

Digitization of calligraphy art: Blended learning and the cognitive realm in a taxonomic perspective Bloom revised

Abdul Latif ^{a.1,*}, Septi Gumindari ^{a.2}, Muhammad Rizal Pahlevy ^{a.3}, Tri Lailinnazlah ^{a.4}

^a State Islamic University Cyber Sheikh Nujati Cirebon, Indonesia.

¹ latiefabdul011013@mail.uinssc.ac.id; ² septigumindari@uinssc.ac.id; ³ rizalpahlevy23@gmail.com;

⁴ linnazztri@gmail.com

*corresponding author

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ABSTRACT

Calligraphy learning in Islamic boarding schools is often faced with time constraints and technical difficulties for students in mastering accurate writing rules, so it requires innovation through technology integration. This study aims to: (1) Describe the implementation of *blended learning* in calligraphy learning; (2) Analyze the achievements of students' cognitive domains in calligraphy learning based on the Revised Bloom Taxonomy; (3) Explore the contribution of digitalization through *blended learning* to cognitive mastery in calligraphy learning; (4) Formulate the implications of the use of *blended learning* on the development of innovative calligraphy learning models. The method used is a descriptive qualitative approach with phenomenological studies. Data were collected through observation, documentation, and in-depth interviews with teachers and students at the Daarut Ta'allumil Qur'an Islamic Boarding School Sumber Cirebon. The results showed that (1) the implementation of *blended learning* adopted the *Enriched Virtual Model* pattern where face-to-face sessions became the motor base, while online sessions utilized graphic design applications to provide visual *feedback* and enrichment; (2) students' cognitive achievements developed intact starting from remembering letter shapes, understanding rules, applying techniques, analyzing independent mistakes, evaluating peer work, to creating new works; (3) digitalization contributes significantly to strengthening technical understanding through repeatable video tutorials, and encourages learning independence (*heutagogi*); and (4) the implications of this model offer flexibility in evaluation and increase the creativity of students, but the physical presence of teachers in *the talaqqi* method remains irreplaceable to transfer implicit knowledge (*tacit knowledge*).

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Introduction

Arabic calligraphy is a form of written art that not only emphasizes aesthetic aspects, but also the accuracy of letter forms and the correctness of writing (Sirojuddin, 2016). In the context of faith-based education such as Islamic boarding schools, learning calligraphy is an important part of the formation of students' skills. However, the phenomenon of errors in writing letters, non-standard forms of khat, and limited learning time still often appear among students. This is due to the characteristics of calligraphy that require a long process, repeated practice, and high

consistency to achieve correct and beautiful results (Fahrurrozi et al., 2024). Islamic boarding schools as Islamic educational institutions face challenges in maintaining the quality of calligraphy learning, especially when students have to balance academic demands, religious activities, and calligraphy art practice that requires intensive time. Therefore, it is important to examine how digitalization and *blended learning approaches* can be solutions in overcoming these limitations, considering that this blended approach has proven to be effective in increasing time efficiency and learning independence (Husamah, 2014), as well as strengthening the cognitive realm of students in the perspective of the Revised Bloom Taxonomy.

Facts in the field based on the results of interviews show that many students have difficulties in maintaining the consistency of letter shapes and the accuracy of khat rules. The dominant errors include an imbalance in the proportion of letters, a lack of precision in the use of traditional stationery such as qalam, and limited practice time that makes students unable to achieve the expected standard of calligraphy work. This condition is one of the causes of the lack of learning innovations that utilize digital technology, even though digitization of calligraphy through applications and multimedia has been proven to help speed up the learning process while increasing student motivation (Arofah & Rois, 2022). Previous studies have indeed highlighted the importance of integrating technology in art learning, but it is still limited to technical aspects and has not been widely associated with the cognitive realm of the Revised Bloom Taxonomy which emphasizes the ability to remember, understand, apply, analyze, evaluate, and create (Anderson & Krathwohl, 2001). This gap shows the need for further research that connects the digitization of calligraphy art with the development of students' cognitive realms through *a blended learning approach*.

Before this research was conducted, there were many similar studies that had been conducted. The previous research that the author referred to in this study were: first, a research conducted by Nurliana & Wardhani (2025) entitled "Reconstruction of Digital Calligraphy Aesthetics: An Adaptation Study of Local Artists". The method used in this study is qualitative descriptive with a case study approach through observation and analysis of digital calligraphy works. The purpose of this study is to describe how local artists adapt to the development of digital technology in the art of calligraphy. The results of the study show that digitalization allows artists to reconstruct the aesthetics of calligraphy, expand the reach of the audience, and increase visual creativity. The similarity between this research and the author's research lies in the focus of digitizing the art of calligraphy, while the difference is that the research emphasizes the adaptation of artists, while the author highlights the integration of digitalization in calligraphy learning in Islamic boarding schools and its relation to the cognitive realm of the Revised Bloom Taxonomy.

Second, research conducted by Arrahma (2025) with the title "The Role of Islamic Calligraphy as a Da'wah Media in the Digital Era". The method used is qualitative with a literature review approach from various sources such as journals, books, and articles. The purpose of this research is to examine the role of Islamic calligraphy as a means of da'wah by utilizing digital technology. The results of the study show that digital calligraphy is effective as a da'wah medium because it is able to convey spiritual messages in a more attractive and accessible way to the wider community. The similarity of this research with the author's research is that both highlight the digitization of calligraphy, while the difference lies in the focus: the previous research emphasized the function of da'wah, while the author emphasized the function of education, especially the development of the cognitive realm of students through *blended learning*.

Third, the research conducted by Bissalam & Wahyudin (2024) with the title "Transformation of Traditional Calligraphy to Digital as a New Era Da'wah Medium". The method used is descriptive with a phenomenological analysis of digital calligraphy practices. The purpose of this research is to explore the transformation of traditional calligraphy into digital as a da'wah medium. The results of the study show that digital calligraphy makes it easier for people to make calligraphy works without having to have traditional skills, thereby expanding participation in the art of calligraphy. The similarity of this research with the author's research is that both discuss the transformation of traditional calligraphy to digital, while the difference is that the previous research

emphasized the accessibility of the general public, while the author emphasized more on the context of Islamic boarding schools and the integration of digitalization with the cognitive realm of the Revised Bloom Taxonomy.

This research offers novelty by focusing on the study on the digitization of calligraphy art in the context of Islamic boarding schools. This research places the digitization of calligraphy as a blended learning-based learning strategy that is directly associated with the development of the cognitive realm of the Revised Bloom Taxonomy (Anderson & Krathwohl, 2001). The novelty of this research lies in the effort to connect aspects of technology, art, and religious education in one analytical framework, thereby expanding the understanding that calligraphy learning is not only oriented to beautiful writing skills, but also to strengthening the high-level thinking skills of students starting from remembering, understanding, applying, analyzing, evaluating, to creating.

Based on the description above, the phenomenon of time constraints and writing errors in calligraphy learning in Islamic boarding schools shows the need for learning innovations that are able to answer the challenges of the digital era. Therefore, this study was conducted to examine in depth how digitalization and *blended learning* can contribute to strengthening the cognitive realm of students. The objectives of this study are: First, to describe the implementation of *blended learning* in calligraphy art learning in the digital era. Second, to analyze the achievements of the cognitive realm of students in calligraphy learning based on the Revised Bloom Taxonomy. Third, to explore the contribution of digitalization through *blended learning* to cognitive mastery in calligraphy learning. Fourth, formulate the implications of the use of *blended learning* in the development of innovative calligraphy art learning models. The benefits of this research are expected to make a theoretical contribution to the development of technology-based art education studies, as well as practical benefits for Islamic boarding schools in designing calligraphy learning strategies that are more effective, efficient, and in accordance with the needs of students in the digital era.

Digitization of Calligraphy and Technology in Art Learning

Digitalization is basically the process of transferring and utilizing information, practices, and media from conventional form to digital form so that it is easier to access, store, repeat, and share. In the context of calligraphy art, digitization does not change the rules of khat, but expands the learning medium, namely from paper and pen to screens, *styluses*, applications, and video tutorials. (Arofah & Rois, 2022) show that Arabic calligraphy can be digitized through applications so that the rules of letter writing are easier for learners to learn and access. However, the standard rules of calligraphy such as the proportion of letters, the size of the dots, and the accuracy of the shape remain the main reference (Sirojuddin, 2016), so that technology is positioned as a medium, not a substitute for the rules.

In art learning, the use of technology can be explained through multimedia learning theory. Mayer (2021) stated that humans learn better through a combination of words and pictures than words alone, and are more optimal when learners can control the speed of material presentation. This principle is relevant for calligraphy because demonstration videos and visual correction allow students to repeat strokes according to their learning speed. On the other hand, Sukarman & Satriadi (2023) explained that online systems have become a new tradition in fine arts learning, but still face limitations, especially in the delivery of visual and technical details. Thus, digitalization in this study is understood as the use of digital image applications, video tutorials, and online communication media to support, not replace, the practice of calligraphy directly.

Blended Learning

Blended learning is an approach that combines face-to-face learning with planned online learning. Graham (2006) defines it as a combination of *face-to-face* learning systems with computer-mediated learning. (Husamah, 2014) emphasizes that the essence is not just to mix two modes, but to combine the advantages of direct interaction with flexibility and documentation in online learning. Garrison & Vaughan (2008) added that a good *blended learning* design requires meaningful integration between the two learning experiences, not just the addition of technology to conventional classrooms.

Staker & Horn (2012) classify *blended learning* into several models, one of which is the *enriched virtual model*, which is learning that mostly takes place online with face-to-face meetings as an amplifier. This model and its variations are used as a reference in studying practice in the field. For learning skills such as calligraphy, face-to-face meetings play a role in delivering technical demonstrations, while online sessions function as training rooms, assignment submissions, and feedback. Rahmi (2023) also views *blended learning* as a strategic step in improving digital literacy, while Astuti et al. (2025) mention that asynchronous features in it make basic evaluations and feedback more efficient. This theory is used to analyze how teachers integrate in-person and online learning in calligraphy.

Taxonomy Bloom Revise

Bloom's taxonomy was first compiled by Bloom et al. (1956) as a framework for classifying educational goals into tiered levels of thinking. Anderson & Krathwohl (2001) revised it by changing the category from nouns to verbs and arranging the dimensions of cognitive processes into six levels, namely *remember*, understand, apply, analyze, evaluate, and create. Krathwohl (2002) explained that this revision also adds a dimension of knowledge, so that learning objectives can be formulated more precisely through the relationship between the type of knowledge and the cognitive processes that are required.

The first three levels are generally grouped as low-level thinking skills, while analysis, evaluation, and creation include high-level thinking skills (Anderson & Krathwohl, 2001). In calligraphy learning, these levels can be interpreted contextually: students remember the shape of hijaiyah letters, understand the writing rules, apply writing techniques with calligraphy tools, analyze errors by comparing works with examples, evaluate friends' works based on rules, and create new calligraphy works. The Revised Bloom Taxonomy is used in this study as a framework to analyze the achievements of the students' cognitive realm while looking at the contribution of digitalization through *blended learning* at each level.

Method

The approach used in this study is a qualitative approach. Qualitative research is a method to explore and understand the meaning that a number of individuals or a group of people consider to come from social or humanitarian problems (Creswell, 2022). This approach was chosen because the focus of the research is to understand the experiences and meanings experienced by calligraphy learning actors in the context of *blended learning*. This requires an in-depth exploration of the process, context, and construction of meaning that is not easily measured through numbers or statistics. The qualitative approach allows researchers to capture the nuances of the learning process, the perception of teachers and students, and the dynamics of interaction between face-to-face and digital components holistically (Sugiyono, 2022).

The type of research used is a phenomenological study. This study aims to explore the subject's deepest awareness and lived *experience* of certain phenomena. In this context, phenomenology is used to describe the "essence" of the experience of students and teachers in using digital technology to learn calligraphy (Creswell & Poth, 2018). This study emphasizes how students understand digital instruction, respond to multimedia feedback, and interpret the process of practicing calligraphy within the cognitive framework of Bloom's Taxonomy (remembering, understanding, applying, analyzing, evaluating, and creating). This type of selection supports the purpose of the research to formulate pedagogical implications rooted in empirical realities in the field.

This research was carried out at the Daarut Ta'allumil Qur'an Islamic Boarding School, Sumber, Cirebon Regency. This location was chosen deliberately (*purposive*) with the consideration that the pesantren has implemented digitalization integration in its calligraphy learning, so that it is representative to study the phenomenon of *blended learning* in Islamic boarding schools.

The determination of the research subject was carried out using *the purposive sampling* technique, which is a sampling technique of data sources with certain considerations (Sugiyono,

2022). The informants in this study are four people, consisting of: One calligraphy teacher as a key informant who understands instructional design and learning evaluation. Three students were selected based on criteria: having outstanding abilities in calligraphy, actively participating in digital learning, and having experience participating in calligraphy competitions. The selection of these outstanding students is based on the assumption that they have more intensive and in-depth experience in interacting with learning materials, so that they are able to provide rich *data* related to cognitive processes in *blended learning*.

This study utilizes two types of data sources. First, primary data sources, namely data obtained directly from informants through in-depth interviews and field observations of teachers and students at the Daarut Ta'allumil Qur'an Islamic Boarding School. Second, secondary data sources, which function as support, such as relevant literature from books, journals, and scientific articles related to digital calligraphy and cognitive theory (Moleong, 2021).

The data collection technique is carried out in three ways: (1) *Passive Participant Observation*: The researcher observes the calligraphy learning process, both during face-to-face sessions (the use of *qalam* and paper) and during the use of digital media, to see the students' cognitive responses directly. (2) *Semi-structured Interview*: Conducted with one teacher and three students to explore the meaning behind their actions. This interview provides flexibility for the researcher to explore the informant's answers more deeply but still within the interview guidelines that have been prepared. (3) *Documentation*: Collect photos of activities, screenshots of the applications used, and portfolios of students' work as physical evidence of cognitive achievement (creating).

Data analysis was carried out using an interactive model from Miles et al. (2019), which consists of three stages: (1) *Data Condensation*: The process of sorting, focusing, simplifying, and abstracting rough data from field notes and interview transcripts. (2) *Data Display*: Organizing information organized in the form of a descriptive narrative to understand what is happening. (3) *Drawing Conclusions/Verification*: Extracting meaning from the data that has been presented and verifying it back in the field to ensure truth. To ensure the validity of the data, the researcher used the source triangulation technique, which is checking back the data obtained from students with data from the teacher, as well as triangulation techniques, which are comparing the results of interviews with the results of observations (Sugiyono, 2022).

Research Results

Implementation of Blended Learning in Calligraphy Learning

Based on data that has been collected through observation and interviews, *blended learning* is an adaptive model for teaching art skills that require physical demonstrations (face-to-face) and independent (online) exercises. The following are the research findings that are analyzed through three crucial aspects:

1. *Integration of Face-to-Face and Online Learning in Calligraphy Learning*

Based on the results of the interviews, teachers implemented blended learning by combining in-person and online learning in a planned manner. Face-to-face learning was carried out at the Islamic boarding school or teacher's home, while online sessions were facilitated via WhatsApp. In a week, students attended one online meeting which usually served as a follow-up to the face-to-face session.

The teacher said that online learning is used to submit assignments, receive students' work, and provide corrections. Corrections are made using digital applications such as Sketchbook, Infinite Painter, or Procreate. These applications allow teachers to provide clearer visual feedback than just through static text or images.

As explained by the calligraphy teacher "*I usually give a digital assignment to the student once a week, this online assignment is an improvement of the corrected writing. Then the explanation and correction are done with the Sketchbook application, Infinite Painter or it can also*

be Procreate on a Tablet." (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumul Qur'an Islamic Boarding School on Saturday, October 11, 2025, at 17.00).

From this statement, this strategy shows that blended learning in calligraphy learning is not only administrative (assignment delivery), but also includes in-depth technical and pedagogical aspects. Face-to-face remains core in mastering calligraphy techniques, while online learning supports the repetition and monitoring of student development.

2. Effectiveness and Challenges of Online Calligraphy Learning

Teachers consider that in-person calligraphy learning is much more effective than online, especially because of the technical nature of calligraphy art that requires demonstrations of movements, strokes, and stationery holding techniques. In face-to-face sessions, students can see firsthand how the kalam is rotated, tilted, and connected. In contrast, online learning only presents a final result without a process, so students' understanding is limited.

As explained by the Calligraphy Teacher *"Obviously direct practice is more understandable by children, when it goes digital, usually students only see pictures so they don't see directly how to hold the kalam"* (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

However, teachers also recognize that online learning has added value, especially in terms of flexibility and continuity. Students who live far away can still follow the learning and receive corrections regularly. WhatsApp is an effective medium to maintain communication and ensure students stay engaged.

As explained by the calligraphy teacher *"With the existence of WA they can still learn, I can still control how much they improve"* (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

The main obstacle in online learning lies not in the technicalities, but in interaction. The teacher said that students tend to be passive during online sessions, often only responding with "yes" without showing deep understanding. This causes the same mistakes to keep repeating.

As explained by the calligraphy teacher *"Sometimes students only say yes, yes, yes... but in reality they still make the same mistake"* (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

3. Feedback and Adaptation Strategies in Blended Learning

In online learning, teachers apply feedback strategies that are both visual and interactive. Students submit photos of their work, and then teachers provide direct corrections to the images using digital applications. Corrections are accompanied by written comments or voice recordings, and students are required to repeat the work until it reaches the expected standard.

As the teacher explained, *"I scratched the student's correction scribbles where the letters were not optimal, and they were obliged to repeat them"* (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

This strategy shows that blended learning in calligraphy learning is not only one-way, but forms a continuous cycle of evaluation and improvement. Teachers also show flexibility in adjusting learning methods according to student conditions, both in terms of time, location, and media used.

With this approach, blended learning becomes an adaptive and contextual solution in learning the art of calligraphy in the digital era. Although online learning has limitations in technical aspects, teachers' strategies in providing feedback, maintaining communication, and monitoring student progress make this model effective and relevant.

Achievement of Students' Cognitive Domain in Calligraphy Learning based on Revised Bloom

Taxonomy

In calligraphy learning (*khat*), there is a unified process that combines fine motor skills and knowledge mastery. To measure the extent to which the learning process has achieved cognitive

goals, this study uses the Revised Bloom Taxonomy framework (Anderson & Krathwohl, 2001) which classifies cognitive processes in six levels. This analysis aims to map the achievements of students from the level of basic knowledge to the ability to think critically and creatively.

1. Remembering

The first stage in the cognitive realm is remembering, which is the ability of students to recognize and recall the information that has been learned. In the context of learning calligraphy, remembering means that students are able to recognize the shape of hijaiyah letters, remember the basic structure, and distinguish similar letters. This ability is an important foundation before students can understand and apply the rules of writing.

The results of the study showed that students were able to remember the shape of the letters quite well, although there were obstacles when learning was carried out online. One student stated: *"God willing. Although sometimes there are letters that are not clear, especially if they are learning online, thank God so far they can still remember well."* Meanwhile, another student added: *"Yes, sir. The problem is that if you have often written, you can memorize the shape yourself. But sometimes similar letters like to confuse, so you have to be thorough."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumil Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that the process of repetition and practice is the main factor in strengthening students' memory of calligraphy letters.

2. Understanding

After remembering, the next stage is to understand, namely the ability of students to interpret, explain, and give meaning to the information learned. In calligraphy, comprehension means that students are able to understand the rules of letter writing, dot size, and the rules of bold strokes.

The results of the interview showed that the students had begun to understand the rules of writing calligraphy even though the depth level was different. One student explained: *"Alhamdulillah, even though I don't really understand it yet, at least for a new learner, I have begun to understand the rules. Especially when I imitate the example from the teacher."* Another student added: *"I already understand enough, because I am often given the task of writing according to the rules. So after a long time, I memorize the rules myself, like a 5-point alif in khot naskhi."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumil Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that students' understanding develops through repeated practice and teacher guidance, so that they are able to internalize the basic rules of calligraphy.

3. Applying

The application stage emphasizes the ability of students to use knowledge and understanding in real situations. In calligraphy learning, application means that students are able to write letters with the correct technique, use calligraphy tools, and produce works according to the rules.

Based on interviews, students have been able to apply calligraphy techniques independently, although they still need examples for more complicated letters or ornaments. One student stated: *"Alhamdulillah, I can, because I have often practiced at home, so I am quite used to it. But if the letters are a bit complicated, I like to check again so that I don't get wrong."* Another student added: *"Yes, but you need to see examples first. If there are already examples, then you can imitate and make them yourself. So you can't be spontaneous right away."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumil Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). This shows that students' application is still adaptive, depending on examples, but has led to independence.

4. Analyzing

The analyzing stage is the ability to break down information into parts, compare, and find certain errors or patterns. In calligraphy, analysis means that students are able to see flaws in the work, compare with examples, and correct mistakes.

The results of the study showed that students were able to analyze errors in their own work. One student explained: *"Once, sir, at that time I made the wrong writing, it didn't look neat. Then I compared it with the correct example, only then did I know where the mistake was."* Another student added: *"Often, especially when I finish writing, I keep looking at it again, if there are letters that don't fit, I immediately correct them."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that students not only write, but also reflect on their work, so that the learning process becomes more critical and evaluative.

5. Evaluating

The evaluation stage is the ability to give an assessment of a work or process based on certain criteria. In calligraphy learning, evaluation means that students are able to assess their friends' work objectively according to the rules of writing.

Based on the interview, the students showed the ability to evaluate their friends' work well. One student stated: *"Yes. Because sometimes we compare with works that are already masters, so we are like, oh this is actually wrong here, yes like that."* Another student added: *"God willing, you can sir. The problem is that you already know the rules, especially if you have often practiced together. So you know which ones are good and which ones need to be improved."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that students are able to evaluate with objective standards, so that the learning process becomes more collaborative and reflective.

6. Creating

The highest stage in the Revised Bloom Taxonomy is creating, which is the ability to produce new works, combine ideas, and express creativity. In calligraphy, creating means that students are able to create new calligraphy works, distinguish sermon styles, and develop critical thinking.

The results of the interviews showed that students had started to create new calligraphy works with different frequencies. One student said: *"Maybe it is calculated that in a week maybe 1 work. But if it can be 4 works in a month."* Another student added: *"Not bad, for example, the kufi style is checkered, very different from the curved one like in the diwani style."* In addition, students also feel that they have developed in critical thinking: *"Alhamdulillah, it is developing, sir. In the past, I just followed it, now I am starting to understand why the letters have to be like this, why the distance is this far. So not only imitate, but also think."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic Boarding School on Saturday, October 11, 2025, at 17.00). These findings show that learning calligraphy is able to foster creativity while training students' critical thinking skills.

The Contribution of Digitalization through Blended Learning to Cognitive Mastery

The results of the study show that digitalization through blended learning makes a significant contribution to students' cognitive mastery in calligraphy learning. This contribution appears in three main dimensions, namely:

1. Understanding Engineering through Digital Media

Digitization plays a role in strengthening the understanding of calligraphy techniques through the use of video tutorials. Students can repeat the material, imitate the strokes, and follow step by step independently. One student stated: *"Very helpful, sir. So you can keep practicing at home, just pause the video and try to imitate the strokes."* Another student added that the clear video and the movements that are displayed slowly make the learning process easier to follow: *"Yes, it's quite helpful, especially if the video is clear and the movements are slow. So you can follow step by step, don't be confused."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

However, there are also students who consider that digital learning only helps partially, because focus is easier to achieve in face-to-face learning: *"Maybe only partially, because it is better to have direct tutorials, because for example, direct tutorials from cellphones are sometimes still not focused."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an

Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that digitalization strengthens the realm of understanding and application in the Revised Bloom Taxonomy, although its effectiveness still depends on the quality of presentation and the learning conditions of students.

2. Self-Evaluation and Cognitive Confidence

Digitization also facilitates students' self-evaluation. Through digital correction from the teacher and comparison of the work with examples, students can immediately identify mistakes and correct them. One student explained: *"It's very easy. Because if I have corrected it through my cellphone, I can immediately see which part is wrong. Then I can practice again so that I don't repeat the same mistakes."* In addition, digital media also increases confidence. Students feel more confident when the results of the exercises are similar to the examples from the video: *"Sometimes yes, especially if you can follow the tutorial and the results are similar to the examples. So I feel, oh it turns out that I can also make a good one."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

However, not all students feel the same way. Some actually feel confused when learning through cellphones, so they are more confident if the evaluation is done directly: *"No, sometimes you are confused if you learn online or from a cellphone. So it's better if you learn directly, you can immediately ask questions."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that digitalization strengthens the realms of *analyze* and *evaluate*, although some students still need face-to-face interaction to gain full confidence in their learning outcomes.

3. Enrichment of Experience and Improvement of Thinking Skills

Digitization not only facilitates understanding and evaluation, but also enriches students' learning experience. Through calligraphy applications and access to various examples of calligraphy, students are encouraged to experiment with new styles. One student stated: *"Yes, it really helps, especially if there is an application for writing practice. So you can try new styles that have never been taught in class."* Another student added that digital media provides a new experience that is different from face-to-face learning: *"Yes, you can expand it, because you can try it, usually face-to-face and online is a new experience, sir."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

In addition, students are also encouraged to think more critically and reflectively. Some are used to comparing works with examples before writing, while others start to find out on their own when they don't understand something: *"Yes, because through digital media I often find out for myself if someone doesn't understand. So be more independent and think for myself first before asking."* (excerpt of an interview with students in the classroom of the Daarut Ta'allumul Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00). These findings show that digitalization strengthens the realm of *create* in the Revised Bloom Taxonomy, because students are encouraged to produce new, more varied, and reflective works.

Implications of the Use of Blended Learning on the Development of Calligraphy Learning Models

Based on data obtained through interviews with calligraphy teachers, blended learning in the context of calligraphy learning emerged as a strategy that was able to provide flexibility, but still faced limitations in technical aspects and interaction. The facts found show that blended learning plays a role as a support for face-to-face learning, especially in terms of evaluation, repetition of material, and the development of student creativity. To understand this phenomenon in more depth, here is an explanation of the research findings that have been obtained.

1. Flexibility and Ease of Evaluation

Blended learning is considered to make it easier for teachers to evaluate student assignments more flexibly. Teachers can remind students of the progress of assignments as well as provide learning videos that help them repeat letter-by-letter writing techniques. This is explained by the calligraphy teacher: *"Calligraphy learning through blended learning is very easy and helpful*

because it can evaluate students' assignments more easily and flexibly, remind them whether they have done it or not, then by providing a learning video they can remember how to write letter by letter correctly and correctly." (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumil Qur'an Islamic Boarding School on Saturday, October 11, 2025, at 17.00).

The statement shows that blended learning serves as a supporting medium that expands students' learning spaces outside the classroom. This flexibility is a major advantage over conventional methods, as teachers are no longer limited to face-to-face time. However, this flexibility still depends on the quality of the digital materials provided.

2. Limitations of Technical Demonstrations and Interactions

Although blended learning helps in reminder and evaluation, the teacher emphasized that face-to-face learning is still superior in explaining the technical details of calligraphy. Aspects such as the position of the lamp, the accuracy of strokes, and the tricks of writing letters are easier to understand through direct demonstrations. The teacher explained: "*Mainly face-to-face calligraphy learning is better, it is easier to explain the letter by letter, it is easier to explain how the lamp is positioned when it is sketched, and then it is easier to do what are the tricks than using videos or WhatsApp platforms.*" (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumil Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

This shows that *blended learning* is not yet fully able to replace direct interaction. Online interaction limited to chat makes the correction and discussion process less optimal. This condition shows that blended learning in calligraphy still functions as a support, not the main substitute for face-to-face learning.

3. Support for Student Creativity and Productivity

Blended learning has also been proven to support students' creativity by fostering the discipline of work. The teacher emphasized that the more students practice, the more their creativity will develop. This is in line with the Arabic proverb about calligraphy: "*al-khatu makhfiyun fi ta'limil ustadz, wa qiwamuhu fi kasratil misyaghin*" which means "*calligraphy writing is hidden in the strokes of the teachers and the robustness of the writing is obtained from the frequent practice of practice*". The teacher explained: "*Blended learning in supporting creativity in calligraphy makes students more disciplined in their work. The more they work, the more disciplined they work, the more creativity they will increase.*" (excerpt of an interview with a calligraphy teacher in the classroom of the Daarut Ta'allumil Qur'an Islamic boarding school on Saturday, October 11, 2025, at 17.00).

In addition, blended learning opens up opportunities for students to participate in online competitions, which have been proven to increase their motivation and productivity. With digital features, students can practice more often and produce works that are worthy of publication or competition.

Discussion

Implementation of Blended Learning in Calligraphy Learning

Based on the results of observations and interviews, the researcher presents an in-depth analysis and interpretation of the implementation of *Blended Learning* in the context of calligraphy learning, based on findings and relevant literature.

1. Integration of Face-to-Face and Online Learning in Calligraphy Learning

Based on the findings of the study, the *blended learning* model applied in calligraphy learning adopts a modified *Enriched Virtual Model* pattern, where face-to-face meetings at Islamic boarding schools or schools are the main base, while online sessions via WhatsApp function as enrichment and follow-up. This is in line with the view of Husamah (2014) who states that the essence of *blended learning* is not just to mix two modes, but to combine the advantages of direct learning (social interaction and modeling) with online advantages (time flexibility and digital documentation).

The use of graphic design applications such as *Sketchbook*, *Infinite Painter*, and *Procreate* by teachers to provide corrections is a form of innovation in *Technology Enhanced Learning* (TEL). In the context of art learning, the integration of digital tools changes the way knowledge is

transmitted. If the traditional method relies on ink correction on paper, this method allows the preservation of students' original works while providing clear visualization of improvements. So that digital media is able to bridge students' spatial understanding through visual manipulation that cannot be done in conventional media.

Thus, teachers do not make online sessions just an administrative formality of collecting assignments, but rather as a space for "improvement". This shows the application of the principle of *Mastery Learning* (learning thoroughly), where students are given the opportunity to revise work based on digital feedback before the next face-to-face meeting.

2. Effectiveness and Challenges of Online Calligraphy Learning

The findings of the study highlight that the effectiveness of online learning in calligraphy is limited to cognitive aspects and product evaluation, but weak in psychomotor aspects (techniques of holding the lamp, pressure, and movement). This confirms Simamora (2020) theory that *tacit knowledge* transfer (knowledge that is difficult to verbalize, such as hand skills) requires direct observation and *physical coaching* that is difficult to replace by screens.

Teachers reveal that students are often passive ("yes, yes, yes") but still make the same mistakes. This phenomenon in the distance education literature is known as *Transactional Distance* or transactional distance. According to Indriani (2021), the high transactional distance in online learning often leads to misconceptions due to a lack of spontaneous constructive dialogue. In this case, the student's brief response ("yes") is often not a sign of understanding, but rather a self-defense mechanism due to the inability to verbally explain technical difficulties on WhatsApp.

However, the flexibility offered through WhatsApp has been proven to maintain *learning continuity*. As revealed by Asari et al. (2023), familiar social media such as WhatsApp is effective in reducing students' anxiety and maintaining *engagement* even though they are geographically separated.

3. Feedback and Adaptation Strategies in Blended Learning

The teacher's strategy of providing direct correction scribbles on photos of students' works using digital applications is an implementation of *visual feedback*. In learning visual skills such as calligraphy, text-based feedback is often ambiguous. By providing digital scrambles on the *layers* above the student's work, the teacher provides *concrete scaffolding*.

Referring to the research of Erniati (2024), effective feedback must be specific, timely, and provide clear instructions for improvement (*feed forward*). The teacher's method that requires students to repeat the work after receiving visual correction creates a *positive feedback loop* cycle. Students not only know that they are wrong, but visually see "what the correct shape looks like" through the teacher's digital strokes in the *Sketchbook* or *Procreate* application.

Overall, this strategy proves that *blended learning* in calligraphy is able to transform into an adaptive model. The problem of losing direct demonstrations in online sessions is compensated for by the precision of digital visual correction, making the learning process continue to run effectively even in the midst of limited physical interaction.

Achievement of Students' Cognitive Domain in Calligraphy Learning Based on Revised Bloom

Taxonomy

1. Remembering

At the remembering stage, students showed the ability to recognize hijaiyah letter forms and the basic structure of calligraphy. The findings of the study revealed that the memorization of the letter form of the students was formed through the intensity of writing practice, as expressed by subjects who felt "memorized" because they often wrote. This is in line with information processing theory which states that *rehearsal* is the key to moving information from short-term memory to long-term memory (Schunk, 2019).

However, the obstacles to online learning that students complain about, such as the lack of clarity in letter visualization, are important notes. A study conducted by Sukarman & Satriadi (2023) confirms that in learning visual-based skills such as calligraphy, technological mediation often distorts crucial instructional details, thereby hindering the visual memory retention process of

students. Nevertheless, the diligence of students in conducting independent repetitions has been proven to be able to minimize these obstacles.

2. Understanding

The achievement at the level of understanding can be seen from the ability of students to interpret the rules of writing, such as the size of the dots in *the khot naskhi*. Students do not just memorize shapes, but begin to construct meanings about *why* and *how* a letter is formed. In the context of Islamic education, this is relevant to the concept of *ta'lim* which emphasizes understanding the meaning behind symbols.

The results of the interview that stated that understanding grows through the "task of writing according to the rules" supports the findings of Fadira et al. (2024) who stated that understanding concepts in learning calligraphy cannot be separated from practice (psychomotor). The understanding of students is constructivist; they build an understanding of the rules slowly through the guidance of the teacher and direct interaction with stationery, not just passive knowledge transfer.

3. Applying

At the application stage, students are able to use writing procedures in real situations. The findings show that the application of students is still adaptive, where they are able to write independently but still rely on *modelling* (examples) for complicated ornaments. This phenomenon is relevant to Bandura's theory of social learning, where the imitation phase (*vicarious learning*) is a bridge before achieving complete self-mastery (Santrock, 2008).

The reliance on examples in the early stages is not a weakness, but a reasonable procedural stage. Jufri et al. (2023) research on Islamic art learning found that the use of *drill* and demonstration methods was very effective in improving students' application skills in the early stages, before they were able to solve more complex writing problems without assistance.

4. Analyzing

The ability to analyze is shown by the students through the activity of comparing their own work with the master's example (*muqaranah*) and detecting imperfections. The statement of the students, "compare with the correct examples, then know where the mistake is," indicates the existence of a metacognitive process. The students not only act as implementers, but also as observers of their own performance.

The ability to break down information to separate "right" and "inappropriate" letters is an indicator of critical thinking. According to Anderson & Krathwohl (2001), analyzing involves the process of distinguishing and organizing elements. In the context of calligraphy, this is in line with recent research by Salam (2023) which states that students' artistic sensitivity grows when they are trained to criticize the details of the anatomical proportions of letters independently.

5. Evaluating

At the evaluation stage, students are able to assess their peers' work using objective standards. These findings show that students have internalized success criteria (such as the proportion and finesse of strokes). The ability to conduct *peer evaluation* is an effective form of collaborative learning.

The ability to judge which is "good" and "needs improvement" shows the depth of understanding of the material. As explained by Fauzan et al. (2022). The concern is that self-evaluation and peer evaluation in art learning can increase learning responsibility and sharpen students' understanding of work quality standards.

6. Creating

The highest stage, creating, is reflected in the ability of students to produce new works periodically and distinguish the style of *sermons*. What is interesting about the findings of this research is the reasoning aspect behind this creativity ("starting to understand why the letters have to be this way"). This indicates that students' creativity is not just an imitation, but creativity based on aesthetic logic.

The ability to combine ideas and produce weekly works shows high productivity. This supports the view that structured calligraphy learning is able to stimulate *Higher Order Thinking*

Skills (HOTS). Research by Fadira et al. (2024) confirms that the peak of Islamic art learning is when students are able to produce works that have new aesthetic value while still being grounded in strong traditional principles.

The Contribution of Digitalization through Blended Learning to Cognitive Mastery

The results of the study show that the integration of digital technology in *the blended learning* model makes a significant contribution to students' cognitive mastery of calligraphy learning. Digitalization not only functions as a tool, but as a catalyst that strengthens the cognitive dimension ranging from technical understanding, self-evaluation, to high-level thinking skills.

1. Understanding Engineering through Digital Media

The findings of the study indicate that video tutorials play a crucial role in strengthening the realm of *understanding* and *applying*. The ability of students to pause and *replay* allows them to set their own learning rhythm (*self-paced learning*). This is in line with the theory of *Cognitive Load* in multimedia learning, where user control over video material can reduce excessive cognitive load, making it easier for information to be processed into long-term memory (Mayer, 2021).

Informants who stated the ease of imitating "*step by step*" movements emphasized the effectiveness of visual modeling. In the context of skill arts education, clear digital visualization helps students internalize complex fine motor procedures. However, complaints about "lack of focus" when learning via cellphones show the challenges of digital distractions. According to Rahmi (2023), *effective blended learning* must balance digital flexibility with face-to-face discipline to minimize *digital fatigue* that students often experience.

2. Self-Evaluation and Cognitive Confidence

Digitization has been proven to facilitate students' metacognitive abilities, especially in the realm of *analyzing* and *evaluating*. Easy access to digital correction allows students to reflect instantly on their work. The statement of informants who feel helped because they "can immediately see which part is wrong" indicates the existence of *an immediate feedback* mechanism. Febriyanti (2015) explained that the most effective feedback is the one given immediately after the assignment is done, because it can immediately correct the wrong cognitive scheme.

Increasing *self-efficacy* when the work is similar to a video tutorial is an indicator of the success of *vicarious experience* in Bandura's theory. However, the dependence of some students on face-to-face confirmation ("more reliable if learning directly") shows that *the social presence* of teachers is not completely replaced by technology. So in Islamic art learning, *talaqqi* or face-to-face meetings are still needed for validation of taste (*dzaug*) which is difficult to transfer digitally.

3. Enrichment of Experience and Improvement of Thinking Skills

The greatest contribution of digitalization can be seen in the realm of creating and independent learning. Access to extensive calligraphy-style practice applications and references encourages students to experiment outside of classroom materials. These findings support the concept of *Heutagogi* (self-determined learning), where students become active agents who seek learning resources independently (Fauzi, 2021).

Changes in the behavior of students who "think for themselves before asking" indicates the growth of critical thinking and *problem-solving* skills. Students are no longer passive in receiving knowledge, but actively constructing understanding through digital exploration. In the perspective of the Revised Bloom Taxonomy, this ability is an important bridge to the highest cognitive level, namely Create. As explained by Anderson & Krathwohl (2001), creativity is born when a person has a sufficient knowledge base and the courage to blend new elements, which in this case is facilitated by the wealth of digital resources.

Implications of the Use of Blended Learning on the Development of Calligraphy Learning Models

Based on research data, the implementation of *blended learning* in calligraphy learning has two implications: on the one hand it offers flexibility in evaluation management, but on the other hand it emphasizes that the physical presence of teachers (*teacher presence*) in technical

demonstrations remains irreplaceable. This model does not change the essence of calligraphy learning, but rather reconstructs the way of delivering material and the mechanism of student training.

1. Flexibility and Ease of Evaluation

The findings of the study show that *blended learning* makes it easier for teachers to monitor and evaluate assignments without being bound by face-to-face time. Teachers can use digital platforms to remind progress and provide video materials that can be accessed repeatedly (*replayable*). This confirms the principle of *ubiquitous learning*, where technology expands physical classrooms into flexible digital spaces.

According to the teacher, the availability of video facilitates students to remember the shape of the letters. In the study of multimedia learning theory, this is referred to as *cognitive load* reduction. Students do not need to force memory to remember all the demonstrations in class, because they have an "external memory bank" in the form of videos. Astuti et al. (2025) support this, stating that in vocational and art skills learning, *asynchronous* (indirect) features in *blended learning* increase the efficiency of teacher evaluation time because basic feedback can be done digitally.

2. Limitations of Technical Demonstrations and Interactions

Although technology offers convenience, the research findings critically highlight the limitations of *blended learning* in transferring detailed technical aspects, such as "pen position" and "scratch tricks". Teachers affirm that face-to-face learning is superior to these. This phenomenon confirms that calligraphy contains an element of *tacit knowledge* that is difficult to codify into WhatsApp video or text format.

In the Islamic calligraphy tradition, the *talaqqi* or *musyafahah* method (direct face to mouth/hand to hand) is the gold standard for transferring *dzauf* (sense of art) and micro techniques. The limitations of online interaction complained by teachers are in line with the study Rahmi (2023) stated that the disadvantage of learning videos is that they look flat, so that scratch details and depth effects (3D) are not as clear as when looking at them in person. Therefore, the implications of *blended learning* in calligraphy ideally place technology as a complement rather than a total *substitute* for teacher-student interaction, especially at the stage of correction of the anatomical details of letters.

3. Support for Student Creativity and Productivity

Another positive implication of *blended learning* is the improvement of work discipline which leads to productivity and creativity. The teacher cited the principle of "*qiwamuhu fi katsratil masyq*" (the strength lies in the number of exercises), which is now facilitated by digital media. Digitalization allows the frequency of students' practice to no longer be limited by school hours.

The existence of online competition opportunities (online competitions) mentioned in the research findings is a strong extrinsic motivator. In educational psychology, this relates to the theory of *Self-Determination*, where students' competencies grow when they have a stage to self-actualize. According to Wicaksono & Rahayu (2025), the digital ecosystem provides a showcase space that encourages students to not only imitate, but also innovate so that their work stands out in competitions. Thus, *blended learning* changes the pattern of practice from just a routine task to a creative activity that is performance-oriented.

Conclusion

Based on the results of the study, the implementation of *blended learning* in calligraphy learning has proven to be effective in balancing mastery of techniques and developing students' cognitive abilities. Teachers apply the *Enriched Virtual* model which combines face-to-face demonstrations as a motor basis with the use of digital technology for evaluation and enrichment. The use of graphic design applications as a visual *feedback medium* facilitates students in understanding rules, analyzing errors, and evaluating works independently and critically according to the stages of the Revised Bloom Taxonomy. This approach not only maintains the continuity of

practice through the flexibility of online media, but also encourages independence (*heutagogi*), productivity, and creativity of students in producing works of art that are in accordance with the rules but still innovative.

However, this study also has some limitations that need to be considered. Online learning was found to still have significant obstacles in the aspect of implicit knowledge transfer, such as pen pressure and fine motor movement details that are difficult to completely replace by screen media. In addition, interactions in online sessions sometimes trigger transactional distances that make students' responses tend to be passive. This study is also limited to a qualitative approach with a focus on interviews and observations, so it has not measured the effectiveness of improving psychomotor skills quantitatively. The next study is recommended to develop instructional content based on detailed videos (3D/zoom) and involve experimental methods to test the effectiveness of this method on the accuracy of students' strokes in a more measurable manner.

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