

Improving Short Story Appreciation Through The Development Of Android-Based Animation Media For Grade VIII SMP Students

Fatmila Sofiyatus Zahroh ✉, Agus Nuryatin, Mukh Doyin

Universitas Negeri Semarang, Indonesia

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Abstract

This study investigates the development, feasibility, and effectiveness of Android-based animation media for short story appreciation in Grade VIII junior high school Indonesian language learning. Conventional literary instruction frequently relies on monotonous lecture methods and text-heavy worksheets, resulting in passive student engagement and suboptimal comprehension. Employing a Research and Development (R&D) design adapted from the Borg and Gall model into three operational stages (preliminary needs analysis, prototype development, and expert validation with empirical testing), the trial was implemented using a one-group pretest-posttest design involving 60 Grade VIII students across MTs Negeri 1 Bojonegoro ($n=30$) and MTs Negeri 5 Bojonegoro ($n=30$). The media, developed using Plotagon Studio, Canva, iSpring Suite, and Web2APK Builder into an offline mobile application, achieved "very feasible" ratings from media experts (90.21%) and material experts (89.70%). Student appreciation scores increased from a pretest mean of 56.40 ($SD = 7.21$) to a posttest mean of 86.95 ($SD = 6.69$), yielding an average Normalized Gain (N-gain) of 0.7007 in the "moderate" category. A paired sample t-test confirmed that this improvement is statistically significant ($t(59) = 24.36, p < 0.001$). These findings prove that the media serves as an effective, accessible scaffolding tool that enriches literary appreciation.

✉ Correspondence address:
Kampus Sekaran FBS UNNES
E-mail: fatmila07@students.unnes.ac.id

INTRODUCTION

Literature education serves as an essential pillar in secondary language education, playing a vital role in fostering students' emotional and cognitive balance, moral sensibility, and social empathy (Sukirman, 2021; Zuliyanti et al., 2022). Within the Indonesian junior high school curriculum (Kurikulum Merdeka), short story (cerpen) appreciation occupies a prominent position, training eighth-grade students to critically analyze narrative structures, interpret character conflicts, and internalize humanist values that reflect real-world social conditions (Prakoso et al., 2023). Meaningful literary appreciation requires students not merely to decode textual words, but to reconstruct narrative worlds, decipher implicit moral dilemmas, and develop empathetic engagement with diverse literary perspectives.

In instructional reality, however, teaching literature in junior high schools (SMP/MTs) confronts persistent hurdles. Classroom observations and empirical studies consistently reveal that literature learning remains predominantly teacher-centered, relying heavily on conventional lecturing and repetitive Student Worksheets (LKS) (Haryanto, 2020; Peuuma et al., 2023). Such practices reduce literary appreciation to mechanical drills of memorizing structural definitions (such as theme, plot, and setting) rather than cultivating aesthetic and affective sensibility (Rahmawati, 2013). Consequently, students perceive literature as dull and disconnected from their lives, leading to daydreaming, low active participation, and suboptimal comprehension of narrative texts.

To surmount this pedagogical stagnation, technology-mediated learning media offers a powerful cognitive and affective bridge. Grounded in Mayer's (2014) Cognitive Theory of Multimedia Learning, presenting instructional materials through dual auditory and visual channels significantly alleviates extraneous cognitive load and fosters deeper generative processing. Dynamic animation surpasses static illustrations by vividly visualizing temporal scene progressions, facial micro-expressions, dialogue

shifts, and dramatic narrative tensions (Fitriasari et al., 2021; Sulistiyowati & Kristanto, 2018). Furthermore, deploying animated content through mobile Android applications enables autonomous, self-paced learning, allowing students to explore short stories flexibly without being confined to rigid classroom hours.

Numerous studies have explored digital media in educational contexts. Ailulia et al. (2022) utilized Plotagon-based animated videos to improve elementary geometry comprehension; Nabila et al. (2023) developed ethnomathematics learning modules using iSpring Suite; Sumardani et al. (2022) engineered spreadsheet- and web-based assessment instruments for high school cerpen analysis; and Furaidah et al. (2022) designed digital novel reading materials for character education. While these studies affirm the instructional promise of digital software, they predominantly address general STEM subjects or rely on passive desktop-oriented reading. Crucially, there is an evident research gap regarding the development of an integrated, standalone, and offline-operable Android application combining 3D character dialogue animation (Plotagon) with interactive assessment scaffolding (iSpring Suite) specifically tailored for Grade VIII short story appreciation. Furthermore, in suburban and rural Indonesian madrasahs—such as MTs Negeri 5 Bojonegoro—chronic infrastructure deficits, including computer laboratory scheduling bottlenecks, ambient projector washout, and fluctuating internet connectivity, severely obstruct online platforms (Nurharirah & Effane, 2022; Rofi'ah et al., 2024). Hence, engineering an offline Android APK that bridges animated literary storytelling with interactive exercises represents an urgent technological and pedagogical innovation.

Addressing these practical and theoretical gaps, this study undertakes a development research framework aimed at four explicit objectives: (1) analyzing the pedagogical and infrastructural needs of teachers and students regarding Android-based animation media for short story appreciation; (2) designing and developing a robust media prototype utilizing Plotagon Studio, Canva, iSpring Suite, and

Web2APK Builder; (3) determining the feasibility of the developed media based on material and media expert appraisals; and (4) evaluating the empirical effectiveness of the media in improving short story appreciation learning outcomes among Grade VIII students.

METHODOLOGY

This investigation employed a Research and Development (R&D) design following the Borg and Gall (1989) procedural framework, adapted into three operational stages in accordance with Sukmadinata's (2016) methodological model: (1) Preliminary Study (Studi Pendahuluan), encompassing curriculum review (Kurikulum Merdeka Indonesian language syllabus for Grade VIII), literature analysis, and empirical needs assessment; (2) Model Design and Development (Pengembangan Model), involving instructional architecture formulation, storyboarding, 3D character animation rendering via Plotagon Studio, graphical layout design in Canva, interactive module compilation in Microsoft PowerPoint via iSpring Suite 10, and final compiling into a standalone offline Android application package (.apk) using Web2APK Builder; and (3) Validation and Testing (Validasi dan Uji Coba), comprising expert judgment, prototype refinement, and empirical classroom trial.

The research participants were selected through purposive sampling to represent distinct institutional and infrastructural contexts in Bojonegoro Regency, East Java. The sample comprised 60 Grade VIII students distributed across two schools: Class VIII G at MTs Negeri 1 Bojonegoro ($n = 30$), representing an urban madrasah with moderate multimedia facilities, and Class VIII A at MTs Negeri 5 Bojonegoro ($n = 30$), representing a rural madrasah facing substantial technological infrastructure limitations (such as shared computer labs and projector visibility constraints). Both participating cohorts demonstrated comparable baseline academic proficiencies in language learning prior to the intervention.

Four primary instruments were deployed for data collection: (1) Semi-structured interview protocols for Indonesian language teachers to examine instructional practices and curricular barriers; (2) Student needs assessment questionnaires utilizing Likert rating scales and open-ended items; (3) Expert validation rubrics structured on a 5-point Likert scale (ranging from 1 = Very Infeasible to 5 = Very Feasible), encompassing criteria of software engineering, audiovisual presentation, instructional alignment, and linguistic appropriateness; and (4) A short story appreciation achievement test comprising 20 items (15 contextual multiple-choice items and 5 rubric-scored analytical essay prompts) evaluating key cognitive dimensions of literary appreciation (identifying themes, analyzing character moral conflicts, tracing plot complications, interpreting physical/social settings, and deducing narrative points of view). The achievement test was subjected to expert content validation and empirical item tryouts, exhibiting a high internal consistency reliability coefficient (Cronbach's $\alpha = 0.84$).

Quantitative and qualitative data were systematically analyzed. Expert validation data were converted into percentage scores using the formula: $P = (\text{sum } x / \text{sum } x_i) * 100\%$, where $\text{sum } x$ is the total empirical score and $\text{sum } x_i$ is the maximum possible score. Criteria intervals were categorized as Very Feasible (81.00%–100%), Feasible (61.00%–80.00%), Fairly Feasible (41.00%–60.00%), and Infeasible (<41.00%). Media effectiveness was calculated using Normalized Gain (N-gain) scores based on Hake's (1999) formulation: $g = (S_{\text{post}} - S_{\text{pre}}) / (S_{\text{max}} - S_{\text{pre}})$, where S_{post} is the posttest score, S_{pre} is the pretest score, and S_{max} is the maximum possible score (100). The resulting N-gain index was interpreted according to established thresholds: High ($g > 0.70$), Moderate ($0.30 \leq g \leq 0.70$), and Low ($g < 0.30$). To determine whether score differences were statistically significant, data were screened for normality using the Shapiro-Wilk test, followed by a two-tailed paired-samples t-test ($\alpha = 0.05$) alongside Cohen's d effect size calculation.

It is methodologically acknowledged that the implementation of a one-group pretest-posttest design (o1 -> x -> o2) without an untreated control group limits causal certitude regarding potential extraneous variables, such as teacher instructional variation, historical maturation, or test-retest familiarity effects. Nevertheless, this quasi-experimental approach was pragmatically necessitated by institutional class scheduling restrictions and the ethical obligation to provide equitable instructional innovations to all participating students in the partner schools. Internal validity was protected by maintaining identical testing intervals, standardized administration conditions, and identical rubric criteria.

RESULTS AND DISCUSSION

Teacher and Student Needs for Android-Based Animation Media

The preliminary investigation conducted across MTs Negeri 1 Bojonegoro and MTs Negeri 5 Bojonegoro confirmed a pronounced pedagogical necessity for interactive multimedia. Needs analysis data gathered from student questionnaires (N = 60) revealed that 86.7% of students experienced substantial boredom during conventional lecture-based literature lessons, while 91.7% expressed a strong desire for animated, visual learning media to assist them in deciphering short story elements. Furthermore, interviews with Indonesian language educators underscored that abstract narrative concepts—such as analyzing implicit character motives, symbolic settings, and multifaceted thematic conflicts—consistently posed serious learning hurdles when presented exclusively through printed Student Worksheets (LKS).

Infrastructural differences between the two research sites highlighted the specific value of an offline Android-based application. While MTs Negeri 1 Bojonegoro possesses moderate ICT equipment, teachers reported high student screen fatigue from static slides. Conversely, MTs Negeri 5 Bojonegoro, situated in a rural locale, grapples with severe facility constraints: the school maintains only a single shared computer

laboratory, while classroom projection is frequently impaired by excessive natural ambient lighting (Nurharirah & Effane, 2022). Consequently, packaging the animated learning media into a lightweight, standalone Android APK operable completely offline without internet quota emerged as the optimal instructional solution for bridging the rural-urban digital divide (Maulido in Rofi'ah et al., 2024).

Prototype Architecture and Media Development Process

The engineering of the android-based animation media proceeded through systematic prototyping structured into six integrated modules: (1) home and navigation menu, offering intuitive access; (2) learning objectives and operational guide, orienting students to expected appreciation competencies; (3) core instructional material, explicating intrinsic and extrinsic short story elements; (4) multimodal animated short story, presenting original literary narratives animated in 3d; (5) guided appreciation steps, scaffolding analytical reading; and (6) interactive evaluation, delivering randomized questions with instant performance feedback



Figure 1 Initial Media View

Development commenced with the synthesis of narrative scripts and character storyboards. Utilizing Plotagon Studio, full 3D animated scenes were created featuring character avatars (such as 'Carla' and classroom peers) enacting short story dialogues with natural vocal intonations, facial expressions, and dynamic camera angles. The graphic interface and visual

branding were subsequently crafted in Canva, generating harmonious visual slides that were imported into Microsoft PowerPoint. Using iSpring Suite 10, interactive quizzes, audio narration sync, and branched navigation triggers were integrated. Finally, the published HTML5 output was compiled via Web2APK Builder into a standalone mobile application package (.apk) ready for deployment on Android devices.

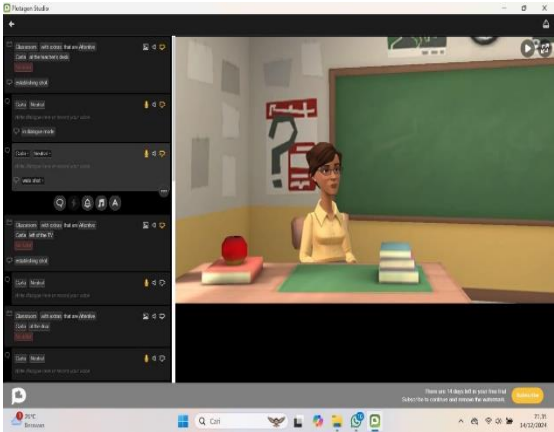


Figure 2 Making Animated Videos with Plotagon

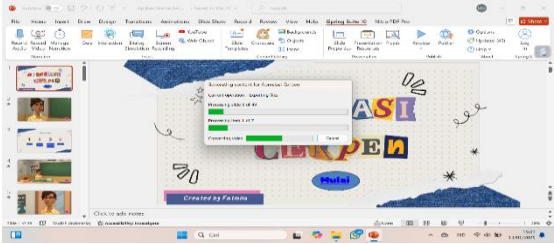


Figure 3 Process of Converting PPT to HTML via Ispring Suite

Expert Validation Results and Media Feasibility

To establish content validity, pedagogical rigor, and technical usability, the developed prototype underwent expert appraisal by designated specialists. Media design and software functionality were evaluated by Day Ramadhani Amir, M.Pd. (Information Technology Education, IKIP PGRI Bojonegoro), while instructional literature content was validated by Dr. Cahyo Hasanudin, M.Pd. (Indonesian Language and Literature Education, IKIP PGRI Bojonegoro). The quantitative appraisal results are summarized in Table1.

Table 1. Expert Validation Results of Android-Based Animation Media

No	Expert Category	Validator & Institution	Assessed Indicators	Validity (%)	Category
1	Media Expert	Day Ramadhani Amir, M.Pd. (IKIP PGRI Bojonegoro)	Software Engineering & Operations (91.50%) Visual & Audio Aesthetics (89.50%) Interactive Usability (89.63%)	90.21%	Very Feasible
2	Material Expert	Dr. Cahyo Hasanudin, M.Pd. (IKIP PGRI Bojonegoro)	Curricular Alignment & Didactics (91.00%) Content Substance & Accuracy (89.20%) Language & Readability (88.90%)	89.70%	Very Feasible
Combined Overall Validity				89.96%	Very Feasible

As detailed in Table 1, the media expert assigned an overall score of 90.21%, qualifying in the 'Very Feasible' category, with high marks across software engineering (91.50%),

audiovisual presentation (89.50%), and interactive usability (89.63%). Concurrently, the material expert awarded a composite score of 89.70% ('Very Feasible'), confirming curricular

alignment (91.00%), content substance (89.20%), and linguistic readability (88.90%). Expert qualitative recommendations—including optimizing subtitle font sizes for 5-inch smartphone displays, moderating character dialogue pacing, and enriching feedback explanations for incorrect quiz answers—were systematically incorporated before field testing.

Empirical Learning Outcomes, N-Gain, and Statistical Significance

The instructional effectiveness of the finalized Android-based animation media was evaluated through pretest and posttest administration across the two participating cohorts (total N = 60). Table 2 presents the detailed empirical outcomes, standard deviations, mean gains, and normalized gain indices.

Table 2. Pretest, Posttest, and N-Gain Learning Outcomes in Short Story Appreciation

School / Group	N	Pretest Mean ± SD	Posttest Mean ± SD	Mean Gain	N-Gain	Category
MTs Negeri 1 Bojonegoro (Class VIII G)	30	58.20 ± 7.15	87.80 ± 6.42	29.60	0.7081	High / Upper Moderate
MTs Negeri 5 Bojonegoro (Class VIII A)	30	54.60 ± 6.88	86.10 ± 6.95	31.50	0.6938	Moderate
Combined Overall Sample	60	56.40 ± 7.21	86.95 ± 6.69	30.55	0.7007	Moderate
Paired Samples t-Test	t(59) = 24.36, p < 0.001, Cohen's d = 3.14 (Statistically Significant)					

The empirical findings demonstrate consistent academic progression. At MTs Negeri 1 Bojonegoro, the pretest mean score rose from 58.20 (SD = 7.15) to a posttest mean of 87.80 (SD = 6.42), yielding an N-gain of 0.7081, which falls on the threshold of the high/upper moderate category. At MTs Negeri 5 Bojonegoro, despite lower initial infrastructure, student scores advanced from a pretest mean of 54.60 (SD = 6.88) to a posttest mean of 86.10 (SD = 6.95), producing an N-gain of 0.6938 (moderate category). Across the aggregate sample (N = 60), the overall mean increased from 56.40 (SD = 7.21) to 86.95 (SD = 6.69), achieving an average N-gain of 0.7007. A paired samples t-test confirmed that this score increase is statistically significant (t(59) = 24.36, p < 0.001), accompanied by a substantial effect size (Cohen's d = 3.14). These results provide robust statistical proof that the media effectively enhanced short story appreciation abilities.

Critical Discussion and Theoretical Grounding

The marked improvement in students' short story appreciation can be explicated through dual cognitive and aesthetic theoretical frameworks. Grounded in Mayer's (2014) Cognitive Theory of Multimedia Learning, human working memory processes verbal and non-verbal information through separate visual and auditory channels. By presenting narrative events through animated characters in Plotagon whose spoken dialogues synchronize with dynamic actions and subtitle cues, the media effectively eliminates the split-attention effect characteristic of text-only worksheets. Students can construct mental models of narrative progression and character motivation without suffering cognitive overload.

Furthermore, from the perspective of Louise Rosenblatt's (1994) Reader-Response Theory, literary appreciation entails an aesthetic transaction wherein readers emotionally

experience the literary world rather than merely extracting factual information (efferent reading). The 3D animation serves as an affective catalyst: students observe characters confronting moral choices, expressing facial distress, and engaging in dramatic interpersonal conflicts. This visual-auditory immersion stimulates emotional identification, enabling eighth-grade learners to articulate sophisticated interpretations of implicit themes and societal values (Sukirman, 2021). These findings corroborate previous investigations by Fitriyanti et al. (2021) and Sulistiyowati & Kristanto (2018), while establishing that interactive mobile delivery provides superior scaffolding compared to static digital modules (Sumardani et al., 2022).

Pedagogical and Technological Limitations

Notwithstanding these positive outcomes, several practical and technological limitations must be acknowledged. First, device heterogeneity posed minor operational hurdles: variations in Android operating system versions (Android 8 through 13), screen dimensions, and RAM capacities among students' personal smartphones occasionally produced slight audio-video latency on low-end hardware. Second, while the application effectively automates objective appreciation testing, deep and nuanced literary analysis—such as debating subjective moral dilemmas or composing creative alternative endings—inherently requires teacher-facilitated classroom dialogue. Hence, Android-based animation media should be deployed as a complementary cognitive scaffold rather than a total replacement for teacher mentorship.

CONCLUSION

This research successfully developed, validated, and evaluated Android-based animation media for short story appreciation among Grade VIII junior high school students. In response to the first research objective, the preliminary needs assessment confirmed an acute demand among teachers and students for interactive multimodal media to alleviate lecture monotony and facilitate narrative

comprehension, particularly in rural schools facing severe digital infrastructure constraints. In response to the second objective, the media prototype was systematically engineered through three Borg and Gall R&D stages, integrating Plotagon Studio 3D character dialogues, Canva graphics, and iSpring Suite interactive quizzes into a standalone, offline Android application package (.apk).

Addressing the third and fourth objectives, expert appraisal confirmed that the media is 'Very Feasible' for instructional use, achieving validation scores of 90.21% from media specialists and 89.70% from literature material experts. Empirically, the media proved moderately effective in improving short story appreciation, raising student scores from an initial pretest mean of 56.40 (SD = 7.21) to a posttest mean of 86.95 (SD = 6.69). This yielded an average Normalized Gain (N-gain) of 0.7007 (moderate category), which was empirically validated as statistically significant via a paired samples t-test ($t(59) = 24.36$, $p < 0.001$, Cohen's $d = 3.14$). Consequently, the claim of media effectiveness is grounded strictly within the scope of moderate normalized gains and verified statistical significance.

The scientific contribution of this study lies in presenting an operational, replicable mobile learning framework that overcomes infrastructure barriers in resource-limited madrasahs while providing dual-coded cognitive scaffolding for literature education. For pedagogical practice, teachers are encouraged to integrate offline mobile animation with collaborative interpretive discussions. Future research should adopt quasi-experimental factorial designs featuring untreated control cohorts, evaluate longitudinal retention across extended posttest intervals, and expand the instructional scope to other literary genres, such as poetry and drama.

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