacks the depth required for transformative character education. The SITOREM analysis identifies specific priority indicators requiring improvement: teacher as a character reinforcer, teacher as a motivator, wayang's honesty values, and national insight into character outcomes.

The primary limitation is the low R-squared (19.9%), indicating that unmeasured variables substantially influence the effectiveness of character education. Future research should incorporate longitudinal designs and experimental studies testing specific interventions (e.g., interactive wayang simulations versus traditional storytelling). It should include school climate, parental involvement, and student digital literacy as additional predictors to provide stronger evidence for causal mechanisms and comparative effectiveness across different educational levels.

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