

Addressing visual fatigue for student engagement: Needs analysis and animation-based *muhadatsah* design in boarding schools

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ABSTRACT

Visual fatigue in learning environments is commonly associated with monotonous, text-heavy printed materials that provide limited visual stimulation. This study aims to identify students' visual learning needs and develop a contextual, modeling-based animated video prototype as an instructional intervention. Employing a Research and Development (R&D) approach based on the ADDIE model, the study was limited to the Analysis and Design phases and involved 28 seventh-grade students and one Arabic language teacher at Al-Hamra Islamic Boarding School Junior High School. Data were collected through participant observation, in-depth interviews, and expert validation. The findings indicate that: (1) students demonstrated behavioral resistance toward conventional textbooks, evidenced by physical damage to approximately 70% of the books, largely due to their text-heavy design; (2) the proposed prototype features animated characters representing Islamic boarding school students (*santri*) and dormitory-based settings to enhance emotional relevance and contextual authenticity; and (3) expert validation produced high feasibility scores from the subject-matter expert (93.3%), media expert (91.4%), and language expert (91.7%), with an overall average of 92.1%, categorized as "Highly Feasible." The study concludes that the contextual animated video prototype has strong theoretical validity as a potential solution for mitigating students' visual fatigue before production. Future research should continue through the Development, Implementation, and Evaluation phases and experimentally examine its effectiveness in improving students' speaking proficiency.



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INTRODUCTION

Mastery of speaking skills (*maharah al-kalam*) occupies a pivotal role in Arabic language education as a means of global communication in the twenty-first century. Effective oral communication requires the seamless integration of linguistic competence with non-verbal elements including intonation, facial expressions, and situational context—to construct meaningful interaction (Alam, 2025; Zulharby et al., 2019). In line with the demands of twenty-first-century 4C

competencies (Critical Thinking, Collaboration, Communication, and Creativity), contemporary foreign language instruction is expected to provide authentic communicative experiences that extend beyond static printed texts. Achieving this objective requires instructional stimuli capable of accurately modeling real-life communicative situations for learners (Amrullah et al., 2024; Sarip et al., 2024). Within this context, the Multimedia Learning approach provides a critical theoretical foundation. Its dual-coding principle suggests that information is processed more effectively when verbal and visual representations are presented simultaneously, thereby strengthening long-term memory retention (Roziqi, 2020; Zhu & Yang, 2023). Consequently, visual media such as animated conversation videos function as cognitive scaffolding that enables learners to visualize linguistic contexts more efficiently than conventional instructional methods. Their integration therefore represents not merely a technological innovation but an essential pedagogical necessity for developing communicative competence (Jamshidi & Zare, 2023; Jumadil & Haniah, 2022; Khadawardi, 2022; Kurnia et al., 2023).

Islamic boarding schools (*pesantren*) possess distinctive educational characteristics, particularly the restriction of students' access to personal digital devices. Under such circumstances, classrooms are expected to serve as a "visual oasis," the primary gateway through which students experience authentic representations of the outside world via technology-enhanced learning media (Minasari, 2025). Although the integration of educational technology into the *pesantren* curriculum has become an increasingly important global discourse for narrowing the digital literacy gap, its implementation frequently encounters obstacles related to limited infrastructure and teachers' pedagogical readiness.

Consequently, the responsibility of teachers to provide high-quality audiovisual learning experiences becomes even more critical than in conventional schools (Nurdin et al., 2025). However, empirical evidence reveals a substantial discrepancy between this educational imperative and current classroom practice. The principal challenge in Arabic language instruction within *pesantren* extends beyond the complexity of instructional content to the persistent reliance on conventional teaching approaches, where printed textbooks remain the sole instructional resource (Oktafatricia et al., 2022; Yasin & Fadhlullah, 2025). As a result, *muhadatsah* instruction, which should foster dynamic communicative interaction, is often reduced to repetitive text-based routines, creating a paradox in which the curriculum aspires to cultivate adaptive twenty-first-century competencies while classroom practices remain constrained by traditional, media-poor instruction (Sholahudin et al., 2025).

The central issue addressed in this study concerns the emergence of visual fatigue resulting from the poor instructional design of Arabic learning materials. Preliminary observations of the Arabic textbooks currently used revealed predominantly monochromatic layouts characterized by text-heavy page designs, which negatively affect readability and students' ability to retain information (Feng et al., 2022; Ismail & Yusof, 2022). Beyond increasing learners' cognitive load, the absence of stimulating visual elements suppresses the development of visual thinking skills that are essential for helping students at the concrete operational stage comprehend abstract foreign-language concepts. Over time, this condition contributes to perceptual fatigue, whereby learners' brains automatically disregard visually unappealing information before meaningful cognitive processing can occur (Alomoush et al., 2023; Cheng et al., 2018).

The most tangible manifestation of this instructional design failure appears in students' behavioral resistance toward learning materials. This phenomenon is reflected in the extensive physical deterioration of Arabic textbooks, including missing covers, torn pages, and acts of vandalism that occur far more frequently than in visually enriched textbooks. Such evidence indicates a diminished sense of ownership resulting from inadequate integration between textual and visual elements, ultimately preventing students from forming meaningful emotional connections with the learning materials (Jamshidi & Zare, 2023; Widyanti & Muta'ali, 2022). Furthermore, an overreliance on printed textbooks creates substantial epistemological barriers to teaching *maharah al-kalam*, as static textual media are inherently incapable of representing the suprasegmental features of spoken language, including intonation, stress, rhythm, and facial expressions that are indispensable for constructing authentic communicative meaning. Consequently, students tend to

reduce conversation practice to reading aloud or mechanically memorizing scripted dialogues without developing genuine pragmatic competence (Amrullah et al., 2024). This problem is further exacerbated by instructional materials that remain dominated by grammatical-structural approaches while failing to provide adequate visual scaffolding for authentic conversational simulation. Such limitations ultimately impede learners' fluency, speaking proficiency, and confidence in spontaneous oral communication due to insufficient exposure to authentic speech models (Al-jarf & Mingazova, 2020; Sarip et al., 2024).

Previous studies have examined the shortcomings of Arabic instructional materials from multiple perspectives. From a visual design standpoint, research has demonstrated that the integration of text and imagery in secondary-level Arabic textbooks remains inadequate, resulting in insufficient visual scaffolding for effective learning (Jamshidi & Zare, 2023). Likewise, visually impoverished textbook designs have been shown to significantly hinder the development of visual thinking skills necessary for understanding abstract concepts (Alomoush et al., 2023). Studies conducted in Islamic boarding school contexts further indicate that the primary challenge lies not only in instructional content but also in pedagogical stagnation and the limited diversity of learning media (Minasari, 2025; Yasin et al., 2025).

In response, recent research has increasingly focused on the development of animation-based instructional media. Animated applications such as Plotagon and two-dimensional animation have demonstrated considerable effectiveness in enhancing student engagement and oral communication skills (Amrullah et al., 2024; Kalbun & Yasak, 2024), while video-based instructional models incorporating twenty-first-century 6C competencies have also been proposed (Sarip et al., 2024). Nevertheless, the majority of these studies emphasize product efficacy or general skill enhancement after implementation, with relatively limited attention devoted specifically to the Analysis and Design phases as a means of addressing visual fatigue within technology-restricted Islamic boarding school environments. This research addresses that gap by developing a context-specific instructional media prototype explicitly designed to alleviate visual fatigue while supporting the unique muhadatsah learning needs of santri.

To address these challenges, this study proposes the development of an Animaker-based animated instructional video employing a contextual modeling approach for muhadatsah instruction. Animation technology was selected because of its ability to perform text-to-picture transformation, converting abstract conversational scripts into concrete visual representations that simultaneously facilitate learners' understanding of linguistic meaning and social context (Kalbun & Yasak, 2024; Karkar et al., 2017). Recognizing that many educational media development projects fail due to insufficient planning during the early stages, this study deliberately limits its scope to the Analysis and Design phases of the ADDIE model. This focused approach is intended to ensure the development of a pedagogically robust blueprint whose conceptual validity has been rigorously established before progressing to the technically demanding and resource-intensive production stage (Jumadil & Haniah, 2022).

Based on the issues outlined above, this study addresses three research questions: (1) What are the characteristics of students' visual learning needs and the manifestations of visual fatigue within Islamic boarding school classrooms? (2) What design characteristics should an animated instructional medium possess to align with the social and cultural context of santri? (3) To what extent is the proposed instructional media design theoretically valid according to expert evaluation? Accordingly, this study aims to diagnose the underlying visual challenges encountered in muhadatsah instruction and to develop a pedagogically validated instructional media design capable of preventing learning fatigue before entering the production stage. The resulting blueprint is expected to serve as a reference model for the development of adaptive learning media in Islamic boarding schools, demonstrating that restrictions on students' access to personal digital devices should not prevent classrooms from providing immersive, visually engaging, and high-quality learning experiences that ultimately foster students' speaking proficiency.

METHOD

This study employed a Research and Development (R&D) approach by adopting the ADDIE instructional design model (Analyze, Design, Develop, Implement, and Evaluate) conceptualized by Branch (Branch, 2009).

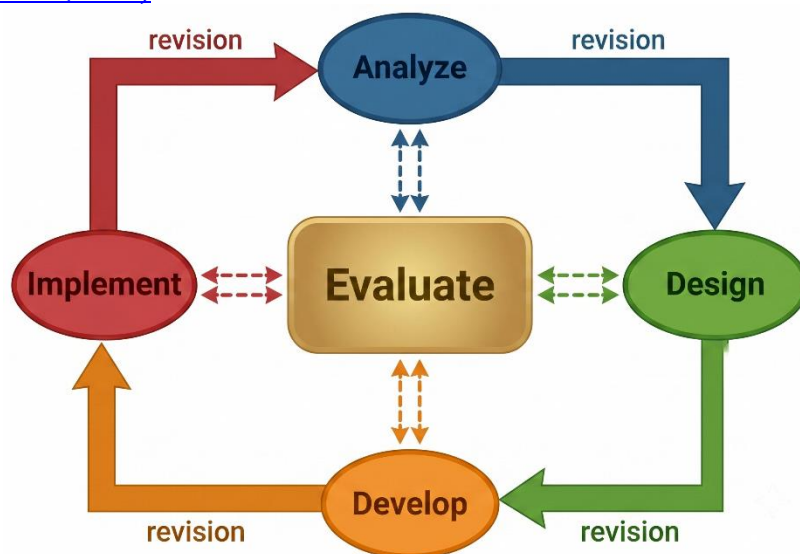


Figure 1. ADDIE Model

As illustrated in Figure 1, the ADDIE model consists of five cyclical and interconnected phases linked through a revision mechanism, allowing developers to revisit earlier stages whenever discrepancies are identified during the process of continuous evaluation. This iterative characteristic constitutes one of the primary reasons for selecting the ADDIE model, consistent with its application in instructional video development by Ulya et al., who demonstrated that systematic revision across development stages contributed substantially to the high validity of the final product (Ulya et al., 2021). The model was selected because of its systematic structure and its emphasis on addressing performance gaps through well-planned instructional design interventions. Although the generic ADDIE framework encompasses five sequential phases, the present study deliberately limited its scope to the first two foundational stages: (1) the Analysis phase and (2) the Design phase.

This methodological focus was based on the premise that the effectiveness of instructional media is largely determined by the accuracy of problem diagnosis and the robustness of the initial design concept. As emphasized by Jumadil & Haniah (2022), in their study on visual technology development, the failure of instructional media to enhance student engagement frequently stems from inadequate needs analysis and the absence of theoretically validated design prior to large-scale production. Furthermore, ensuring that the visual characteristics of instructional media are aligned with learners' religious and cultural values represents a critical consideration during the design process. This perspective is supported by Aeni et al., whose research on culturally responsive Islamic educational media highlighted the importance of contextualizing visual design for school-age learners (Aeni et al., 2022). Accordingly, the present study is positioned as design research, or more specifically, a preliminary study aimed at producing a pedagogically grounded blueprint and prototype of animated media for *muhadatsah* instruction. The proposed prototype was evaluated for both content validity and construct validity through expert judgment, thereby establishing a theoretically sound foundation for subsequent research encompassing the Development and Implementation phases of the ADDIE model.

The study was conducted at Al-Hamra Islamic Boarding School (IBS) Junior High School, a full-boarding educational institution operating within the Islamic boarding school (*pesantren*) system. This site was purposively selected because its institutional policy restricts students' access to personal digital devices. Such an environment provides an ideal ecological setting for investigating students' dependence on classroom instructional media as their primary source of visual stimulation,

as well as examining how limited variation in learning media contributes to visual fatigue during the learning process.

The participants were selected through purposive sampling and consisted of 28 seventh-grade students enrolled in a single classroom cohort. Seventh-grade students were intentionally chosen based on psychopedagogical considerations, as they are in a critical transitional stage from elementary education to the full-boarding school environment. At this stage, students are generally more susceptible to academic culture shock and learning boredom than their senior counterparts, making them an appropriate population for investigating visual fatigue in classroom learning. In addition to the student participants, one Arabic language teacher responsible for teaching *muhadatsah* served as the key informant to identify instructional challenges encountered during classroom practice. The study also involved three expert validators, comprising one expert in Arabic language instruction, one instructional media design expert, and one Arabic language expert. These experts were responsible for evaluating the theoretical feasibility and overall quality of the proposed instructional media prototype through expert judgment.

The development process was rigorously implemented by following the first two stages of the ADDIE model. The Analysis phase was designed to diagnose the existing performance gap through three complementary activities: performance analysis, needs analysis, and content analysis. Performance analysis focused on classroom observations of the teacher's instructional practices and the use of printed textbooks during *muhadatsah* instruction. Needs analysis explored students' visual preferences, learning experiences, and the manifestations of visual fatigue encountered throughout the instructional process. Content analysis examined the Grade VII *muhadatsah* curriculum to identify learning objectives, instructional content, and communicative competencies that should be represented in the proposed media.

The findings generated during the Analysis phase subsequently informed the Design phase, in which the identified instructional needs were translated into concrete product specifications. This phase involved the development of a comprehensive content map, the preparation of contextual dialogue scripts reflecting students' daily experiences in the Islamic boarding school environment, and the creation of character storyboards using the Animaker platform. The development procedure concluded with an expert judgment process to verify both the accuracy of the instructional content and the theoretical appropriateness of the media design before the prototype was finalized.

To ensure data triangulation, this study employed three complementary research instruments developed on the basis of visual fatigue indicators. Qualitative data were collected using an observation protocol and an in-depth interview guide. The observation protocol was designed to document the physical condition of students' Arabic textbooks, particularly signs of deterioration, as well as students' behavioral responses during classroom instruction. The in-depth interview guide was used to explore teachers' pedagogical challenges and students' psychological preferences regarding the use of animated instructional media. To evaluate the quality of the proposed prototype, quantitative data were obtained through expert validation sheets employing a five-point Likert scale. The validation instrument was specifically designed to assess two principal dimensions: content validity, evaluated by the Arabic language subject-matter expert, and construct validity, evaluated by the instructional media expert, with particular emphasis on visual aesthetics, readability, and instructional design quality.

The data were analyzed using complementary qualitative and quantitative techniques according to the nature of the data collected. Qualitative data obtained from classroom observations and in-depth interviews were analyzed using the interactive model proposed by Miles, Huberman, and Saldaña, which consists of three iterative processes: data condensation, data display, and conclusion drawing and verification (Miles et al., 2015). During the data condensation stage, the analysis focused on identifying specific patterns associated with visual fatigue and students' instructional needs. The resulting diagnostic findings were then systematically organized to formulate the design specifications for the proposed instructional media.

Quantitative data derived from the expert validation process were analyzed using descriptive percentage statistics to determine the levels of content validity and construct validity of the proposed media design. The feasibility level of the instructional media prototype was calculated using the following formula:

$$P = \frac{\Sigma x}{\Sigma xi} \times 100\%$$

Information:

P = Feasibility Percentage

Σx = Total Score Awarded by the Validators

Σxi = Maximum Ideal Score

The resulting percentage scores were subsequently interpreted according to the feasibility criteria presented in Table 1.

Table 1. Interpretation Criteria for Prototype Feasibility

No.	Percentage Interval	Feasibility Category	Recommended Action
1	86%–100%	Highly Feasible	No Revision Required
2	76%–85%	Feasible	Minor Revision
3	66%–75%	Moderately Feasible	Revision Required
4	56%–65%	Less Feasible	Major Revision
5	<56%	Not Feasible	Complete Redesign Required

RESULTS AND DISCUSSION

Results

Based on observations conducted with 28 seventh-grade students, physical evidence regarding the condition of the printed instructional materials was documented. Field observations revealed that the majority of students' Arabic textbooks had undergone substantial physical deterioration. As illustrated in Figure 2, the damage included missing or severely damaged front covers, torn pages, and handwritten markings throughout the text. These findings provide tangible evidence of students' behavioral resistance toward the existing instructional materials, which had previously been identified during the needs analysis.

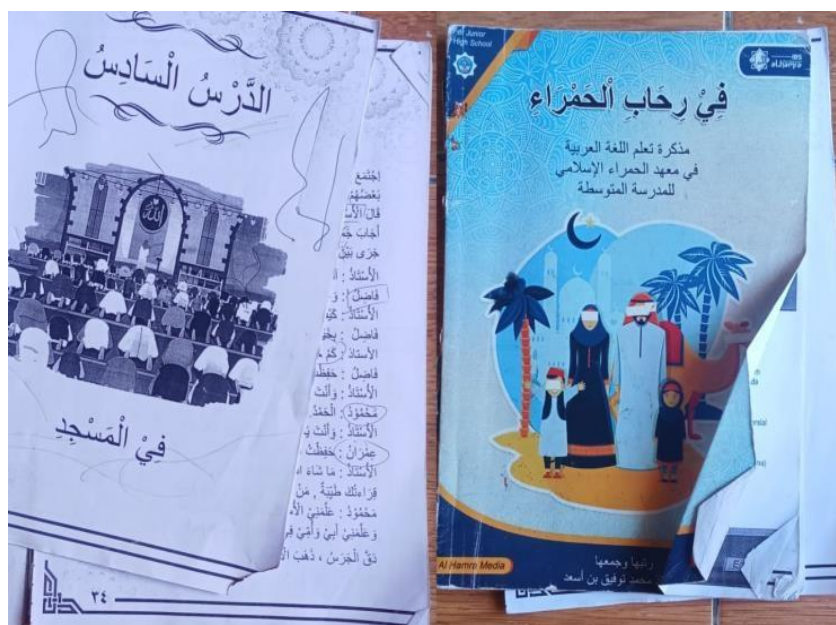


Figure 2. Physical Condition of Student Books

The observational findings were further corroborated by in-depth interviews conducted with student representatives and the Arabic language teacher. A summary of participants' perceptions regarding the instructional media currently used in *muhadatsah* classes is presented in Table 2.

Table 2. Summary of Interview Findings

No.	Participant	Key Response
1	Student (S-01)	"The textbook looks worn out because I rarely open it. It mostly contains text with very few illustrations. Reading it for a long time makes me feel sleepy and unmotivated. It would be much more interesting if it included more pictures."
2	Student (S-02)	"Honestly, I don't really like reading this book. It's printed in black and white, and the pages are filled with text, so it becomes tiring to look at."
3	Teacher (G-01)	"It is quite difficult to demonstrate conversational contexts using text alone because seventh-grade students still rely heavily on visual and audio support to understand communicative situations."

In addition, a comparative analysis of the existing instructional media identified a clear mismatch between the characteristics of the current textbooks and students' visual learning preferences. The existing textbooks are predominantly text-heavy, with more than 90% of the page content consisting of text presented in a monochromatic format. In contrast, students expressed a preference for instructional media incorporating diverse, dynamic, and visually engaging representations capable of supporting contextual understanding. Full Text Book, Black and White, and Minimal Visuals.

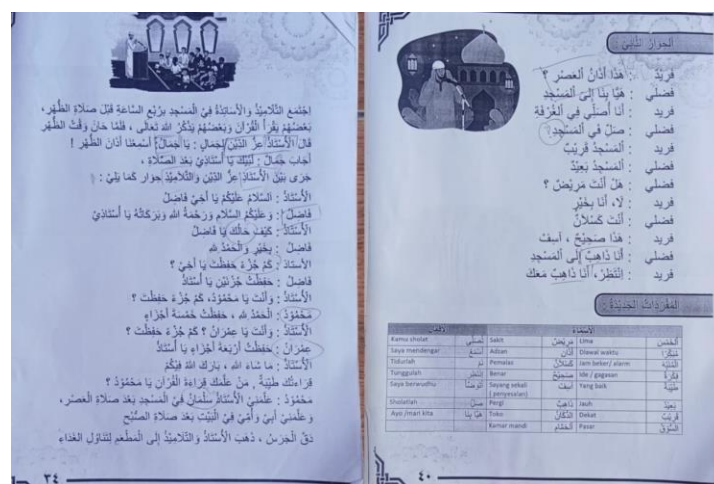


Figure 3. Full Text Book, Black and White, and Minimal Visuals

Based on the needs analysis, an animated instructional video prototype was designed using the Animaker platform. The prototype focused on *muhadatsah* materials covering Chapters 6 to 10 from the textbook *Fi Rihab Al-Hamra*. The instructional content and corresponding visual design specifications are presented in Table 3.

Table 3. Instructional Content Map and Visual Character Design

No.	Chapter	Conversation Topic	Setting	Main Characters
1	6	<i>Fi al-Masjid</i> (At the Mosque)	School Mosque Interior	Umar, Yusuf, Karim
2	7	<i>As-Shalah</i> (Prayer)	Congregational Prayer Area	Akbar, Abid
3	8	<i>Fi al-Mal'ab</i> (at the Sports Field)	Boarding School Basketball Court	Faqih, Ghani
4	9	<i>At-Tha'am</i> (Food)	School Cafeteria / Boarding School Courtyard	Wafi, Thoriq
5	10	<i>Fi al-Maktabah</i> (At the Library)	Library Bookshelves	Ilyas, Khalid

The animated characters were developed as custom-designed avatars to reflect the visual identity of *santri* in the Islamic boarding school environment. Characters such as Umar and Yusuf were specifically illustrated wearing traditional Muslim caps (*peci*) and robes that resemble the official student attire of the institution, distinguishing them from the default character templates provided by the Animaker platform. This contextualized visual design was intended to strengthen

learners' emotional engagement and to enhance the authenticity of the instructional experience through contextual modeling.



Figure 4. Character Design

The instructional sequence of the animated video was organized through a storyboard integrating conversational texts, native-quality neural voice narration, and character animation. An example of the storyboard developed for Chapter 6 (*Fi al-Masjid*) is presented in Table 4.

Table 4. Sample Storyboard of the Animated Instructional Video

No.	Scene	Visual Representation	Audio / Dialogue	Pedagogical and Design Rationale
1	01	Opening Scene. The video cover displays the chapter title and introduces the main characters. The title " <i>Chapter 6: Fi al-Masjid (At the Mosque)</i> " appears using a fade-in animation.	Background Music: Upbeat instrumental music. Narration: " <i>Al-Fashlu as-Sadis: Fi al-Masjid</i> " (Chapter Six: At the Mosque).	Attention Gaining: The introductory music and animated title are intended to capture students' attention and prepare them cognitively before the instructional content begins (pre-instructional strategy).
2	02	Greeting Scene (Tahiyyah). Umar approaches Yusuf and Karim, who are engaged in conversation. Umar raises his right hand to greet them.	Umar: <i>Assalamu'alaikum, O Yusuf and Karim.</i> Yusuf & Karim: <i>Wa'alaikumussalam.</i>	Social Modeling: The animation demonstrates appropriate etiquette when entering the mosque and greeting others. Hand gestures are synchronized with the dialogue to model culturally appropriate non-verbal communication practiced within the <i>santri</i> community.
3	03	Main Dialogue 1 (Reading Activity). The camera zooms in on Yusuf, who is holding an open copy of the Qur'an. Umar appears curious and asks a question.	Umar: " <i>What are you doing in the mosque, Yusuf?</i> " Yusuf: " <i>I am reading the Qur'an.</i> "	Contextual Clues: The Qur'an serves as a visual cue enabling students to infer the meaning of the verb <i>aqra'u</i> ("to read") without relying on translation into Indonesian.
4	04	Main Dialogue 2 (Memorization Activity). The camera pans toward Karim, who briefly closes his eyes while placing his hand on his chest to indicate memorization and reflection.	Umar: " <i>And what are you doing, Karim?</i> " Karim: " <i>I am reviewing my Qur'an memorization.</i> "	Differentiated Representation: Distinct visual actions differentiate <i>reading</i> (looking at the Qur'an) from <i>muraja'ah</i> (reviewing memorization), helping students understand the semantic differences between the two verbs through contextual visualization.

No.	Scene	Visual Representation	Audio / Dialogue	Pedagogical and Design Rationale
5	05	Closing Scene (Prayer and Appreciation). All three characters appear together. Umar raises both hands in prayer while Yusuf and Karim smile.	Umar: " <i>Masha Allah... May Allah make your memorization easier.</i> " Karim: " <i>Allahumma Ameen.</i> "	Affective Learning: The closing scene reinforces character education by encouraging students to appreciate and pray for one another's success, reflecting the values cultivated within the Islamic boarding school environment.

The proposed instructional media prototype subsequently underwent expert validation involving three specialists: an instructional media expert, an Arabic language instruction expert, and an Arabic language expert. All validation instruments employed a five-point Likert scale. A summary of the quantitative validation results is presented below.

Table 5. Validation Results from the Instructional Media Expert

No.	Evaluation Aspect	Items	Score	Percentage (%)	Category
1	Visual Design	6	26	86.7	Valid
2	Animation and Transitions	6	27	90.0	Highly Valid
3	Audio Quality	4	19	95.0	Highly Valid
4	Content Presentation	5	23	92.0	Highly Valid
5	Interactivity	3	14	93.3	Highly Valid
6	Compatibility	4	19	95.0	Highly Valid
Total / Average		28	128	91.4	Highly Valid (Minor Revision)

As shown in Table 5, the instructional media prototype obtained a total score of 128 out of a maximum possible score of 140, corresponding to a validity percentage of 91.4%. This result places the prototype within the Highly Valid category, indicating that it is appropriate for implementation following only minor revisions, primarily concerning aspects of visual design.

Table 6. Validation Results from the Arabic Language Instruction Expert

No.	Evaluation Aspect	Items	Score	Percentage (%)	Category
1	Instructional Content	10	47	94.0	Highly Valid
2	Language Structure	5	23	92.0	Highly Valid
Total / Average		15	70	93.3	Highly Valid

As presented in Table 6, the subject-matter expert assigned a score of 70 out of a maximum of 75, yielding a validity percentage of 93.3%. These findings indicate that the instructional content is well aligned with the competencies of *maharah al-kalam* and the developmental characteristics of the target learners. Accordingly, the prototype was judged to be highly valid and suitable for implementation without requiring substantial revisions.

Table 7. Validation Results from the Arabic Language Expert

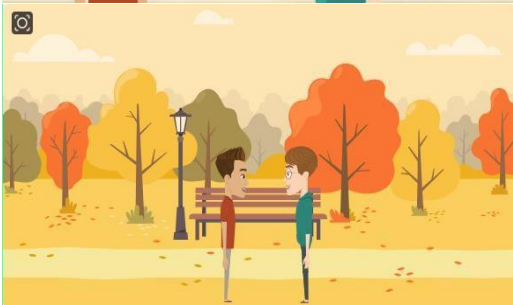
No.	Evaluation Aspect	Items	Score	Percentage (%)	Category
1	Grammar	6	27	90.0	Highly Valid
2	Sentence Construction	3	14	93.3	Highly Valid
3	Vocabulary	3	14	93.3	Highly Valid
Total / Average		12	55	91.7	Highly Valid (Minor Revision)

The Arabic language expert awarded a total score of 55 out of a maximum possible score of 60, resulting in a validity percentage of 91.7%. This evaluation confirms that the Arabic language used throughout the instructional media generally conforms to accepted linguistic standards. Nevertheless, the expert recommended several minor revisions to improve wording, sentence formulation, and the accuracy of selected terminology.

Overall, the prototype achieved an average validity score of 92.1% across all three expert evaluations. According to the established feasibility criteria, this score places the instructional media within the Highly Feasible category. In addition to the quantitative evaluation, the instructional media

expert provided several qualitative recommendations, including improving the readability of Arabic subtitles, enhancing the consistency of background illustrations, and refining the color scheme used in the practice segments. These recommendations were incorporated into the revised version of the prototype before the final design was approved. The resulting revisions to the animated instructional media are presented in Table 8.

Table 8. Product Revision Process

No.	Before Revision	After Revision
1		
2		
3		

Discussion

The empirical finding that approximately 70% of the Arabic textbooks used at Al-Hamra Islamic Boarding School Junior High School exhibited severe physical deterioration should not be regarded as a routine occurrence. Rather, it represents a manifestation of students' behavioral resistance toward instructional materials that fail to accommodate their cognitive and visual learning needs. Students' reports of feeling "sleepy" and "tired" while reading monochromatic textbooks provide compelling evidence of visual fatigue during classroom learning. From the perspective of Cognitive Load Theory, this phenomenon can be explained by the excessive extraneous cognitive load imposed by text-heavy instructional materials (Sweller & Sciences, 2011). Students are required to devote substantial cognitive resources to decoding dense textual information without adequate visual support, thereby exhausting their working memory before meaningful comprehension can occur. This interpretation is consistent with Cheng et al., who demonstrated that instructional materials characterized by high textual density and low visual contrast significantly reduce students' sustained attention during learning (Cheng et al., 2018). Furthermore, these findings reinforce the argument proposed by Yusof et al. that rigid and visually unappealing Arabic textbooks are negatively associated with students' intrinsic motivation, ultimately contributing to apathetic

attitudes toward both learning and the physical maintenance of instructional materials (Yusof et al., 2024).

The instructional solution proposed in this study, namely the integration of animated characters representing *santri* through distinctive attributes such as the *peci* (traditional Muslim cap) and *baju koko* (Muslim shirt), together with authentic boarding school settings, constitutes a strategic application of contextual modeling (Lewicka & Waszau, 2017). This contextualized visual design directly addresses students' need for culturally relevant learning experiences by bridging their dual identities as school students and *santri* living in a boarding school environment. As argued by Kuraedah et al. and Suib and Baharudin, foreign language instruction becomes substantially more effective when instructional media reflect learners' social and cultural identities, thereby reducing the psychological distance between learners and the target language (Kuraedah et al., 2022; Suib & Baharudin, 2025). Moreover, the transition from static printed texts to animated instructional videos provides empirical support for Mayer's Multimedia Learning Theory, particularly the coherence and modality principles (Mayer, 2021). Previous research has similarly demonstrated that animation enhances multimedia learning by enabling learners to understand procedural and narrative content through dynamic visual representations (Kurniawan et al., 2019). By simultaneously presenting *muhadatsah* materials through visual channels (animated characters) and verbal channels (native-quality audio narration), the proposed instructional media provide concrete cognitive scaffolding that facilitates learners' understanding of pragmatic aspects of spoken Arabic, including intonation, facial expressions, and communicative gestures that cannot be adequately represented through printed text alone. Furthermore, the deliberate visual differentiation between conversational scenes clarifies semantic distinctions between verbs that are often ambiguous when taught using conventional translation-based approaches (Sarip et al., 2024).

The prototype achieved validity scores of 91.4% from the instructional media expert, 93.3% from the Arabic language instruction expert, and 91.7% from the Arabic language expert, indicating that the proposed instructional media satisfy rigorous standards of theoretical feasibility. These consistently high ratings demonstrate that limiting the scope of this study to the Analysis and Design phases of the ADDIE model should not be interpreted as a methodological limitation but rather as a deliberate preventive strategy to ensure the conceptual quality of the instructional product. As emphasized by Branch (2009), the design phase constitutes the core of instructional development, and the failure of educational products is more frequently attributable to inadequate instructional design than to technological limitations. Consequently, the "Highly Feasible" classification obtained in this study serves as an important quality assurance indicator, confirming that the pedagogical content remained conceptually accurate throughout its transformation into a digital instructional format. These findings further support the conclusions of (Jumadil & Haniah, 2022), who argued that investing substantial effort in systematic instructional design and expert validation significantly reduces the likelihood of major revisions during subsequent production stages, thereby increasing the readiness of instructional media for empirical implementation and large-scale effectiveness testing.

A major contribution of the present study lies in providing a practical instructional design model for Islamic boarding schools, which frequently face the challenge of balancing the preservation of educational traditions with the integration of contemporary technology. The findings introduce the concept of a "Visual Oasis," whereby animated instructional media function as a pedagogical window through which students can experience authentic simulations of real-world communication without violating institutional policies that restrict the use of personal digital devices. From a pedagogical perspective, the proposed instructional media transform *muhadatsah* instruction from a predominantly teacher- and text-centered approach into an immersive multimedia learning experience. By incorporating authentic representations of boarding school life, the media extend beyond their role as instruments for knowledge transmission and serve as psychological interventions that restore students' learning motivation diminished by visual fatigue. The contextualized prototype therefore demonstrates that limited access to digital devices and internet connectivity within Islamic boarding schools should not be viewed as barriers to modern Arabic language instruction, but rather as instructional design challenges that can be addressed through culturally responsive and contextually grounded media development.

Despite the high level of theoretical validity achieved by the proposed instructional media, several methodological limitations should be acknowledged and considered as directions for future research. The principal limitation concerns the scope of the development process, which was intentionally confined to the Analysis and Design phases of the ADDIE model. Consequently, the present study establishes only the theoretical feasibility of the prototype based on expert judgment and does not provide empirical evidence regarding its effectiveness in improving students' learning outcomes. As a result, the conclusions drawn from this research remain limited to demonstrating the prototype's potential for mitigating visual fatigue and its pedagogical appropriateness, rather than verifying measurable improvements in students' speaking proficiency. Future research is therefore encouraged to extend the prototype through the Development, Implementation, and Evaluation phases of the ADDIE model. Subsequent studies should employ experimental research designs involving control and experimental groups to examine the effectiveness of the contextualized animated instructional media in enhancing students' fluency and accuracy in *muhadatsah*. Furthermore, future investigations are encouraged to expand the instructional content to include more advanced conversational topics, thereby providing broader evidence of the effectiveness and scalability of the proposed instructional media across diverse Arabic language learning contexts.

CONCLUSION

Based on the findings of the analysis and design phases, this study draws three principal conclusions. First, the presence of visual fatigue among students at Al-Hamra Islamic Boarding School Junior High School was empirically confirmed through the extensive physical deterioration of students' Arabic textbooks, affecting approximately 70% of the materials, together with students' verbal reports describing the instructional materials as monotonous and lacking sufficient visual illustrations. Second, in response to these findings, the study successfully developed a prototype specification for animated instructional media for *muhadatsah* based on a Contextual Modeling approach using the Animaker platform. The novelty of the proposed design lies in its integration of *santri*-oriented character representations and authentic boarding school settings that closely reflect learners' sociocultural environment. Third, the proposed prototype demonstrated a high level of theoretical validity, achieving an average expert judgment score of 92.1%, which places it in the Highly Feasible category with respect to both instructional content and media design. From a theoretical perspective, these findings reinforce the view that, within technology-restricted boarding school environments, visual instructional media should not be regarded merely as supplementary learning resources but as essential psychological supports for sustaining student engagement and reducing visual fatigue. From a practical perspective, future instructional media developers are encouraged to extend this prototype through the Development and Implementation phases of the ADDIE model to examine its empirical effectiveness in improving students' learning outcomes. Furthermore, Arabic language teachers are encouraged to move beyond an exclusive reliance on printed textbooks and adopt contextually designed visual instructional media capable of modeling the non-verbal dimensions of spoken communication, including intonation, facial expressions, gestures, and authentic conversational contexts, thereby supporting the development of students' speaking proficiency.

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