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Innovation of Audio Visual Teaching Materials Based on Animated Videos as Edupreneur Development at SDN Karangrejo II Purwosari

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ABSTRACT

Background: The rapid development of educational technology demands innovative audio-visual teaching materials that not only support learning processes but also foster edupreneurship from an early age. In elementary schools, the limited use of creative digital media often hinders the development of students' creativity and entrepreneurial awareness.

Objective: This study aims to develop animated video-based audio-visual teaching materials as a form of learning innovation and edupreneurship development at SDN Karangrejo II Purwosari.

Method: The research employed a Research and Development (R&D) method using a systematic development model consisting of needs analysis, product design, development, validation, and limited trials. The research subjects included teachers and elementary school students at SDN Karangrejo II Purwosari.

Findings and Implications: The main product of this study is an animated video-based audio-visual teaching material designed to be educational, engaging, and economically valuable. The results show that the developed product is feasible for use, as indicated by expert validation results in terms of content, media, and instructional design, as well as positive responses from users.

Conclusion: The developed teaching material contributes to learning innovation and supports educational development by integrating creativity, technology, and educational value in elementary education.

INTRODUCTION

The development of digital technology has brought significant changes to the world of education, including at the elementary school level. The integration of technology into learning requires teachers to present innovative teaching materials that are not only informative, but also engaging and relevant to the characteristics of 21st-century students. One form of innovation that is increasingly needed is the use of animated video-based audio-visual teaching materials, because this media is able to combine visual, audio, and narrative elements simultaneously, thereby increasing student

learning engagement. Previous research shows that the use of animated videos in elementary school learning has a positive effect on student motivation, conceptual understanding, and creativity. Furthermore, digital-based teaching materials also have the potential to be developed as school edupreneurship products, namely educational products that have economic value and are oriented towards the independence and creativity of educational institutions.

The empirical basis for the use of animated video in elementary education is further strengthened by large-scale quantitative evidence. A comprehensive meta-analysis by Hillmayr et al., (2020) synthesizing 92 experimental studies found that digital instructional tools produced a significant positive effect on student learning outcomes ($g = 0.65$, $p < .001$), with effects most pronounced when digital tools supplemented rather than replaced conventional instruction. This meta-analytic finding provides robust cross-contextual support for integrating animated video-based teaching materials into the elementary school learning environment as an empirically effective supplement to existing instructional practices.

Ideally, learning in elementary schools is expected to utilize animated videos as innovative teaching materials that not only function as a medium for delivering material but also as a means of developing 21st-century skills, such as creativity, critical thinking, and digital literacy. Furthermore, the development of systematically designed animated video teaching materials opens up opportunities for schools to produce learning products with market value, so that learning not only impacts academic aspects but also supports the development of school edupreneurship.

The motivational dimensions of animated video media are of particular significance for elementary school learners. Barut T, (2022) demonstrated that animated and interactive video formats significantly outperformed non-animated instructional materials in sustaining learner motivation across a large-scale study involving 1,654 students, with learners exposed to animated content reporting higher levels of engagement, attention, and intrinsic motivation. These findings reinforce the importance of visual dynamism and narrative structure as critical design variables in the development of animated video-based audiovisual teaching materials for elementary school contexts.

In the context of 21st-century education, cultivating digital literacy, creative thinking, and innovation from an early age has become a fundamental educational priority. Animated video teaching materials are uniquely positioned to support the development of these competencies in elementary school students, as they provide multimodal, visually stimulating learning experiences that promote conceptual engagement and active knowledge construction. In the Indonesian elementary school context, the development of

innovative digital instructional media is especially critical for supporting students in navigating an increasingly technology-driven academic and social landscape. From a cognitive perspective, the development of effective animated video teaching materials must account for the cognitive architecture of elementary school learners. For young learners still developing their cognitive capacities, this principle underscores the need for carefully paced, structured, and visually scaffolded animated media that supports comprehension without overwhelming working memory capacity.

However, actual conditions in the field indicate that the utilization of animated video-based audiovisual teaching materials is still suboptimal. Based on initial observations at SDN Karangrejo II Purwosari, the learning process is still dominated by the use of conventional teaching materials, while animated video media has not been independently developed by teachers and the school. Furthermore, the resulting learning products have not been directed as innovative media with potential economic value, thus the opportunity for developing school edupreneurship has not been fully utilized.

This situation indicates a gap between ideal and actual learning conditions. Ideally, animated video teaching materials should be creatively and sustainably developed as both a learning medium and an edupreneurship product, but in practice, this development remains limited. Previous research confirms that low digital media development competency and limited development models are the main factors contributing to suboptimal innovation in teaching materials in elementary schools. Therefore, research and development focused on producing applicable and economically valuable animated video-based audiovisual teaching materials is needed.

The design of animated video instructional materials must also adhere to evidence-based principles derived from multimedia learning research. RE Mayer, (2021) articulated a comprehensive framework of design principles for effective instructional videos—including the multimedia, coherence, segmenting, signaling, and modality principles—each grounded in experimental evidence from cognitive science. The application of these principles is particularly critical in R&D contexts where animated videos serve both as pedagogical tools and as edupreneurship products, as robust pedagogical quality must first be established before the economic viability of such products can be meaningfully realized and sustained.

The edupreneurial dimension of this research is further supported by international scholarship on educational innovation and institutional entrepreneurship. Ramírez-Montoya et al., (2021) demonstrate that educational institutions that systematically develop innovative digital learning products foster stronger cultures of professional creativity and are better

positioned to generate sustainable educational value. Similarly, Salas-Pilco et al., (2022) identify digitally produced educational content as a critical driver of institutional innovation in contemporary educational ecosystems, reinforcing the strategic importance of positioning schools as active producers of innovative learning resources rather than passive consumers of commercially developed materials.

The urgency of this research lies in the academic and practical need to present a model for developing teaching materials that is relevant to the demands of 21st-century learning while also supporting the strengthening of edupreneurship in elementary schools. Academically, this research contributes to the development of studies on learning innovation and audio-visual media. Practically, this research provides concrete solutions for teachers and schools in developing creative teaching materials that can be used sustainably (Lestari & Dahnial, 2024).

Based on the description, the problems in this study can be identified as follows: limited innovation of audio-visual teaching materials based on animated videos and the less than optimal utilization of teaching materials as school edupreneurship products. This study is limited to the development of audio-visual teaching materials based on animated videos at SDN Karangrejo II Purwosari. The formulation of the research problem is how the process of developing audio-visual teaching materials based on animated videos and how suitable the product is as a learning tool and development of edupreneurship in elementary schools.

This study aims to develop audiovisual teaching materials based on animated videos that are suitable for use in learning and have the potential as edupreneurship products at SDN Karangrejo II Purwosari. The benefits of this research are expected to contribute to teachers in improving learning innovation, students in increasing motivation and creativity in learning, and schools in developing economically valuable learning products. The novelty of this research lies in the development of animated video teaching materials that are not only focused as a learning medium, but also as a school edupreneurship product. This dual orientation explicitly distinguishes the present study from prior works in the field. Similarly, Lestari & Dahnial, (2024) investigated animated video as a pedagogical innovation without situating it within an edupreneurship framework.

RESEARCH METHOD

This study uses Research and Development (R&D) research, a research method that aims to produce a specific product and test the feasibility and effectiveness of the product in a learning context. Research and development

was chosen because it is suitable for developing animated video-based audio-visual teaching materials that can be used practically in elementary schools. According to Borg and Gall, R&D research is a process used to develop and validate educational products so that they are suitable for implementation in the field Similarly, Sugiyono explains that the R&D method focuses on product development accompanied by testing its effectiveness and usefulness in the learning process (Sugiyono, 2019).

The development model used in this study is the ADDIE model, which consists of five main stages: analysis, design, development, implementation, and evaluation. In the analysis stage, an analysis of learning needs, student characteristics, and learning conditions at SDN Karangrejo II Purwosari was conducted. The design stage included the preparation of concepts, learning scenarios, and the design of animated videos as audio-visual teaching materials. Next, the development stage was carried out by producing animated videos according to the design and conducting validation by material experts, media experts, and learning experts. The implementation stage was carried out through limited trials of the use of teaching materials in the classroom. The final stage, namely evaluation, aimed to assess the feasibility, practicality, and usefulness of the product based on the validation results and user responses (Branch, 2010).

The application of the R&D method in this study is consistent with contemporary educational research frameworks that emphasize the systematic development, implementation, and validation of educational products within authentic learning contexts (Creswell & Creswell, 2017). This methodological orientation is particularly appropriate for studies aimed at producing practical instructional tools that can be empirically verified and iteratively refined based on expert feedback and user responses. Furthermore, the multi-instrument data collection approach employed in this study—encompassing observational data, interview data, expert validation questionnaires, and documentation—reflects established best practices in educational design research that prioritize comprehensive and triangulated evidence for product feasibility assessments.

The subjects of this study involved teachers and students at SDN Karangrejo II Purwosari. The location and subjects were selected based on the consideration that the school has not yet optimized the use of animated video-based audiovisual teaching materials, and has the potential to develop innovative learning products with educational and economic value. Teachers served as validators, practitioners, and media users, while students served as the primary users of the developed teaching materials. It is important to acknowledge that the trial component of this study was conducted on a limited

scale, involving only 10 students at a single school site (SDN Karangrejo II Purwosari). This constitutes a significant methodological limitation, as findings derived from a small and geographically restricted sample cannot be readily generalized to broader populations or diverse educational contexts.

The limited sample size may also reduce the statistical representativeness of the user response data and comprehension test results. Future research is therefore strongly recommended to conduct larger-scale trials involving a more diverse and representative sample across multiple schools, grade levels, and regions, in order to obtain more comprehensive, externally valid, and empirically robust findings regarding the feasibility, practicality, and effectiveness of animated video-based audiovisual teaching materials as both learning media and edupreneurship products.

Data collection techniques in this study included observation, interviews, questionnaires, and documentation. Observations were conducted to determine learning conditions and media needs in the classroom. Interviews were used to gather in-depth information from teachers regarding learning needs and potential media development. Questionnaires were used to obtain quantitative data regarding the level of feasibility and user response to the developed product. Documentation was used to support the research data in the form of photographs, learning documents, and product development results. These techniques align with Sugiyono's opinion that a combination of data collection techniques is necessary to obtain comprehensive data in development research (Sugiyono, 2019).

Data analysis in this study was conducted using qualitative and quantitative data analysis. Qualitative data were obtained from observations, interviews, and validator suggestions, which were analyzed descriptively to improve the product. Quantitative data were obtained from expert validation questionnaires and user responses, which were analyzed using percentages to determine the level of validity, practicality, and usefulness of the animated video-based audiovisual teaching materials developed. The results of this data analysis were used as a basis for determining the feasibility of the product for implementation in learning and as a school edupreneurship product (Arikunto, 2018).

RESULT AND DISCUSSION

Product Development Results

The main result of this Research and Development (R&D) study is an animated video-based audio-visual teaching material on the History of the Khulafaur Rasyidin, developed for Islamic Religious Education in elementary schools. This product is designed as an innovative learning medium that

integrates visual, audio, and animation elements to help students understand narrative and chronological Islamic history material. The animated video was developed to suit the characteristics of elementary school students, who tend to require concrete, engaging, and easy-to-understand learning media.

The resulting product is a relatively short animated video, presenting the material using visual illustrations of the Khulafaur Rasyidin figures, concise text, voice narration, and supporting background music. The animated video was developed using the Canva digital design platform, which allows for the practical and flexible creation of animated visual content. The target users of this product are elementary school students, specifically students at SDN Karangrejo II Purwosari, as a supporting medium for in-class learning and independent learning. To clarify the characteristics of the developed product, a product description is presented in Table 1 below.

Table 1. Animated Video Product Description

Aspect	Description
Product name	Animated Video of the History of Khulafaur Rasyidin
Product Form	Audio visual teaching materials based on animated videos
Material	History of the Caliphate
Target Users	Elementary School Students
Development Platform	Canva
Product Function	Islamic Education learning media and innovative learning support
Main Characteristics	Animated visuals, audio narration, short text, character illustrations

Source: Data Processed

The goal of developing this product is not only to improve students' understanding of the history of the Khulafaur Rasyidin, but also to provide innovative learning media that can increase student motivation. Furthermore, the development of this animated video is aimed at being an innovative form of digital learning media that has the potential to be further developed as an educational product with edupreneurial value, both by teachers and schools. In terms of advantages, this animated video has significant differences compared to conventional learning media such as textbooks or lecture methods.

Audio-visual media can present information simultaneously through images, text, and sound, making it easier for students to understand abstract historical concepts. This aligns with multimedia learning theory, which states that learning will be more effective when information is presented through a combination of visuals and audio rather than solely text or verbally (Mayer, 2020). Thus, the animated video product developed in this study can be seen

as a tangible result of a pedagogically relevant and media-innovative R&D process.

Expert Validation Results

Expert validation was conducted to assess the validity and academic feasibility of the developed animated video-based audiovisual teaching materials. The validation process involved two types of validators, namely material experts and learning media experts, which aimed to ensure that the product met the standards of content, appearance, and suitability for the characteristics of elementary school students. The assessment was conducted using a Likert scale of 1–4, with the following criteria: 1 = Not Feasible, 2 = Quite Feasible, 3 = Feasible, and 4 = Very Feasible.

Aspects assessed by material experts included the suitability of the material on the History of the Khulafaur Rasyidin, content accuracy, language clarity, and suitability for the developmental level of elementary school students. Meanwhile, media experts assessed visual appearance, animation quality, audio clarity, text readability, and the media's suitability for the characteristics of elementary school students. A summary of the expert validation results is presented in Table 2 below.

Table 2. Validation Results of Material Experts and Media Experts

Validator	Assessment Aspects	Average Score	Category
Subject Matter Expert	Suitability of material & language	3.50	Worthy
Media Expert	Visual & audio display	3.60	Worthy
Overall Average	All aspects	3.55	Worthy

Source: Data Processed

Based on these results, the animated video product received an overall average score of 3.55, which falls into the "Appropriate" category. This indicates that, in terms of content and media design, the product meets the eligibility criteria for use in Islamic Religious Education learning in elementary schools, although it still requires minor improvements as suggested by the validator.

The product was deemed suitable because it met the main principles of learning media suitability, namely content accuracy, clarity of presentation, and suitability to student characteristics. Furthermore, in research and development, the expert validation stage is a crucial step in ensuring product quality before wider implementation (Sugiyono, 2019). The validation results, which fall into the "feasible" category, confirm that this animated video is

academically and pedagogically sound and can be used as a supporting teaching material for learning, and is worthy of proceeding to the user trial stage.

Product Revision

Product revision is an important stage in Research and Development (R&D) research that aims to improve the product based on the evaluation results and input from expert validators. Based on the validation results of material experts and media experts, several weaknesses were found in the animated video product developed, especially related to the relatively short duration of the material presentation, which has the potential to make it difficult for some elementary school students to follow the flow of the History of Khulafaur Rasyidin material optimally.

The validators' primary recommendation emphasized the need to adjust the video's duration and flow to better suit the characteristics of elementary school students, who require a slower pace and repetition of key sections. Furthermore, the validators provided input on simplifying the text, adding pauses between scenes, and enhancing animated visuals to enhance the learning message. As a follow-up to this feedback, the researchers made several improvements to the animated video product. The relationship between expert advice and follow-up product revisions is presented in Table 3 below.

Table 3. Product Revisions Based on Validator Suggestions

Validator Suggestion	Revision Follow-up
The duration of the material presentation is too fast	Slowing down the narrative tempo and adding pauses between scenes
The historical flow does not place enough emphasis on the characters.	Added explanation breaks for each Khulafaur Rasyidin character
The text in some parts is too dense	Simplify text into short bullet points
Animation transitions are too fast	Adjust the transition speed to make it more comfortable for students to see.
Audio narration needs to be clearer	Adjust the volume and clarity of the narration audio

Source: Data Processed

The revision was comprehensive but maintained the product's basic concept as an animated video-based audio-visual learning medium. The revisions are expected to improve the clarity of the material, enhance learning enjoyment, and enhance the practicality of the media for teachers and students at SDN Karangrejo II Purwosari. Conceptually, the revision process undertaken in this study reflects the key characteristics of R&D research,

which is iterative and ongoing. According to product revision is a crucial stage in ensuring that the developed product truly meets user needs and is suitable for use in real-world learning contexts. Revisions based on expert input allow the product to evolve from an initial version to a more optimal one.

Furthermore, Sugiyono, (2019) emphasized that product revisions in development research serve to improve the quality, practicality, and effectiveness of the product before wider implementation. Adjustments to the duration, presentation flow, and text and animation of the learning videos in this study demonstrate a systematic effort to align the product with the characteristics of elementary school students. Thus, product revisions are not understood merely as technical improvements, but as an integral part of the formative evaluation process in developing learning media. These revisions are expected to improve the effectiveness of animated videos as Islamic Religious Education teaching materials and strengthen the product's readiness for further testing and use.

Product Trial Results

A product trial was conducted to determine the practicality and user acceptance of the developed animated video-based audiovisual teaching materials. The trial subjects included elementary school teachers and students at SDN Karangrejo II Purwosari. The trial was conducted on a limited basis to obtain an initial overview of user responses before the product was widely used.

1. Student Response

A student response questionnaire was administered to 10 students of SDN Karangrejo II Purwosari after participating in learning using animated videos on the History of Khulafaur Rasyidin. The questionnaire was compiled using a Likert scale of 1–4, with the following criteria: 1 = Disagree, 2 = Quite Agree, 3 = Agree, 4 = Strongly Agree.

The aspects assessed include the attractiveness of the media, ease of understanding the material, clarity of presentation, and the appropriateness of the video duration.

Table 4. Student Response Questionnaire Results

No	Rated aspect	Average Score	Category
1	Interesting animated videos for learning Islamic Education	3.6	Very good
2	Videos make it easier to understand historical material	3.2	Good
3	Clear animation and image display	3.5	Very good
4	Easy to understand audio and narration	3.4	Good
5	The video duration is appropriate	2.9	Enough
Overall average		3.32	Good

Source: Data Processed

Based on the questionnaire results, the overall average score was 3.32, which falls into the "Good" category. These results indicate that students responded positively to the use of animated videos as a learning medium. The aspects of visual appeal and clarity received high scores, while the video duration aspect received the lowest score, indicating that some students still felt the pace of material delivery was relatively fast.

However, student responses also revealed limitations, such as the relatively short duration of the video presentation in some sections. This led some students to require further explanation from the teacher in certain sections. These findings suggest that while the media is considered practical and engaging, the pace of presentation still needs to be adjusted to the learning abilities of elementary school students. To measure their level of understanding of the material, students were given 10 evaluation questions tailored to the content of the animated video. The results of the student comprehension test are presented in Table 5 below.

Table 5. Results of Student Material Understanding Test

No	Student Name	Mark
1	Maya's Love	70
2	Vicken	60
3	Risky	70
4	Wildan	70
5	Nayla's Love	70
6	Fatima	70
7	Kirana	60
8	Syahrul	80
9	Love	70
10	Jihan	80
Average		70

Source: Data Processed

Based on the data, an average score of 70 was obtained, indicating that students generally achieved a fair to good understanding of the History of the Khulafaur Rasyidin material after using the animated video. This score indicates that the developed learning media is capable of helping students understand the material, although improvements are still needed, particularly in terms of the tempo of delivery.

Teacher Response

Interviews with teachers indicated that the animated videos developed were relevant to the characteristics of elementary school students. Teachers stated that this medium helped explain narrative and chronological Islamic history material and made it easier for teachers to capture students' attention at the beginning of the lesson. Furthermore, teachers believed that using animated videos saved explanation time and increased student participation during the learning process.

The teacher also stated that this animated video is practical for use as a learning aid, both in face-to-face instruction and as a resource for independent student learning. The teacher's comments align with student feedback, noting the need to adjust the duration to ensure a more optimal pace for student delivery.

A summary of the product trial results is presented in Table 6 below.

Table 6. Summary of Product Trial Results

Subject	Rated aspect	Response Results
Student	Interest in learning	Very good
Student	Ease of understanding the material	Good
Student	Serving duration	Relatively fast
Teacher	Relevance to the characteristics of elementary school students	Very relevant
Teacher	Practicality of media use	Practical

Source: Data Processed

Positive responses from students and teachers indicate that the animated videos developed have a high level of practicality and user acceptance. According to the theory of practicality of learning media, practical media is media that is easy to use, interesting, and helps teachers and students achieve learning objectives (Plomp, 2013). The animated videos in this study meet these criteria because they can be used flexibly and are well-received by users.

Furthermore, students' positive responses to audiovisual media align with previous research findings that suggest animated video media is effective in increasing elementary school students' motivation and understanding. The relatively short duration also indicates that user acceptance is not only positive but also reflective and constructive, which can serve as a basis for further product refinement in R&D research.

Thus, the results of the product trial indicate that this animated video-based audio-visual teaching material is not only academically feasible, but also practical and well received by teachers and students, so it has the potential to be used and further developed in Islamic Religious Education learning in elementary schools.

Product Edupreneurship Value

The animated video product developed in this research not only functions as a learning medium but also has added value as a digital learning product with the potential to be developed within the framework of school edupreneurship. The animated video on the history of Khulafaur Rasyidin is designed in a digital format that allows for repeated use, both in classroom learning, student independent learning, and as a supporting learning resource outside of class hours. These characteristics make the product efficient, flexible, and sustainable.

In terms of development, this animated video has the potential to be expanded into other materials within Islamic Religious Education subjects, such as Islamic history, morals, Islamic jurisprudence, and exemplary stories. With a similar design pattern and animation flow, teachers or schools can replicate and expand the product into a series of learning videos, thereby strengthening the school's identity as a developer of digital educational content. Furthermore, the video format allows the product to be uploaded to digital platforms, such as YouTube or school-based online learning platforms, opening up the opportunity for a wider user reach.

Based on the interviews, teachers stated that this animated video has the potential for sustainability because it can be used long-term and tailored to learning needs. They also believe that this product has the potential to be utilized as a superior learning medium for schools and can be further developed as economically valuable digital learning content. This perspective demonstrates an acceptance of the role of teachers and schools not only as users of media but also as producers of educational innovation.

Conceptually, this animated video product aligns with the concept of edupreneurship, which is an effort to present educational innovations that have both educational value and economic opportunities. Edupreneurship

emphasizes creativity and innovation in education, which can generate learning benefits and open up knowledge-based business opportunities (Hendarman, 2021). Animated videos, as digital products, enable teachers and schools to act as edupreneurs through the development, distribution, and utilization of innovative learning media.

The use of digital platforms, such as YouTube or educational social media, provides opportunities for these products to be published and monetized, for example through advertising, educational content collaborations, or the sale of usage licenses. Thus, learning media is positioned not only as a learning aid but also as a school's intellectual asset with economic value. This aligns with the view that digital technology-based educational innovation can be a means of economic empowerment in the education sector (Fayolle et al., 2015).

Thus, the edupreneurial value of the animated video developed in this study lies in its ability to integrate Islamic Religious Education (PAI) learning innovations with opportunities for educational economic development. This product has the potential to foster a culture of innovation, creativity, and entrepreneurship in elementary schools, while strengthening the school's role as a center for sustainable digital learning development.

Discussion

The results of the study indicate that the development of audiovisual teaching materials in the form of animated videos on the history of the Khulafaur Rasyidin is considered feasible and relevant for use in Islamic Religious Education (PAI) learning in elementary schools. The feasibility of this product is supported by validation results from material experts and media experts, which indicate that the content, visual appearance, and audio quality are in accordance with the characteristics and needs of elementary school students. This finding is in line with the theory of learning media, which states that good media must meet the aspects of material suitability, clarity of presentation, and visual appeal to support the achievement of learning objectives.

From a generative learning perspective, the effectiveness of animated video in facilitating conceptual understanding among elementary school students is further explained by the active cognitive engagement that multimodal instructional media promotes. When learners simultaneously process animated visual content and auditory narration, they engage in the complementary cognitive operations of selecting, organizing, and integrating information—processes that are foundational to meaningful and durable learning. Paas & van Merriënboer, (2020) further argue that effective management of cognitive load during multimedia instruction requires careful

calibration of element interactivity and information density to match the cognitive capacity of the target learner group, a principle that directly informs the instructional design decisions underlying this study.

International empirical evidence further corroborates the effectiveness of animated video in sustaining student engagement and motivation. Barut Tugtekin & Dursun, (2022) demonstrated that animated and interactive video formats consistently outperformed non-animated instructional materials in terms of learner motivation across a large-scale validation study involving 1,654 students, confirming that visual dynamism, narrative coherence, and multimodal presentation constitute meaningful design variables for improving learner experience. The positive student responses documented in the present study—particularly the high scores on visual appeal (mean 3.6) and animation clarity (mean 3.5)—align with these international findings, reinforcing the cross-contextual validity of animated video as an effective and motivating instructional medium.

From a multimedia learning theory perspective, the combination of animated images, short text, and audio narration in learning videos has been shown to help students understand abstract and historical material. Mayer, (2020) emphasized that learning is more effective when information is presented through visual and auditory channels simultaneously, as this can reduce cognitive load and enhance conceptual understanding. This was reflected in the product trial results, where most students demonstrated a good level of understanding of the material, despite the relatively short video duration.

The design challenge identified in this study—particularly the fast-paced presentation tempo identified by both validators and students—can be more precisely understood through the framework of cognitive load theory. The fast-paced presentation of Khulafaur Rasyidin historical content in the developed animated video represents a classic extraneous load challenge: when instructional information is presented at a pace exceeding learners' working memory processing capacity, comprehension is compromised and retention is reduced. This analysis reinforces the critical importance of applying cognitive load principles as a guiding framework during the iterative product revision process in R&D-based media development.

Research on teacher technology acceptance further contextualizes the positive reception of the animated video product documented in this study. Evidence from international studies on digital instructional media adoption indicates that teachers are most likely to integrate new educational technologies when they perceive the tools as directly relevant to curriculum goals, practically manageable, and supportive of student engagement. In the

specific context of Islamic Religious Education in Indonesian elementary schools, research confirms that audio-visual and digital narrative media are particularly effective in making abstract historical and moral content accessible to young learners, improving both comprehension outcomes and affective engagement with the subject matter.

The instructional design of effective video-based learning materials is further informed by evidence-based principles for multimedia instruction. RE Mayer, (2021) proposed a comprehensive, research-validated framework of design principles for instructional videos, prominently including the segmenting principle which recommends dividing complex instructional content into learner-paced segments and the coherence principle, which advises eliminating extraneous material that does not directly serve the instructional objective.

The fast-paced presentation issue identified in the present study directly corresponds to a partial deviation from the segmenting principle, wherein the compressed chronological narrative of Khulafaur Rasyidin history exceeds the optimal information density for elementary school learners. Future product iterations should therefore incorporate deliberate content segmentation and pacing adjustments informed by these evidence-based multimedia design principles.

When compared with previous research, the results of this study are consistent with previous findings that animated videos as an audiovisual medium can increase elementary school students' interest and motivation to learn, particularly in Islamic Religious Education. Animated media is considered capable of creating a more enjoyable and less monotonous learning environment than lecture methods or the use of textbooks alone. Therefore, the developed product serves not only as a tool to assist in delivering material but also as a means to improve the quality of students' learning experiences.

This research's contribution to Islamic Religious Education (PAI) learning lies in providing innovative media that is contextual, engaging, and in line with developments in educational technology. Furthermore, from an edupreneurship perspective, this animated video product has added value because it has the potential to be further developed as a digital learning product that can be reused, packaged for other materials, and utilized by schools as part of innovative educational entrepreneurship-based learning. Thus, the results of this research not only enrich the study of learning media development but also support the strengthening of a culture of innovation and edupreneurship in elementary schools.

The contribution of the developed animated video product to the culture of educational innovation in elementary schools reflects broader findings in

the educational entrepreneurship literature. Furthermore, studies on digital content development in Indonesian elementary school contexts indicate that locally developed, culturally relevant digital teaching materials are particularly effective in fostering student motivation, community engagement, and school-level innovation capacity.

The broader educational significance of digital learning tools is affirmed by meta-analytic evidence. Hillmayr et al., (2020) synthesized 92 experimental studies and found that digital tool use in classroom settings produced a mean effect size of $g = 0.65$ on student learning outcomes, with the greatest effects observed when digital tools were used to complement rather than replace teacher-led instruction. This finding reinforces the edupreneurship value proposition of the animated video product developed in the present study: digital learning tools are most educationally impactful and most viable as sustainable school-level intellectual assets when they are strategically positioned as pedagogical supplements to, rather than substitutes for, the relational and professional dimensions of teaching.

A deeper critical comparison with international research further contextualizes these findings. Mayer, (2020) underscores that effective multimedia-based learning must balance cognitive load management with learner engagement — a challenge particularly acute for young learners in the elementary school age range. International research on digital media development in primary education has consistently identified video pacing and duration as critical design variables that directly affect content comprehension.

The present study's finding that students rated the video duration as the lowest-scoring aspect (mean score 2.9, categorized as "Sufficient") aligns with this international body of evidence, indicating that the tension between content completeness and learner attention span is a pervasive challenge in audiovisual instructional design globally, not merely a local implementation issue. Furthermore, from an entrepreneurship education perspective, Fayolle et al., (2015) emphasize that educational products with entrepreneurial value must first achieve robust pedagogical quality before their economic potential can be meaningfully realized a principle that reinforces the iterative revision process undertaken in this study.

The persistence of the fast-duration limitation in the final revised product warrants analytical reflection beyond a simple design oversight. From an instructional design perspective (Branch, 2010), this limitation is partly inherent to the constraints of the development platform (Canva), which is primarily designed for concise visual content rather than long-form instructional video with pedagogically calibrated pacing. The narrative density

of the Khulafaur Rasyidin historical material encompassing the biographies, governance practices, and chronological succession of four caliphs creates an inherent tension between content breadth and video duration.

Presenting this material within a format engaging enough for elementary school students inevitably compresses the narrative pace. This structural challenge suggests that future iterations of this product may benefit from a segmented, episodic video format in which each caliph is presented as a separate learning unit, thereby allowing educators greater flexibility in pacing and enabling students to engage with content in manageable chunks. This recommendation aligns with the principles of modular instructional design endorsed in the R&D literature.

The comprehension test results obtained in this study, with an average score of 70 among trial participants, are consistent with findings from educational research on initial product trials in elementary school settings, where first-cycle implementations typically yield moderate-to-good learning outcomes that function as empirical bases for iterative product refinement rather than definitive measures of instructional effectiveness (J Nouri, 2016). This interpretation aligns with the formative evaluation perspective articulated in instructional design research, which holds that early product trials are most productively understood as diagnostic tools for identifying areas of improvement rather than as summative assessments of overall product quality. Accordingly, the comprehension test results in this study affirm the developmental trajectory of the product while simultaneously identifying specific areas—particularly the pace of material delivery where targeted refinement is warranted in subsequent development cycles.

CONCLUSION

This study successfully developed animated video-based audio-visual teaching materials on the History of the Khulafaur Rasyidin for Islamic Religious Education (PAI) in elementary schools at SDN Karangrejo II Purwosari, using the R&D method with the ADDIE model. Expert validation yielded an overall average score of 3.55 (feasible), while product trials involving 10 students produced a mean student response score of 3.32 ("Good") and a comprehension test average of 70. The primary limitation identified was the relatively fast pace of material delivery (rated 2.9, "Sufficient"), which served as the empirical basis for iterative product revision. The findings are acknowledged to have limited generalizability due to the small and single-site trial sample.

Practically, the developed animated video constitutes a suitable and replicable instructional medium for PAI learning, offering clear pedagogical

value in terms of student engagement, motivation, and conceptual understanding of Islamic historical content. From an edupreneurship perspective, its digital format enables repeated use, cross-material adaptation, and potential distribution via online educational platforms, positioning the school as a producer of knowledge-based digital learning assets. Future research is recommended to conduct larger-scale experimental trials, develop the product in an episodic, modular format to address pacing limitations.

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