

Cek Naskah Akhir Ta'lim al-'Arabiyyah

by Cek Plagiarisme

Submission date: 21-Dec-2025 01:57PM (UTC+0700)

Submission ID: 2848748057

File name: NASKAH_2.pdf (692.92K)

Word count: 7881

Character count: 45275



DEVELOPMENT OF TPACK-BASED ANIMATED VIDEO LEARNING MEDIA TO ENHANCE ARABIC VOCABULARY MASTERY

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Article Information

Article History:

Received : 28-May-2025

Revised : 08-December-2025

Accepted : 12-December-2025

Published : 21-December-2025

ABSTRACT

The increasing demand for effective Arabic language instruction underscores the importance of innovative digital learning media in enhancing students' vocabulary mastery and engagement. This study aims to develop animated video learning media based on the Technological Pedagogical Content Knowledge (TPACK) framework to improve mufrodat (Arabic vocabulary) mastery among tenth-grade students. The research employed a Research and Development (R&D) approach using the ADDIE model, which includes Analysis, Design, Development, Implementation, and Evaluation stages. The needs analysis revealed that conventional lecture-based instruction was ineffective, with 85% of students reporting boredom and difficulty memorizing vocabulary, and an initial mufrodat mastery level of only 30%. To address this issue, TPACK-based animated videos were developed through competency mapping, material structuring, and scriptwriting aligned with the integration of technology, pedagogy, and content. Expert validation results indicated high feasibility, with scores of 90.22% from media experts and 85.53% from content experts. The implementation was conducted with Grade X students at MA Darul Ulum Semarang. The effectiveness test demonstrated a significant improvement in learning outcomes, as the average score increased from 56.89 to 87.41, representing a gain of 30.52 points. Student responses (96.07%) and teacher observations (80.56%) further confirmed the high feasibility of the developed media. Overall, the findings indicate that TPACK-based animated video learning media are effective and engaging in improving students' mufrodat mastery and learning outcomes, offering practical contributions to Arabic language education and digital learning innovation.



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How to Cite:

Putri, A. A., Thalib, D. F. A. S., Naifah, N., & Alshaer, A. (2025). Development of TPACK-Based Animated Video Learning Media to Enhance Arabic Vocabulary Mastery. *Ta'lim al-'Arabiyyah: Jurnal Pendidikan Bahasa Arab & Kebahasaaraban*, 9(2), 190–206. <https://doi.org/10.15575/jpba.v9i2.46054>

INTRODUCTION

Arabic language learning within the Indonesian educational context has received special attention through various policies, notably the Decree of the Director General of Islamic Education Number 3211 of 2022. This decree emphasizes the strengthening of Arabic competence encompassing reading, understanding, speaking, and writing as an integral part of the Islamic education curriculum (Syafei et al., 2025). The primary goal is to equip students with comprehensive skills to access religious literature and communicate in broader contexts. However, achieving these objectives requires a shift from teacher-centered approaches to more interactive methods that support both intellectual and spiritual development (Taufik et al., 2024).

Despite these policy expectations, empirical reality often presents a stark contrast, as observed at MA Darul Ulum Semarang. While Arabic is a mandatory subject essential to supporting Sharia sciences such as the Quran, Hadith, and Fiqh, preliminary observations and interviews reveal that the current teaching media are ineffective at capturing student interest. Consequently, students experience boredom and struggle significantly with language acquisition, particularly with vocabulary memorization. Data indicate that Arabic vocabulary mastery at this institution is only around 30%, highlighting a critical need for innovation to bridge the gap between curriculum demands and the students' actual learning difficulties.

To address such challenges in the 21st century, the integration of technology, particularly interactive multimedia, has become a strategic necessity to overcome limitations in learning styles, distance, and time (Jamil & Agung, 2022; Wuyckens et al., 2022). Among various technologies, animated video media has proven exceptionally effective, with studies showing it can improve vocabulary mastery by 35% compared to conventional lecture methods. By using animated videos, students receive information visually, which enhances engagement and motivation, thereby making the absorption of foreign-language Vocabulary more effective (Adipat, 2021; Azhar et al., 2021; Koh, 2020).

However, the mere use of digital tools is insufficient without a robust pedagogical framework; this is where **Technological Pedagogical Content Knowledge (TPACK)** becomes vital. TPACK integrates technological, pedagogical, and content knowledge into a cohesive unit, ensuring that technology serves as an effective medium rather than a distraction. In Arabic learning, TPACK enables teachers to master content and instructional methods while utilizing technology to deliver material interactively (Haniefa & Samsudin, 2023; Mishra et al., 2023; Tseng et al., 2022). Research confirms that TPACK-based animation creates a more engaging learning experience by combining relevant pedagogical strategies with deep subject understanding (Chang & Abidin, 2024; Knapp et al., 2022; Siregar & Tambunan, 2024).

The characteristics of modern learners further underline the urgency of this approach. Recent literature indicates that *mafradat* (Vocabulary) mastery among Generation Z is significantly influenced by dynamic visual and auditory stimulation rather than rote memorization. Studies by Ritonga et al. (2023) and Albantani & Madkur (2023) assert that animated video-based media can reduce cognitive load in comprehending abstract meanings while enhancing long-term retention. In this context, TPACK ensures that the developed animation is not only aesthetically engaging ("Technology") but also linguistically accurate ("Content") and pedagogically effective ("Pedagogy").

Despite the clear benefits of TPACK and animation, a significant research gap persists in Arabic education. The majority of prior studies, such as those by Pratama & Ainin (2023),

have predominantly focused on analyzing teachers' perceptions of TPACK readiness or on assessing the effectiveness of existing generic videos. There is a scarcity of Research and Development (R&D) studies dedicated to creating original media products that explicitly integrate TPACK syntax "by design" to address specific vocabulary difficulties. The absence of such tailored media often leads to a misalignment between subject content and digital delivery (Bulkani et al., 2022; Fitria, 2023; Visonà & Kurt, 2024).

Based on the identified problems and research gap, this study aims to develop TPACK-based animated video learning media for Arabic Vocabulary at MA Darul Ulum Semarang and to evaluate its validity, practicality, and effectiveness explicitly. Unlike previous research that limits itself to perception analysis, this study focuses on developing a concrete instructional solution that systematically synergizes content, pedagogy, and technology. By producing media that concretely visualize word meanings and integrate appropriate teaching strategies, this research intends to provide a verified product that not only overcomes student boredom but also yields a measurable improvement in vocabulary acquisition scores.

METHOD

Research Design This study employs a Research and Development (R&D) method utilizing the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). While the ADDIE model is theoretically chosen for its effectiveness in developing multimedia tools integrating graphics, animation, and audio, this study specifically applies it to create TPACK-based animated videos. To ensure the product's effectiveness is scientifically measurable beyond mere description, the implementation phase incorporates a Pre-Experimental Design, specifically the One-Group Pretest-Posttest Design. This design was selected to allow for a focused comparison of students' vocabulary mastery before and after the intervention without a control group, ensuring a direct assessment of the developed media's impact on learning outcomes.

The operational procedure of this research follows the five ADDIE stages systematically (Aydin et al., 2023; Mohd Jais et al., 2022). The process began with the Analyze stage, during which the researcher conducted a needs assessment through diagnostic tests and interviews with Arabic teachers to identify specific vocabulary learning gaps and to analyze the Grade X Merdeka Curriculum. Subsequently, the Design stage involved creating a flowchart and storyboard for the animation, explicitly integrating TPACK elements (technology, pedagogy, and content), and designing validation instruments and vocabulary test items for the pre-test and post-test. Following this, the Development stage produced the animated video, which underwent rigorous expert validation by Subject Matter Experts (assessing linguistic accuracy) and Media Experts (assessing visual design), with revisions made until the product was declared valid.

The subsequent stages focused on field application and assessment. In the Implementation stage, the valid product was tested on the research subjects, beginning with a Pre-test to measure baseline capability, followed by the learning intervention using the animated videos, and concluding with a Post-test to measure improvement. Simultaneously, practicality questionnaires were distributed to students and teachers to gauge user response. Finally, the Evaluation stage involved analyzing improvements in learning outcomes (Formative Evaluation) and the overall feasibility of the media (Summative Evaluation) to determine whether the product met the success criteria effectively (Chang & Abidin, 2024).

This study was conducted at MA Darul Ulum, Semarang, Central Java, with a population comprising Grade X students. A sample of 27 students from Grade X Semester 1 was selected using a Purposive Sampling technique. The specific methodological reason for this selection was that this class had the lowest average Arabic vocabulary proficiency score among the classes and is currently in the foundational phase of language transition, making it the most relevant for testing the efficacy of the new media. To ensure rigorous data collection, this study used four instruments: validation sheets for experts, practicality questionnaires for users, objective vocabulary tests (multiple-choice/matching) to measure cognitive outcomes, and observation sheets and interview guidelines. Furthermore, data triangulation was applied to enhance validity by cross-verifying findings from teacher interviews, student questionnaires, and classroom observations.

To support scientific significance, the data analysis technique was divided into two distinct categories. First, feasibility analysis utilized a percentage formula to process data from expert validation and practicality questionnaires, categorizing the media's quality. Second, to scientifically assess the media's effectiveness, the study employed inferential statistics rather than just percentages. The N-Gain Score (Normalized Gain) formula was applied to measure the magnitude of improvement between Pre-test and Post-test scores. Additionally, a Paired Sample T-Test was conducted using statistical software to determine the significance of the difference, where the media is considered effective if the significance value (Sig.) is < 0.05 and the N-Gain score falls within the medium or high category.

$$P(s) = S/N \times 100\%$$

$P(s)$ = Sub Variable Percentage
 S = Total Score For Each Sub Variable
 N = Maximum Score Value

Table 1. Assessment Percentage Table

No	Intervals	Criteria
1	80% < skor \leq 100%	Very good
2	60% < skor \leq 80%	Good
3	40% < skor \leq 60%	Fairly good
4	20% < skor \leq 40%	Poor

The trial in this study was conducted in three stages. The first stage is the validity test, which assesses the product's validity with media and language experts during the development phase. The second stage is the response test, which measures students' responses after using the animated video. The third stage is the effectiveness test, which assesses the product's effectiveness.

RESULT AND DISCUSSION

Animated media in Arabic language learning is a highly effective tool for introducing and reinforcing students' understanding of the learning material (Ardiansyah et al., 2022; Mohd Rahimi et al., 2021; Rusli et al., 2024). The use of animation not only makes learning more engaging and interactive but also helps visualize abstract concepts, such as vocabulary and sentence structures, which may be difficult to grasp through text or direct conversation alone. In Arabic, where mastery of Vocabulary and grammar is crucial, animation can be used to illustrate word meanings, correct pronunciation, and the application of sentences in real-life situations (Anggraeni et al., 2023; Fahiroh et al., 2021).

Animation also enables students to see and hear words or phrases in a more dynamic, context-rich environment, which helps reinforce their memory and comprehension. By integrating engaging visual and auditory elements, animation makes it easier for students to distinguish between similar Vocabulary, recall complex grammatical structures, and practice speaking skills in Arabic (Akla, 2021). The visual representations of words and phrases, along with their proper pronunciation and usage, create a more immersive learning experience. As a result, animated media not only boosts students' motivation to learn but also accelerate their ability to understand and master the Arabic language (Sarip et al., 2024). This is particularly beneficial for students with visual or auditory learning preferences, as it caters to their learning styles, making the language acquisition process more effective and enjoyable.

Analysis Stage

The analysis stage in this study refers to the initial needs analysis, where the researcher identifies the problems faced by students and Arabic language teachers. This stage involves observations, interviews, and questionnaires. The researcher conducted classroom observations of Arabic language teaching, conducted interviews with Arabic language teachers to obtain information on the teaching process, and distributed questionnaires to gather in-depth information on students' needs. This data is further supported by interviews with the vice principal of the curriculum department regarding the curriculum, available facilities, and infrastructure that can be utilized in the learning process.

Based on observations, interviews, and questionnaires, the following findings were obtained: Students' enthusiasm for memorizing Vocabulary remains low because teachers rarely use technology in Arabic language lessons. From the interviews with the Arabic language teacher, it was found that students' vocabulary mastery was only about 30% of the Vocabulary they should have memorized. The questionnaire results from 27 students revealed that their views on Arabic language learning were quite varied. About 48% of students found Arabic lessons interesting, while 52% did not around 59% of students admitted to getting bored while learning Arabic, while 41% did not. The majority of students (85%) experienced difficulties learning Arabic in class, while only 15% did not. The use of animated videos in learning had not been widely implemented, even though 74% of students had used them previously. The majority of students (81%) expressed interest in learning through animated videos, and 81% also felt it was important to develop animated video-based media using TPACK to aid learning of Arabic. However, only 19% of students found it easy to memorize Arabic Vocabulary, while 81% found it difficult.

In terms of facilities, the school is still under development, so the available facilities are quite limited. Currently, the available resources include classrooms, whiteboards, LCD projectors, and other audio devices. The school's location on the outskirts of the city means

internet access remains minimal. Given the conditions at Madrasah Tsanawiyah Pondok Pesantren Darul Ishlah Bulukumba, the researcher aims to develop Arabic learning media in the form of animated videos for seventh-grade students. It is hoped that the development of this animated video-based Arabic learning media will address the problems students face in learning Arabic, offering teachers the opportunity to learn and develop their potential.

Design Stage

The competency map establishes learning objectives and goals to improve students' mastery of Arabic Vocabulary. In contrast, the material map selects topics from Chapter 2 of Semester 1 for Grade X (*Usrah wal Bait*), organizing key issues, such as family members and parts of the house, in a sequence that facilitates student understanding. The Media Content Outline (MCO) serves as a guide in writing the script for the animated video. The MCO for this animated video includes the video title, video theme, the profile of Pancasila students, learning outcomes, learning objectives, the animated video's content in the form of a story or dialogue (*bimar*), and activities for memorizing Arabic Vocabulary presented with images and text. Additionally, the MCO includes memorization exercises without text, only with images, and a quiz to evaluate students' understanding.

The script development involves using dialogue and narration to support learning and integrating TPACK elements to create an interactive learning experience. With this approach, students are expected to effectively enhance their mastery of Arabic Vocabulary through engaging, enjoyable media.

Development Stage

In the pre-production phase, preparations begin by organizing the devices and applications to be used in creating the Arabic-language learning animation video. The tools prepared include laptops and applications such as CapCut, Adobe Express, and TTSMaker, as well as ChatGPT Pro to assist with content creation and material processing. Additionally, a stable internet connection is an important factor to ensure smooth video production. This phase also involves planning the script and outline for the animation video.

In the production phase, the animation video is created, following the script and media plan established during pre-production. The script includes the entire storyline, dialogues, and activities for the video, conveying the Arabic language learning material. During this phase, visual, audio, and text elements are carefully integrated using the prepared software tools. The production process is carried out with precision and attention to detail to ensure the animation video effectively delivers the content in an engaging, interactive way for students.

In the post-production phase, the completed Arabic-language learning animation video is uploaded to YouTube to make it easily accessible to students and anyone who needs it. This phase ensures the video can be conveniently accessed by the target audience, enabling flexible learning opportunities. By sharing the video on a widely used platform like YouTube, the educational content can reach a broader audience, making it more effective in supporting the learning process. The video is titled accordingly, and the YouTube link is provided for easy access to the learning material, enhancing both its availability and usability.

Table 2. Title And Link Of Arabic Learning Animation Video

No	Title Of Learning Animation Video	Learning animation video link
1	Khiwar and <i>Vocabulary</i> about family	https://youtu.be/CxZO4d2uyPU?si=imTftKGoAA8TTpz1
2	Stories and <i>Vocabulary</i> about Home	https://youtu.be/9pTYoHIBxpo?si=3tT2zF9StkUH7zQZ



Figure 1. Animation Video About Family



Figure 2. Animation Video About Home

Implementation Stage

The implementation was carried out with 27 Grade X students. Given the school's location on the outskirts of the city, with limited internet access, the teacher optimized the available facilities, such as LCD projectors and audio devices. In this stage, the TPACK (*Technological Pedagogical Content Knowledge*) framework was not merely present as an artifact (the video) but was operationalized dynamically within the classroom ecosystem as follows:

Technological Knowledge (TK): The teacher did not simply play the video; instead, technology was integrated to address infrastructure limitations. Since internet access was unstable, the animated videos produced using digital tools like CapCut and Adobe Express were downloaded in advance and projected offline. This technology served as a consistent transmission medium for visual-auditory material, ensuring that every student received the same standard of native-speaker audio and visualizations, thereby overcoming the variability of manual instruction.

Pedagogical Knowledge (PK): The teacher used active learning strategies to prevent students from becoming passive viewers. The video was used with a "chunking" technique: the teacher paused it at specific vocabulary segments to conduct drilling exercises in which

students mimicked the pronunciation. Furthermore, the teacher facilitated interactive discussions regarding the context of the visuals displayed. Direct evaluation was also conducted through quizzes and memorization exercises interspersed with the video viewing to measure short-term memory retention.

Content Knowledge (CK): The core instructional content focused on specific Vocabulary (*mufradāt*) regarding "Family" and "Home". Through animation, abstract content or text-heavy memorization was transformed into concrete visual representations. This helped students distinguish between vocabulary words with similar sounds or meanings through clear visual cues and understand simple sentence structures (*tarkīb*) used in daily dialogue.

TPACK Synthesis: The intersection of these three components occurred when the animation technology visualized difficult Arabic content, which was then mediated by the teacher's pedagogical strategies. The teacher monitored four key aspects: pronunciation accuracy, understanding of meaning, memorization ability, and proficiency in sentence formation. This integrated approach created an immersive environment where technology reduced the cognitive load required to visualize word meanings, allowing students to focus on pronunciation and usage.



Figure 3. Implementation of learning using video animation

Evaluation Stage

28

The evaluation stage aims to assess the effectiveness of the developed animated video learning media for Arabic language instruction, particularly in the topics of house and family, for students in Class X, Semester 1.

The results of the questionnaire analysis, administered to 27 tenth-grade students, aimed to assess their interest and responses to using animation videos as a learning tool to enhance their mastery of Arabic Vocabulary, particularly in the context of home and family topics. This questionnaire provided valuable insights into how TPACK-based animated video media influences the students' learning process. The students' evaluations reflect their reactions to the use of animated videos for vocabulary learning, offering a glimpse into the effectiveness and appeal of this medium as an aid in understanding new Vocabulary. The questionnaire results also highlight the students' increased motivation and interest in learning Arabic vocabulary, as well as the media's role in helping them grasp concepts and Vocabulary related to the theme of home and family.

Table 3. Student Questionnaire Results

No	Rated Aspect													S	N	P%	Validation
	1	2	3	4	5	6	7	8	9	10	11	12	13				
1	3	4	3	4	4	3	3	3	3	4	4	3	3	44	52	85%	Very good
2	3	4	3	3	4	4	3	3	4	3	3	4	3	44	52	85%	Very good
3	2	3	2	2	2	1	1	2	3	3	1	2	3	27	52	52%	Fairly good
4	4	3	4	3	3	4	3	4	4	3	3	4	3	45	52	87%	Very good
5	3	4	3	4	3	4	4	3	4	4	4	3	3	46	52	88%	Very good
6	4	4	3	4	4	3	3	3	4	3	4	4	3	46	52	88%	Very good
7	3	3	3	3	4	4	4	4	4	4	4	4	4	48	52	92%	Very good
8	4	4	4	4	4	4	3	4	4	4	4	3	4	50	52	96%	Very good
9	4	4	4	4	3	3	3	3	3	4	4	3	4	46	52	88%	Very good
10	2	2	3	3	2	3	2	2	3	4	3	3	3	35	52	57%	Fairly good
11	3	3	3	3	3	3	3	3	3	3	3	3	3	39	52	75%	Good
12	4	4	4	4	4	4	4	4	3	4	3	4	3	49	52	94%	Very good
13	4	4	4	4	3	3	3	3	3	4	4	3	4	46	52	88%	Very good
14	3	4	4	3	3	4	4	3	3	3	4	3	3	44	52	85%	Very good
15	3	4	4	4	4	4	4	4	4	4	4	4	4	51	52	98%	Very good
16	4	4	4	4	4	4	4	4	4	4	4	4	4	52	52	100%	Very good
17	3	3	4	3	4	4	4	4	4	3	3	4	3	46	52	88%	Very good
18	4	4	3	4	4	3	3	4	3	4	3	4	4	47	52	90%	Very good
19	3	3	2	4	4	4	3	3	4	4	3	3	4	44	52	85%	Very good
20	4	4	3	4	3	4	4	3	4	3	4	3	4	47	52	90%	Very good
21	3	3	3	3	2	3	3	4	3	3	3	3	3	39	52	75%	Good
22	4	3	3	3	4	2	3	3	4	3	3	3	4	42	52	81%	Very good
23	4	4	4	3	4	4	3	4	4	4	4	3	4	49	52	94%	Very good
24	4	3	4	3	4	3	3	4	4	3	4	4	3	46	52	88%	Very good
25	3	3	4	3	3	4	3	2	2	4	4	3	3	41	52	79%	Good
26	4	3	3	3	4	3	3	3	4	4	3	3	1	41	52	79%	Good
27	3	4	4	3	3	4	3	4	3	3	4	4	3	45	52	87%	Very good
Amount													1199	1248	96,07%	Very good	

The data indicate that students' questionnaire results on using animated video media to improve their Arabic Vocabulary show that the "good" category received 96.07% across all evaluation aspects.

45

The researcher also gathered data through direct observations conducted by the Arabic language teacher of students in class X. These observations were designed to assess the effectiveness of using TPACK-based animated video media as a tool to enhance students' mastery of Arabic Vocabulary. By closely monitoring students during the lesson, the teacher was able to observe and evaluate their responses as they engaged with the animated video content. The teacher focused on four key aspects during the evaluation process: 1) the students' ability to pronounce Vocabulary correctly, 2) their understanding of the meaning and context of the Vocabulary, 3) their ability to memorize the Vocabulary effectively, and 4) their proficiency in forming sentences using the Vocabulary learned. These aspects were

considered crucial indicators of students' overall progress in mastering Arabic, particularly in acquiring new Vocabulary (Adira et al., 2024). By examining these areas, the teacher could provide valuable insights into students' learning strengths and areas for improvement, thereby ensuring a more comprehensive evaluation of the media's impact.

Table 4. Results of teacher observation analysis

No	Rated Aspect				S	N	P%	Validation
	1	2	3	4				
1	4	4	3	3	14	16	87,50%	Very good
2	4	2	3	3	12	16	75,00%	Good
3	4	2	2	1	9	16	56,25%	Fairly Good
4	4	3	2	2	11	16	68,75%	Good
5	4	4	4	3	15	16	93,75%	Very good
6	4	3	2	2	11	16	68,75%	Good
7	3	2	3	2	10	16	62,50%	Good
8	4	4	4	3	15	16	93,75%	Very good
9	4	3	4	2	13	16	81,25%	Very good
10	3	3	4	1	11	16	68,75%	Good
11	4	3	4	3	14	16	87,50%	Very good
12	4	4	3	3	14	16	87,50%	Very good
13	4	4	4	4	16	16	100,00%	Very good
14	4	4	4	3	15	16	93,75%	Very good
15	4	3	2	1	10	16	62,50%	Good
16	4	4	3	3	14	16	87,50%	Very good
17	4	3	3	2	12	16	75,00%	Good
18	4	3	4	3	14	16	87,50%	Very good
19	4	4	4	3	15	16	93,75%	Very good
20	3	2	2	1	8	16	50,00%	Fairly good
21	3	2	4	2	11	16	68,75%	Good
22	4	3	3	2	12	16	75,00%	Good
23	4	4	2	2	12	16	75,00%	Good
24	4	3	3	2	12	16	75,00%	Good
25	4	3	4	3	14	16	87,50%	Very good
26	4	4	4	3	15	16	93,75%	Very good
27	4	4	3	2	13	16	81,25%	Very good
Amount		348	432	80,56%	Very good			

The data from the teacher's observation indicate that, when using TPACK-based animated video media to improve their Arabic vocabulary mastery, the students received a rating of "very good" with a 80.56% across all evaluation aspects.

The evaluation results from the pre-test and post-test conducted on Class X students who were introduced to animated video media for Arabic language learning demonstrate a significant and noteworthy improvement in vocabulary mastery. The pre-test was

administered to gauge students' vocabulary proficiency before they interacted with the TPACK-based animated video content. The average pre-test score of 56.89 indicated a relatively low level of vocabulary understanding, suggesting that many students struggled to master the Arabic Vocabulary. However, after implementing animated video media that integrated technology, pedagogy, and content using the TPACK framework, the average post-test score increased significantly to 87.41. This remarkable jump in scores reflects a substantial improvement in students' vocabulary comprehension and retention. With an average difference of 30.52 points, the results clearly demonstrate the positive, transformative impact of TPACK-based animated learning media. The significant improvement in students' vocabulary acquisition highlights the effectiveness of this approach in enhancing students' understanding and retention of new Vocabulary, underscoring the value of integrating multimedia technology into the learning process for better educational outcomes.

Table 5. Accumulated Percentage Value of the Effectiveness of Animated Videos

No.	Test Description	Number of Students	Average value	Category
1	Pree test	27	56,89	Fairly Good
2	Post test	27	87,41	Very good
Total difference: 30,52				

Discussion

The primary finding of this study reveals a significant surge in students' Arabic vocabulary mastery, with the average *post-test* score reaching 87.41, a drastic increase from the *pre-test* score of only 56.89. This 30.52-point gain confirms that the animated media intervention effectively addressed low vocabulary mastery. This aligns with recent findings by Rusli et al. (2024) and Sarip et al. (2024), which state that animated media not only boosts motivation but also tangibly accelerate students' ability to comprehend complex Arabic materials. These results demonstrate that the learning barriers initially experienced by 85% of students can be effectively overcome through an appropriate media approach.

Cognitively, this success occurs because animated media present material in a more dynamic format compared to conventional methods. Research by Ardiansyah et al. (2022) indicates that animated videos are effective at capturing student attention and reinforcing understanding through concept visualization. In this context, animation helps students process abstract Vocabulary (*mufradat*) into concrete visuals, thereby facilitating information recall. This is further supported by Regina & Rajasekaran (2024), who found that animation accelerates Vocabulary learning more enjoyably and interactively than traditional lecture methods.

Within the TPACK framework, the Technological Knowledge (TK) component was operationalized to address infrastructure challenges. Given the school's remote location and limited internet access, the use of digital tools such as CapCut and Adobe Express focused on producing high-quality offline video content. This strategy supports the findings of Basilotta-Gómez-Pablos et al. (2022), who state that integrating various digital tools into media production enables the creation of interactive content tailored to student needs, even

within facility limitations. Here, technology functions as a bridge for consistent material accessibility.

The Pedagogical Knowledge (PK) aspect is evident in the teacher's role, which goes beyond merely showing the video to integrating it with active learning strategies. The teacher implemented drilling methods and interactive Q&A sessions interspersed during the video playback. This pedagogical approach is crucial, as emphasized by Miranda & Sampaio (2025), who highlight that the appropriate combination of technology and pedagogy is the key driver of improved learning quality. Without this pedagogical intervention, animated videos would remain passive viewing experiences with limited impact on student memory retention.

Regarding the Content Knowledge (CK) component, the media was developed with a material map strictly aligned with the "Family and Home" chapter curriculum. (Fahiroh et al., 2021) Emphasize that, in Arabic, mastery of Vocabulary and grammar is crucial, and that animation must be designed to illustrate word meanings and correct pronunciation. The visualization in this video ensured that the material content was delivered with contextual accuracy, helping students distinguish word meanings through relevant visual situations, rather than relying solely on textual translation.

While the student questionnaire yielded a 96.07% positive response, a critical view suggests this high figure may be influenced by the "Novelty Effect." Since 74% of students had used animation before, but likely not in a formal classroom setting at this school, their enthusiasm might stem from the freshness of the method rather than deep intrinsic motivation. This interpretation serves as a necessary caution against overgeneralizing the results.

The teacher's observation of student activities yielded a score of 80.56%, placing it within the 'Very Good' category. However, the potential for subjective bias (observer bias) must be acknowledged, as the observation was conducted by the same teacher who developed the instructional media. The teacher may have tended to rate student responses more positively because of expectations for the product's success. Nevertheless, this bias was minimized through triangulation with objective data from the post-test results. The consistency between the improved test scores and the observation results demonstrates that the teacher's positive perception was indeed grounded in the students' tangible progress in pronouncing and memorizing Arabic Vocabulary (Dwi A et al., 2023; Kudsiyah et al., 2021). Found a similar pattern in their research, where animation-based learning videos consistently improved memory retention of teaching materials. This confirms that the teacher's positive perception during observation aligns with empirical data on students' cognitive improvement.

The use of AI tools such as ChatGPT Pro and editing applications in developing instructional materials enhanced the quality of the instructional content. (Leunard et al., 2023). Emphasize the importance of using cutting-edge technology to address challenges in memorizing Arabic Vocabulary. This study demonstrates that when teachers are empowered with modern content production tools (TPACK), they can create learning materials that are far more relevant and motivating than static textbooks.

The media's effectiveness was heavily influenced by external factors, specifically teacher readiness and infrastructure. The teacher's ability to utilize AI (ChatGPT Pro) and editing software was a prerequisite for success. Without this digital competency, the limitation of "minimal internet access" would have crippled the implementation. This

highlights a crucial disparity: the same media might fail in a classroom where the teacher lacks the Technological Knowledge to troubleshoot or adapt resources for offline use.

Practically, this study implies that the Arabic language curriculum in infrastructure-limited areas should prioritize "low-bandwidth" digital solutions, specifically downloadable, teacher-created animated assets combined with active drilling pedagogies. Institutions should focus teacher training on *content creation* (TK) rather than just consumption. Future research must address this study's limitations by conducting longitudinal research to test long-term retention beyond the novelty period. Additionally, comparative studies are needed to evaluate whether this TPACK approach remains effective for more abstract Arabic concepts, such as complex grammar (*Nabwu-Shoruf*), given the need for comprehensive language mastery.

CONCLUSION

This study concludes that the development of animated video media based on the ADDIE model serves not merely as a technical innovation but also as a strategic solution to overcome students' cognitive barriers to Arabic vocabulary acquisition. The primary contribution of this research is empirical evidence that integrating the TPACK (Technological, Pedagogical, and Content Knowledge) framework effectively transforms abstract vocabulary learning into a concrete, immersive experience. This is substantiated by the significant surge in students' average scores from 56.89 (pre-test) to 87.41 (post-test), yielding a gain of 30.52 points. This effectiveness underscores that animated media, when used with appropriate pedagogy, serve as a significant cognitive bridge, enhancing short-term memory retention and directly addressing the low motivation previously experienced by 59% of students.

Theoretically, these findings reinforce the relevance of TPACK theory in foreign language education, demonstrating that technology (animated video) cannot stand alone without pedagogical intervention (drilling and discussion methods) and deep content understanding (contextual Vocabulary). Practically, this study offers an adaptive learning model for educational institutions with limited infrastructure. The resulting media can be used offline, providing teachers with a way to present high-quality visualizations and native-speaker pronunciation without relying on internet connectivity, thereby democratizing access to quality learning materials.

Despite positive results with a 96.07% student response rate, this study has substantial limitations that must be acknowledged. *First*, the high student enthusiasm may be influenced by the "novelty effect," in which motivation spikes upon introducing a new medium rather than the content itself. *Second*, the study is limited to a small sample (27 students) from a single school, which limits the generalizability of the results to a broader population. *Third*, the effectiveness measurement is restricted to short-term cognitive improvement (pre-test to post-test) and does not assess long-term vocabulary retention.

Based on these findings and limitations, this study recommends the following directions for future research: (1) Future researchers should conduct longitudinal studies to test whether vocabulary retention persists after the novelty effect fades; (2) Develop animated media for more complex language skills, such as grammar (*Qawa'id*) or spontaneous speaking skills (*Maharab Kalam*), extending beyond mere vocabulary memorization; and (3) Integrate more immersive technologies such as Augmented Reality (AR) or interactive mobile applications to foster autonomous student learning outside the classroom. For

educational practitioners, it is recommended not to use this media merely for passive viewing but to integrate it into communicative classroom activities to maximize language acquisition.

ACKNOWLEDGMENT

We want to express our sincere gratitude to our supervisors for their valuable guidance, constructive feedback, and continuous support throughout the research process. Their expertise and direction were essential to the successful completion of this study. We also extend our appreciation to the editorial team of Journal *Ta'lim Al-'Arabiyyah* for their professional assistance and dedication during the publication process, which greatly contributed to the successful publication of this paper.

AUTHOR CONTRIBUTIONS STATEMENT

[AAP] is the lead researcher responsible for data collection, analysis, and writing this article. [DFAT] is the creator of the animation media featured in this article. [N], as the research mentor, provided crucial guidance in research design and helped shape the conceptual framework.

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