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Development of Calligraphy Learning Media on Calligraphy Font Types in Higher Education

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ABSTRACT

Learning media is one of the supporting components in the learning process. In the process of learning fine arts, especially in calligraphy courses, recognizing calligraphy letters is one of the topics studied. This course instructs students on how to transform calligraphy letters into two-dimensional works of art. In order for the learning process to run effectively, learning media are needed that are valid and practical and can be used as a tool to achieve learning objectives optimally. The purpose of this study was to evaluate and describe the feasibility of calligraphy learning media specifically designed for letter recognition material. The research method used is the R&D research and development method with the 4D approach. This research was conducted at the Bachelor of Fine Arts Education Study Program, Gorontalo State University. The findings from the validation of learning media by several validators showed values that serve as a reference for the validity and feasibility of the media. The values obtained include 85.62% from a material expert validator, indicating very feasible criteria; 81.40% from a media expert validator, also indicating very feasible criteria; and 72.79% from a calligrapher, which indicates feasible criteria. The use of student response questionnaires also affects the level of validity of learning media with a value of 77.66% for attractive criteria. As a whole, it proves that calligraphy learning media for recognizing calligraphy types is very feasible to develop.

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1. INTRODUCTION

Education is essentially a vehicle for channeling planned efforts to create a learning environment and process so that students can develop their potential to possess spiritual and religious strength, moral character, intelligence, and skills that benefit themselves, society, the nation, and the state (Saleh et al., 2023; Vestia & Setiawan, 2021). One component of education is learning media. Media is a component of communication, serving as a message carrier from the communicator to the recipient (Sudarsana et al., 2020; Lubis et al., 2023; Kandia et al., 2023). Learning media is a supporting tool in the

teaching process (Fitra et al., 2020; Hasdiana et al., 2022; Alzubaidi et al., 2023). The completeness of the supporting tools used and optimal delivery of learning materials during the learning process can motivate students to learn (De Freitas, 2018; Marshall & Wallace, 2019; Aljawarneh, 2020).

The use of learning media ranges from simple to complex. Engaging learning media will stimulate students' attention to the material presented by the teacher or lecturer in class (Yadegaridehkordi et al., 2019; García-Martínez et al., 2020). This is also true in the learning process of fine arts, especially in calligraphy courses, such as the Introduction to Calligraphy Letters course. This course instructs students on how to transform calligraphic letters into two-dimensional artistic creations.

Arts and culture education, particularly in the context of Islamic calligraphy, plays a crucial role in preserving aesthetic and spiritual heritage (Karawani et al., 2023; Islam & Abdullah, 2024). In universities, calligraphy courses aim to equip students with technical skills and a profound understanding of the history, philosophy, and diversity of calligraphy fonts (or khat). However, calligraphy instruction often faces challenges that make it less effective (Adawiyah, 2024; Guirong & Xu, 2024).

Calligraphy instruction, particularly on calligraphy fonts (Naskhi, Tsuluts, Riq'ah, Diwani, Kufi, etc.), traditionally relies heavily on lectures, manual demonstrations by lecturers, and hands-on practice using conventional tools (Ahmad, 2021; Yusof & Azalie, 2025). This approach has several limitations, including a lack of dynamic visual representation and limited access and practice time (students need readily accessible visual references to review and compare letterforms). Limited face-to-face class time hinders the initial introduction and mastery of various fonts, and learning appeal (the current generation of students are digital natives who respond better to technology-based learning media. Reliance on traditional methods can reduce motivation and learning engagement.

Innovation in delivering calligraphy fonts through the development of technology-based learning media is necessary to address the aforementioned challenges. Innovative learning media can bridge the gap between complex teaching materials and students' learning needs (Rodríguez-Abitia et al., 2020; Fernandez-Antolin et al., 2021; Wijayanto et al., 2023). To ensure an effective and efficient calligraphy learning process, teachers or lecturers must utilize appropriate learning media. The selection of learning media must be tailored and aligned with the learning material to determine the achievement of learning objectives (Bernacki et al., 2021; Contrino et al., 2024).

The development of learning media, such as interactive applications, video tutorials, or digital modules that present clear and interactive visualizations of letter anatomy and comparisons between fonts, has enormous potential to enhance conceptual understanding, support independent learning, and increase learning motivation (Noor & Aisyah, 2018; Moradi et al., 2018; Nicolaou et al., 2019; Rachmavita, 2020).

After gathering information about learning media and calligraphy, the next step is to create an initial calligraphy learning product with material on introductory calligraphy letters. We anticipate that lecturers and students will use this learning media to enhance the quality of calligraphy learning, specifically in calligraphy lettering. The design guide

for calligraphy learning media incorporates insights from a variety of online and textbook sources.

Although digital calligraphy learning media already exist, most focus on basic writing training. The novelty of this research lies in the specificity of the material: the media developed exclusively focuses on comparing, identifying, and in-depth understanding of the anatomy of calligraphy font types (khat). This developed media not only teaches how to write but also presents detailed visualizations of writing rules (e.g., thick-thin ratios, angles of inclination, and point proportions) between types of khat that are often difficult to understand only from textbooks. The development of this media integrates interactive features that conventional calligraphy learning media in higher education have not comprehensively included. In short, the novelty of this research lies in the development of digital learning media that focuses on deep learning the anatomy and comparison of khat types, making it an innovative solution to overcome the difficulty of mastering calligraphy font types at the higher education level.

Therefore, this research aims to design, implement, and test the feasibility and effectiveness of technology-based learning media that specifically address the diversity of calligraphy fonts. We hope that this research's results will significantly enhance the quality of calligraphy learning in academic settings.

2. METHOD

This research is a developmental study focused on creating a product that serves as a learning aid to enhance the learning process. The product developed in this study is a calligraphy learning medium with material on introducing calligraphy letters in the calligraphy course in the Bachelor of Fine Arts Education Study Program, Gorontalo State University. This research method uses the research and development method, also known as R&D (research and development), with a 4D approach. The focus of R&D research is on implementation in the educational field, specifically in the process of developing and validating products. The 4D model was chosen because it is more systematic and suitable for developing calligraphy learning media. The four stages of development are: define, design, develop, and disseminate. The steps in the 4D research model are proposed by Thagarajan (Kurniawan & Dewi, 2017). The flowchart for developing learning devices using the modified 4-D model explains these steps, as shown in Figure 1 below.

Figure 1. Flowchart of 4-D Model Steps

Data collection activities in this study used a validation sheet in the form of a questionnaire. The validation questionnaire was measured using a Likert scale to determine the feasibility of the calligraphy learning media for the Introduction to Calligraphy Letters material developed by the researcher.

1) Media Expert Validation Sheet

This validation sheet contains information on the feasibility of the calligraphy learning media for the Introduction to Calligraphy Letters material. The validation sheet was completed by the media validator based on the instructions prepared by the researcher. The media expert validation instrument will be used to validate the calligraphy learning media for the Introduction to Calligraphy Letters material.

2) Calligraphy Expert Validation Sheet

The calligraphy expert's validation sheet includes various aspects of calligraphy writing, which are detailed through multiple statements.

3) Material Expert Validation Sheet

The validation sheet by the material expert contains several aspects related to the concept of calligraphy developed through several statements. The validation sheet was completed by the material validator based on the instructions prepared by the researcher.

4). Student Response Questionnaire

The student response questionnaire contained student responses regarding the appeal of the product, a calligraphy learning medium, in the Introduction to Calligraphy Letters material.

Data analysis activities in this study were conducted after data collection. Data analysis was used to organize data obtained during interviews, observations, documentation, and questionnaire distribution. Data analysis is essential to facilitate drawing conclusions from the research results. The data obtained contained the numbers 5, 4, 3, 2, and 1, representing a Likert scale. These numbers were then summarized to draw conclusions about the media's suitability. The measurement scale for the lecturer and student response questionnaire used a Likert scale. The Likert scale is used to measure attitudes, perceptions, and opinions, ranging from very positive to very negative, or vice versa.

Table 1. Scoring Rules

No.	Category	Score
1.	Strongly Agree	5
2.	Agree	4
3.	Undecided	3
4.	Disagree	2
5.	Strongly Disagree	1

The final score for all statements is the average percentage score for each aspect based on all validator responses. The validation criteria used are shown in the following Table 2.

Table 2. Validation Criteria for Average Analysis of each Statement

Average	Validation Criteria
$4{,}21 \leq V \leq 5{,}00$	Highly Valid
$3{,}41 \leq V \leq 4{,}20$	Valid/No Revision
$2{,}61 \leq V \leq 3{,}40$	Moderately Valid/No Revision
$1{,}80 \leq V \leq 2{,}60$	Invalid/Partially Revised
$1{,}00 \leq V \leq 1{,}80$	Highly Invalid/Totally Revised

The criteria for interpreting the validation questionnaire scores can be seen in the following Table 3.

Table 3. Learning Media Interest Scale

Interval	Criteria
$80{,}01\% < P \leq 100\%$	Very Eligible
$60{,}01\% < P \leq 80\%$	Eligible
$40{,}01\% < P \leq 60\%$	Quite Eligible
$20{,}01\% < P \leq 40\%$	Not Eligible
$0\% < P \leq 20\%$	Very Eligible

In this study, the researchers modified the 4-D model. The modifications included the following: Simplifying the model from four stages to three: definition, design, and development. The dissemination stage was not conducted because the goal of this study was to develop the learning tool until a good learning tool was obtained, which had been produced at the development stage.

3. RESULTS AND DISCUSSION

Results

This research led to the creation of a calligraphy learning product designed to introduce calligraphy letters. The Bachelor of Fine Arts Education study program at Gorontalo State University conducted the research. The research stages were as follows:

Define Stage

Preliminary research was used as a preliminary activity before conducting research on the development of calligraphy learning media for the introduction of calligraphy letters. The definition stage aimed to determine and define the learning requirements. The analysis results from this stage are as follows:

a. Front-End Analysis

Observations conducted in the Fine Arts Education study program revealed that there were still obstacles in the classroom learning process. Educators still used the lecture method and PowerPoint presentations without detailing the types and patterns of calligraphy letters. However, the use of appropriate learning media would have led to optimal learning outcomes. As a result, student motivation and interest in learning decreased. This was one factor contributing to suboptimal learning.

The results of this analysis were used as the basis for creating calligraphy learning media for the introduction of calligraphy letters, with the aim of addressing the needs of the learning process and achieving learning objectives.

b. Student Analysis

This step aims to determine the students' prior knowledge and previous experiences in learning, particularly regarding the introduction to calligraphy. Students' prior knowledge of calligraphy is also crucial in this research. This research focused on developing calligraphy learning media for the introduction to calligraphy and involved second-semester (even) students with varying characteristics. Students had received calligraphy material but had not yet used the tools in their learning.

c. Task Analysis

We obtained the results of this stage from a pre-research questionnaire, which analyzed students' needs for the development of calligraphy learning media. The results of the task analysis defined the objectives for developing calligraphy learning media aimed at introducing students to calligraphy. This learning media is expected to facilitate students in learning calligraphy, particularly in understanding the techniques and methods of creating calligraphy letters.

d. Concept Analysis

We use this stage to identify, select, and organize appropriate concepts for the development of learning media. The researchers will develop calligraphy learning media that focuses solely on introducing calligraphy letters. This phase will allow students to master the material, understand the forms of calligraphy letters, and learn how to create them.

e. Learning Objective Analysis

This stage will produce a product in the form of calligraphy learning media for the introduction to calligraphy letters. This learning media aligns its objectives with the learning objectives and core competencies in calligraphy creation. Students will gain an understanding of calligraphy letterforms and learn how to create them using this learning media.

Design Stage

The design stage involves creating a product specifically for calligraphy learning media that introduces students to calligraphy letters. Additionally, we create a design to evaluate the viability of the learning media under development.

a. Format Selection

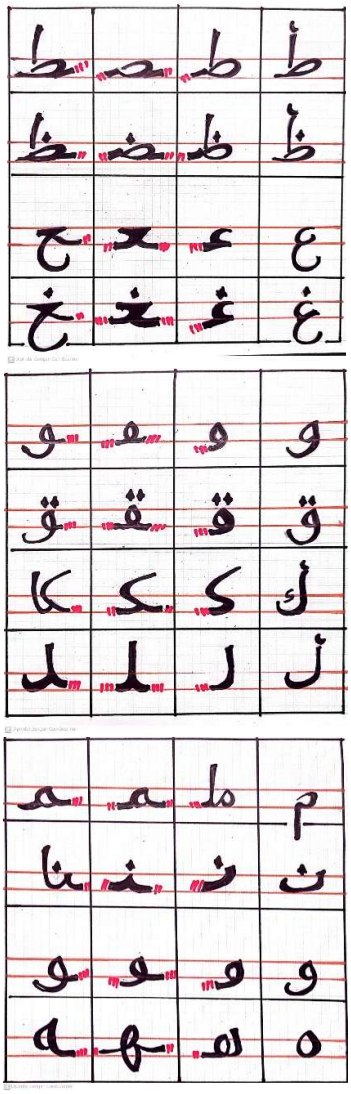
The format for creating calligraphy learning media for recognizing calligraphy letters was developed using display letters manually on white cardboard. The letter patterns were created on millimeter block lines with a 1:1 ratio. Each calligraphy piece measured 4 cm x 4 cm in diameter. The learning medium was accompanied by a PowerPoint presentation and a banner explaining how to use the media and how to apply letter recognition to the calligraphy medium.

b. Initial Design

The initial design of the calligraphy learning media was adapted to the selected learning media format previously described. The calligraphy learning media design consisted of eight panels, namely:

1) The materials used for the calligraphy learning media for recognizing calligraphy letters were durable and fade-resistant. The calligraphy learning media for recognizing calligraphy letters were created using display letters manually on cardboard, which were then scanned and printed in banner form.
2) The PowerPoint presentation was created to facilitate educators and students in using the calligraphy learning media for recognizing calligraphy letters.

End Middle Beginning Single



End Middle Beginning Single

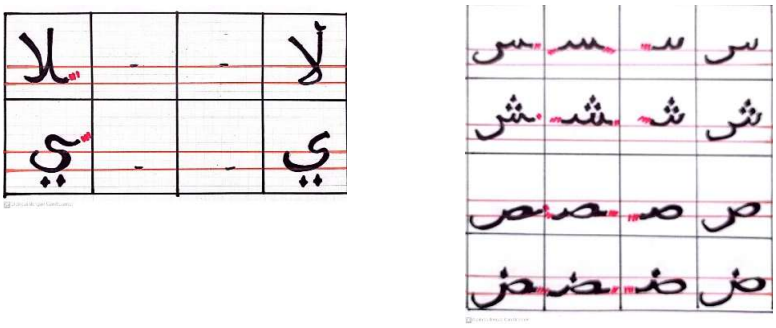


Figure 2. Learning media for recognizing calligraphy letters consisting of 8 panels

This panel serves as a reference for creating Islamic calligraphy, facilitating the writing and reading of Arabic letters. Arabic letters, also used in the Quran, are called hijaiyah letters and have their characteristics and rules for writing. A word consisting of several letters that must be connected according to the rules of writing. Therefore, if a letter stands alone, it is called a single letter. When connected, the letter's spelling can change. For example, the beginning, middle, and end will have different shapes. Some letters also lack a beginning and middle, only a single letter and an end, such as the letter Alif. The media features two orange horizontal lines that guide letter placement, and red lines at the ends of the letters indicate that the letters can be connected along those lines.

3. Development Stage

The development stage is the result of the validation of the learning media conducted by several validators: expert validators in the material, media, and calligraphy. Validation results were obtained from lecturers who met the specified criteria. Research data was obtained from students in the Fine Arts Education study program.

a. Product Validation

1) Material Expert Validation

Material validation includes assessment aspects including the suitability of the material to the learning media and content, the relevance of the learning media to the teaching materials, and educational value. The purpose of this activity was to assess the suitability of the materials used in calligraphy learning media for the calligraphy letter recognition course. The validators were lecturers with relevant competencies.

The assessment of the suitability of the calligraphy learning media for the calligraphy letter recognition course was conducted by administering a questionnaire containing several statements. The questionnaire also included suggestions for improvements to the developed learning media. The validator (V) suggested changes to the questionnaire content to ensure alignment with the material, which included adding basic competencies in calligraphy letter recognition and creating a user manual or instructions for using the learning media. Based on the results of the material expert validation, the percentage of 85.62% was categorized as very suitable.

Table 4. Material Expert Validation Results

No.	Assessment Aspects	Score of Each Aspect	Percentage (%)	Criteria
1.	Suitability of material for learning media	4,25	85%	Very Worthy
2.	Content	4,25	85%	Very Worthy
3.	Relationship between learning media	4,25	85%	Very Worthy
4.	Educational value	4,37	87,5%	Very Worthy
	Total	17,12	342,5%	Very Worthy
	Average	4,28	85,62%	

2) Media Expert Validation

Media validation includes assessment aspects, including learning media efficiency, aesthetics, durability, and safety for students. The purpose of media expert validation is to assess the feasibility of the developed learning media, specifically calligraphy learning media for the introduction to calligraphy letters.

The feasibility assessment of calligraphy learning media for the introduction to calligraphy letters was conducted by administering a questionnaire containing several statements. The questionnaire also included suggestions for improvements to the developed learning media. The validator (V) said the letter shapes should be clearer and all letters should be the same size. Based on the validation results from the media expert, the percentage was 81.40%, categorized as very feasible.

Table 5. Media Expert Validation Results

No.	Assessment Aspects	Score of Each Aspect	Percentage (%)	Criteria
1.	Learning Media Efficiency	4,16	83,33%	Very Worthy
2.	Aesthetics	4	80%	Worthy
3.	Learning Media Durability	4	80%	Worthy
4.	Student Safety	4,11	82,30%	Worthy
	Total	16,27	325,63%	Very Worthy
	Average	4,06	81,40%	

3) Calligraphy Expert Validation

Media validation includes assessment aspects, including calligraphy letter writing rules, layout, and arrangement of the calligraphy learning media for the calligraphy introduction material. Calligraphy expert validation aims to assess the feasibility of the developed learning media, specifically calligraphy learning media for the calligraphy introduction material, by carefully examining the assessment aspects provided.

The feasibility assessment of the calligraphy learning media for the calligraphy introduction material was conducted by administering a questionnaire containing several statements. The questionnaire also included suggestions for improvements to the

developed learning media. The suggestions provided by the validator included examples of calligraphy letter shapes in the learning medium's PowerPoint. Based on the results of the calligraphy expert validation, the learning media achieved a feasibility score of 72.79%.

Table 6. Calligraphy Expert Validation Results

No.	Assessment Aspects	Score of Each Aspect	Percentage (%)	Criteria
1.	Calligraphy Writing Rules	4	80%	Worthy
2.	Layout	3,62	68.38%	Worthy
3.	Arrangement	3,5	70%	Worthy
	Total	11,12	218,38%	Worthy
	Average	3,70	72,79%	

a. Product Revision

Several expert validators in the fields of material, media, and calligraphy validated the calligraphy learning media, which included an introduction to calligraphy letters. The revised product was then revised based on the suggestions provided by the validators during the validation process. After the revisions were completed, the researcher returned to the validators to reassess the revised product.

b. Product Trial

The field trial of the product was conducted with the involvement of at least 10 students in the fine arts education program. The selected students were those who had already studied calligraphy. Based on the results of the product trial conducted in the fine arts education program, involving at least 10 students, a percentage of 77.66% was achieved, with the assessment criteria being attractive.

Table 7. Product Trial Results

No.	Assessment Aspects	Score of Each Aspect	Percentage (%)	Criteria
1.	Interest	4,11	82,30%	Very Interesting
2.	Content	3,62	68,38%	Interesting
3.	Presentation Method	4,11	82,30%	Very Interesting
	Total	11,84	232,98%	Interesting
	Average	3,94	77,66%	

The validation results of material experts, media experts, calligraphy experts, and student responses to product trials can be seen in the following histogram in Figure 3.

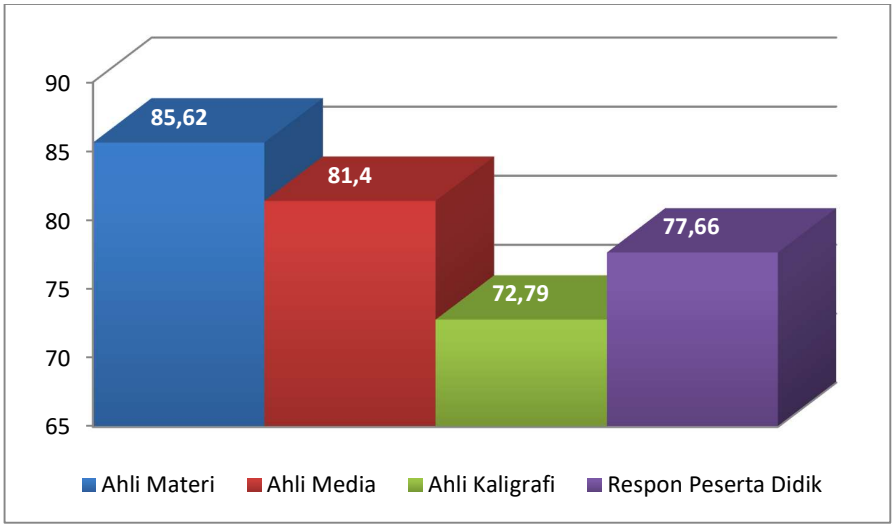


Figure 3. Histogram of Learning Media Validation Results

Discussion

The intent of this study was to evaluate and describe the feasibility of calligraphy learning media specifically designed for letter recognition material. Several validators validated learning media and found values that indicate its validity and feasibility. A material expert validator gave 85.62%, a media expert 81.40%, and a calligrapher 72.79%, suggesting very feasible criteria. Student response questionnaires affect learning media validity with 77.66% for attractive criteria. Overall, calligraphy learning media for type recognition is viable to construct. The findings of this study indicate that the developed digital calligraphy learning media has a high level of feasibility (validity) based on assessments by subject matter and media experts. This feasibility confirms that the designed media, which focuses on detailed visualization and comparison of calligraphy font types (*khat*), meets the pedagogical and technical standards required for a university environment.

This finding aligns with the theory of interactive learning media, which states that effective media must be able to present complex learning materials, enhance attention, and facilitate interaction, especially for materials requiring in-depth visualization (Conceição, 2021; Bizami et al., 2023; Roque-Hernández et al., 2023). In this case, the developed media successfully transformed abstract and difficult-to-differentiate khat material into a clear and structured visual representation.

Previous research on calligraphy has often focused on the development of print-based modules or basic demonstration videos. The novelty of this research lies in providing a highly specific learning solution to the problem of khat identification at the academic level. Method Update: This media serves as a digital bridge that overcomes the limitations of manual demonstrations by lecturers, which are often subjective and time-consuming. It provides a consistent standard of visual accuracy for all students. Relevance to Higher Education: The primary contribution of this research is filling the gap in the availability of calligraphy-specific learning media that utilize technology for in-depth comparison and analysis, not just for basic motor skills. The study

demonstrates the alignment between traditional art education and the demands of modern, technology-based pedagogy (O'Leary et al., 2018; Ji & Shen, 2025; David Darwin et al., 2025).

Although the media demonstrated high effectiveness, several limitations exist, including: Material Focus: This media focuses exclusively on understanding font types (concepts and anatomy). Motor skills and physical calligraphy writing practice still require lecturer guidance and hands-on practice. Trial Scale: The effectiveness test was conducted on a limited scale at one university. Wider implementation may require technical and curricular adjustments.

The study's results suggest integrating the developed media as a mandatory learning resource (digital textbook) in university calligraphy courses. Furthermore, this research opens up opportunities for further development, such as the addition of a self-assessment feature based on visual khat recognition to strengthen students' identification skills.

4. CONCLUSION

The following conclusions were drawn from the research and development of calligraphy learning media designed to introduce calligraphy letters, which several experts (validators) assessed as very feasible. Material experts achieved an average score of 85.62%, media experts received an average score of 81.40%, and calligraphy experts obtained an average score of 72.79%. According to students, the calligraphy learning media for introducing calligraphy letters was considered intriguing. Students' average score percentage was 77.66%.

As suggestions, for educators who wish to use calligraphy learning media for the introduction to calligraphy letters, it is hoped that it will help students understand the material's concepts and increase their knowledge. Researchers interested in continuing this research should aim to expand the preparation of learning media and progress through to the fourth stage, which is the dissemination stage, or conduct mass trials in several relevant study programs to assess the effectiveness of calligraphy learning media for introducing calligraphy letters.

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