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## THE DEVELOPMENT OF DORATOON-BASED LEARNING MEDIA INTEGRATED WITH LOCAL WISDOM FOR ELEMENTARY SCHOOL TEACHERS

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### Abstract

The rapid development of information and communication technology (ICT) has transformed educational practices and created new opportunities for interactive learning. However, many elementary school teachers in Pamijahan District, Bogor Regency, still face challenges in effectively utilizing digital media while integrating local cultural values into the learning process. This study aims to develop Doratoon-based learning media integrated with local wisdom to enhance teachers' ICT competence in elementary education. The study employed a Research and Development (R&D) approach using a modified Borg and Gall model consisting of six stages: needs analysis, product design, initial development, expert validation, limited trial, and product revision. Data were collected through expert validation questionnaires and teacher response surveys. The results showed that the developed media achieved high feasibility, with validation scores of 92% from media experts and 88% from material experts. A limited trial involving 10 elementary school teachers yielded a 91% positive response rate in terms of usability, visual appeal, and contextual relevance. These findings indicate that Doratoon-based learning media integrated with local wisdom is feasible and effective in supporting teachers to design interactive, engaging, and culturally meaningful learning experiences. Furthermore, the study highlights its potential to strengthen teachers' digital pedagogical competence and promote culturally responsive learning in primary education contexts.

**Keywords:** Doratoon, digital learning media, local wisdom, elementary school teachers, R&D.

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## INTRODUCTION

The rapid advancement of information and communication technology (ICT) has brought significant transformation to the field of education, particularly in terms of access to learning resources and improving the quality of teaching and learning processes. According to (UNESCO, 2020), the integration of ICT in education enhances the quality of learning and expands access for all learners. Within the framework of the *Merdeka Curriculum*, learning at the elementary level is expected not only to focus on content mastery but also to promote *deep learning* a process that emphasizes conceptual understanding, critical thinking, and collaboration. In accordance with the Ministry of Education and Culture Regulation No. 81A of 2013, ICT-based learning activities are one of the key strategies to realize active, creative, and contextual learning.

Nevertheless, the implementation of information and communication technology (ICT) in elementary school learning continues to face multiple challenges. One major issue is the limited digital competence of teachers, which affects their ability to design and integrate technology effectively into pedagogical practices. Many teachers still lack sufficient digital literacy and pedagogical knowledge to use technology meaningfully in classroom instruction. In addition, external factors such as limited technological infrastructure, inadequate access to digital devices, unstable internet connectivity, and insufficient institutional support further hinder the effective integration of ICT in schools. These constraints often result in the underutilization of digital technologies in teaching and learning processes, despite their potential benefits. Previous studies also report that teachers frequently encounter barriers such as inadequate digital skills, limited training opportunities, and insufficient technological resources when attempting to integrate ICT into classroom instruction (Alptekin & Taneri, 2025; UNESCO, 2020). As a result, the successful implementation of ICT in primary education requires not only technological availability but also the development of teachers' digital pedagogical competence and continuous professional support.

One promising digital platform for educational use is Doratoon, an online animation tool that provides diverse templates, characters, and graphical features that are easy to use. This platform helps teachers design engaging, interactive, and visually appealing instructional videos (Rehdaya & Tyas, 2024). The use of Doratoon in classroom learning has been shown to increase student engagement and strengthen understanding of abstract concepts (Amemasor et al., 2025; Hidayatillah & Ar, 2024). Beyond its technological value, integrating local wisdom into learning media also plays a vital role. Local wisdom reflects the cultural values and practices of a community passed down through generations (Kristianingsih, 2022). In educational settings, it serves to shape students' character, instill social values, and preserve cultural heritage (Dinçer, 2024; Kholida & Assri, 2024).

The local values of the Pamijahan community such as cooperation, religiosity, and environmental awareness can be integrated into digital learning media to help students connect with their cultural identity while fostering appreciation for local traditions. Supporting this idea, previous studies have highlighted the effectiveness of digital and culturally infused learning media. (Hutauruk, Sihombing, et al., 2022) found that animation-based media enhanced conceptual understanding in science learning, while (Ariana et al., 2023; Loureiro et al., 2024) reported that Doratoon effectively improved students' motivation. (Melisa & Fadlan, 2023) also revealed that learning activities incorporating Sundanese local wisdom strengthened students' social awareness and character development. These findings emphasize the importance of developing Doratoon-based learning media enriched with local wisdom to enhance teachers' pedagogical competence while embedding cultural values in learning. Preliminary observations in Pamijahan District, Bogor Regency, indicate that most elementary teachers are not yet familiar with digital platforms for developing instructional media, including animation tools such as Doratoon. Consequently, classroom instruction remains largely conventional and less engaging for students. In fact, the integration of local wisdom into elementary education holds great potential to foster learning motivation, strengthen character, and instill pride in regional identity (Diachuk, 2024).

Doratoon, as a web-based platform, has been widely recognized for its potential to support innovative digital learning media development. Previous studies highlight that Doratoon enables teachers to create animated educational videos through customizable templates, characters, and graphic elements, making the development of engaging instructional materials more accessible (Asyhari & Hidayat, 2023). By integrating visual, audio, and narrative components, Doratoon can facilitate more interactive and engaging learning experiences for students (Rehdaya & Tyas, 2024). Furthermore, its intuitive and user-friendly interface allows teachers with limited technical skills to design digital learning content efficiently.

Despite these advantages, most existing studies primarily emphasize the technical functionality and visual appeal of Doratoon as a digital media creation tool. Limited attention has been given to how such digital media can incorporate contextual elements that reflect students' socio-cultural environments. In particular, (Raynanda & Kadir, 2024) focused on the practicality and usability of Doratoon but did not address the integration of local cultural values in the learning content. As a result, the potential of Doratoon to support culturally responsive and context-based learning in elementary education remains insufficiently explored. To address this gap, the present study develops Doratoon-based learning media integrated with local wisdom from Pamijahan, Bogor Regency. By combining digital animation technology with culturally relevant content, this study aims to enhance teachers' ability to design interactive learning media while simultaneously promoting local cultural identity in elementary education. This integration represents a novel contribution by bridging digital innovation with culturally grounded learning media development.

The integration of digital animation media in education has gained increasing attention as it can enhance student engagement, visualization of abstract concepts, and interactive learning experiences. Various animated video creation platforms, such as Powtoon, Vyond, Animaker, and Canva, have been widely utilized to support the development of digital instructional media. However, many of these platforms often require advanced editing skills, stable internet connectivity, or subscription-based access, which may limit their usability for teachers with limited technological experience. In contrast, Doratoon provides a more intuitive interface, lightweight operational requirements, and a wide range of ready-to-use animated templates that enable teachers to produce instructional videos more easily without extensive multimedia expertise. These characteristics position Doratoon as a practical platform for supporting teachers in developing digital learning media in elementary school contexts (Bahri et al., 2024).

Despite the growing use of animation-based learning media in education, several previous studies have explored the use of Doratoon primarily as a digital tool for creating interactive instructional videos and improving students' learning motivation and engagement. These studies mainly focus on the technical features, usability, and visual attractiveness of the Doratoon platform as a multimedia development tool in digital learning environments. However, existing research has rarely examined how Doratoon-based learning media can be systematically developed within a research and development framework to integrate local wisdom values and support culturally relevant learning in elementary education. As a result, the potential of Doratoon to connect digital learning innovation with culturally contextualized educational content remains insufficiently explored (Rahayu, 2023; Rum et al., 2025).

To address this gap, the present study employs a Research and Development (R&D) approach to design and develop Doratoon-based learning media integrated with local wisdom from Pamijahan District. The novelty of this research lies in the integration of digital animation media with local cultural values within a structured instructional design process, producing a learning media model that not only supports teachers' digital pedagogical competence but also promotes culturally responsive learning and the preservation of local cultural identity in elementary education.

This study is grounded in several theoretical perspectives that guide both the development of the learning media and the interpretation of the research findings. First, the identification of teachers' needs for digital learning media is informed by the concept of digital pedagogical competence, which emphasizes teachers' ability to integrate technology effectively into teaching and learning processes. Second, the development of Doratoon-based learning media is based on multimedia learning theory, which explains that the integration of visual and verbal information through animation, narration, and graphics can enhance students' understanding and engagement. Third, the integration of local wisdom values in the learning media draws on the principles of culturally responsive pedagogy, which highlight the importance

of connecting learning content with students' cultural and social contexts to make learning more meaningful. In addition, the feasibility and practicality of the developed media are evaluated based on instructional media development principles, which emphasize aspects such as content accuracy, visual design, usability, and contextual relevance. Based on these theoretical foundations, this study aims to: (1) identify teachers' needs regarding digital learning media integrated with local wisdom; (2) develop a Doratoon-based instructional product that embeds Pamijahan's cultural values; and (3) assess the feasibility and practicality of the developed product through expert evaluation and limited field testing. This study is expected to produce an innovative learning media product that not only strengthens teachers' technological competence but also supports the integration of local cultural values into elementary education.

## METHODS

This study employed a Research and Development (R&D) approach aimed at producing an educational product in the form of Doratoon-based learning media integrated with local wisdom for elementary school teachers in Pamijahan District, Bogor Regency. The R&D approach was chosen because it enables the integration of systematic research activities with the practical process of developing innovative educational products (Borg & Gall, 1983). The population of this study consisted of elementary school teachers in Pamijahan District, and participants were selected using a purposive sampling technique based on criteria such as actively teaching at the elementary level and having basic experience in using digital technology for learning. A total of 10 teachers from five elementary schools were involved in this study, participating in the needs analysis stage to identify challenges in developing digital learning media and in the limited trial stage to evaluate the usability, practicality, and relevance of the developed Doratoon-based learning media for classroom implementation.

This study employed a Research and Development (R&D) approach adapted from the model proposed by Borg and Gall (1983) which originally consists of ten stages. In this study, the model was modified into six stages: needs analysis, product design, initial product development, expert validation, limited field testing, and product revision. The modification was made to accommodate the limited scope of the study and practical constraints related to time and research resources, particularly because the developed product was intended for a small-scale implementation within a specific local context rather than large-scale dissemination. The participants consisted of 20 elementary school teachers in Pamijahan District, Bogor Regency, selected through purposive sampling based on criteria such as actively teaching at the elementary level and having basic experience in using digital technology for learning. The feasibility of the developed product was evaluated through expert validation and teacher responses using percentage-based criteria, where scores of 81–100% were categorized as very feasible, 61–80% as feasible, 41–60% as fairly feasible, 21–40% as less feasible, and 0–20% as unfeasible (Ridwan & Lestari, 2025; Soesana et al., 2023).

The research instruments included teacher needs observation sheets, expert validation questionnaires, and teacher response questionnaires. The expert validators consisted of two experts, namely a specialist in educational technology and an expert in elementary education, who evaluated the media in terms of content accuracy, instructional design, visual presentation, and language clarity. The field testing involved elementary school teachers in Pamijahan District, who participated in evaluating the practicality and usability of the developed learning media. The questionnaires used in this study consisted of structured items designed to assess aspects such as content relevance, visual quality, ease of use, and instructional effectiveness. All questionnaire items were measured using a four-point Likert scale, ranging from 1 (strongly disagree), 2 (disagree), 3 (agree), to 4 (strongly agree). Prior to data collection, the instruments were reviewed and validated by experts to ensure their content validity and suitability for the research objectives. Quantitative data obtained from expert validation and teacher responses were analyzed using descriptive statistics by calculating feasibility percentages based on the ratio of the obtained score to the maximum possible score multiplied by 100%. Meanwhile, qualitative data from interviews, open-ended responses, and expert suggestions were analyzed thematically to enrich and support the quantitative findings regarding the feasibility and improvement of the developed Doratoon-based learning media (Sugiyono, 2011).

## RESULTS AND DISCUSSION

The results of the study presented are important data obtained from the results of data collection in the field (test results, questionnaires, interviews, documents, etc.). Research results can be supplemented by tables, figures, or graphs to clarify the results of the study. Avoid presenting similar data in separate tables. Tables, figures and graphics must be commented or discussed. All tables, figures and graphics must be centered and numbered consecutively. For qualitative research, the results section contains detailed sections in the form of sub-topics that are directly related to the research focus and categories.

### Results

#### 1. Need Analysis

The needs analysis stage aimed to identify the extent to which elementary school teachers in Pamijahan District utilized information technology in their teaching practices and to understand the challenges they encountered. Data were collected through observations, interviews, and questionnaires administered to 10 teachers from five elementary schools. The results indicated that 82% of teachers had never used digital animation platforms such as Doratoon, while 74% reported difficulties in designing digital learning media independently. Most teachers still relied on conventional instructional tools such as blackboards and student worksheets. In addition, 90% of teachers emphasized the importance of integrating local

wisdom values into learning materials so that they are more relevant to students' daily experiences and cultural context.

## 2. Product Design

Based on the needs analysis findings, the researchers designed a Doratoon-based learning media concept integrating local wisdom values. The design stage began with the development of a storyboard and script for an educational animation video incorporating the theme "Pamijahan Local Wisdom" within the Grade IV thematic curriculum. The learning media integrated values such as cooperation (gotong royong), religiosity, and environmental awareness, which were visualized through animated characters and scenes reflecting the daily life of the Pamijahan community. The media combined text, images, voice narration, and background music to enhance student engagement and contextual understanding.

## 3. Product Development

The initial product development stage involved the creation of a Doratoon-based animated learning video designed for Grade IV thematic learning by integrating local wisdom values from the Pamijahan community. The development process was guided by clearly defined learning objectives, aiming to enhance students' understanding of thematic concepts while fostering character values such as cooperation (gotong royong), religiosity, and environmental awareness. The media was designed in the form of a 5–7 minute educational animation structured into three sequential sections following a storyboard framework (Link Doratoon Media : [https://youtu.be/x\\_RD9mMY9r0](https://youtu.be/x_RD9mMY9r0)). The introduction section presented a contextual scenario depicting daily life in the Pamijahan community to activate students' prior knowledge and establish learning relevance. The content section delivered the main learning materials through animated explanations, narration, and visual illustrations that integrated local wisdom values within the thematic learning context. The closing section summarized the key concepts and reinforced moral messages related to the cultural values presented in the video. The media design applied key principles of multimedia learning, including the integration of visual and verbal information, synchronization of narration with animation, and the use of contextual storytelling to improve comprehension and engagement. In addition to the animated video, a teacher user guide was developed to support the effective implementation of the media in classroom instruction. The resulting prototype was subsequently prepared for expert validation to evaluate its pedagogical suitability, design quality, and relevance for elementary school learning contexts.

The developed product in this study is a Doratoon-based animated learning media designed to support thematic learning for Grade IV elementary students. The product is presented in the form of a 5–7 minute educational animation video that integrates instructional content with local wisdom values from the Pamijahan community. The media consists of three main components: an introductory segment that presents a contextual scenario reflecting

students' daily lives, a content segment that delivers the main learning materials through animated explanations, narration, and visual illustrations, and a closing segment that summarizes key concepts while reinforcing character values. The learning media integrates various multimedia elements such as text, images, narration, animation, and background music to enhance students' engagement and understanding. In addition, the product is complemented by a teacher user guide that provides step-by-step instructions for implementing the media in classroom learning. The main innovation of this product lies in the integration of digital animation technology with local wisdom-based learning content, which enables teachers to deliver instructional materials that are both interactive and culturally contextualized. Unlike conventional digital learning media that primarily focus on visual attractiveness, the developed media embeds local cultural values such as cooperation (*gotong royong*), religiosity, and environmental awareness into the instructional narrative. This integration not only supports the use of ICT in elementary education but also promotes culturally responsive learning that connects academic content with students' social and cultural environments. (Figure 1).





**Figure 1.** Doratoon Media

#### 4. Expert Validation

The product validation was conducted by two experts consisting of a digital learning media expert and an elementary education expert, while the practicality test involved 10 elementary school teachers in Pamijahan District. The validation aimed to assess several dimensions of the developed media, including content relevance, visual design, interactivity, language clarity, and the integration of local wisdom values. The evaluation used a four-point Likert scale, ranging from 1 (very unfeasible) to 4 (very feasible). The results of expert validation and teacher responses were analyzed by calculating the average score and percentage for each dimension.

**Table 1.** Results of Expert Validation and Teacher Responses

Evaluation Dimension	Expert Score	Expert (%)	Category	Teacher	
				Response (%)	Category
Content relevance	3.5	88%	Feasible	87%	Very practical
Visual design	3.7	92%	Very feasible	91%	Very practical
Interactivity	3.7	92%	Very feasible	90%	Very practical
Language clarity	3.5	88%	Feasible	86%	Very practical
Local wisdom integration	3.6	90%	Very feasible	89%	Very practical

The results indicate that the visual design and interactivity aspects achieved the highest feasibility scores (92%), showing that the animation, visual presentation, and multimedia elements were considered highly engaging and suitable for elementary school students. Teacher responses also confirmed the practicality of the developed media, with more than 90% of teachers reporting that the media was easy to use and visually attractive. In addition, teachers stated that the integration of local wisdom values made the learning materials more contextual

and meaningful for students. Although the content relevance and language clarity aspects obtained slightly lower scores (88%), experts suggested minor revisions, including improving the synchronization between voice narration and animation movements and providing clearer user instructions for teachers. The results of expert validation and teacher responses indicate that the Doratoon-based learning media is both feasible and practical for use in elementary school learning.

#### 5. Limited Field Testing

The limited field testing was conducted with 10 elementary school teachers in Pamijahan District to evaluate the practicality and usability of the developed media and to collect teachers' responses regarding its instructional design and content relevance. The trial was implemented during a short training session in which teachers were given the opportunity to operate the Doratoon platform and apply the developed media in a simulated classroom setting. The results indicated that 90% of teachers perceived the media as very easy to use, even for those with no prior experience in creating digital learning materials. One participant stated that "the animation and narration make the lesson more interesting and help students understand the material more easily." In addition, 85% of teachers reported that the media was engaging, culturally relevant, and capable of increasing students' learning motivation, particularly because the content reflected familiar elements of the Pamijahan community. A teacher further explained that "the integration of local wisdom values in the animation helps students connect the lesson with their daily experiences." These findings were consistent with the results of the expert validation stage, in which the media obtained feasibility scores of 92% for visual and interactivity aspects and 88% for content and language aspects. One expert noted that "the use of contextual animation combined with local cultural elements provides an effective learning experience for elementary students," although minor revisions were recommended, such as improving the synchronization between voice narration and animation movements. Overall, the combination of quantitative validation results and qualitative feedback indicates that the developed Doratoon-based learning media is both feasible and practical for use in elementary classroom contexts.

#### 6. Product Revision

Based on expert validation and teacher feedback, several revisions were implemented. These revisions included synchronizing the voice narration with the animation movements, adding explanatory text to clarify key learning messages, and improving the

teacher user guide in PDF format to provide clearer step-by-step instructions. After these revisions, the final product was completed as a Doratoon-based animated learning media integrating Pamijahan's local wisdom values.

## **Discussion**

The results of this study indicate that the Doratoon-based learning media integrated with Pamijahan local wisdom achieved a high level of feasibility and practicality for use in elementary school learning. The needs analysis showed that 82% of teachers had never used animation-based digital learning media, while 74% experienced difficulties in developing digital instructional materials. These findings indicate a gap in teachers' digital pedagogical competence, particularly in designing interactive multimedia learning resources. Similar findings have been reported in previous studies, which emphasize that elementary school teachers often require structured guidance, training, and accessible digital tools to effectively integrate ICT into classroom instruction (Ramadhan & Setyasto, 2025).

The expert validation results show that the developed media achieved 92% feasibility in visual design and interactivity aspects and 88% feasibility in content and language aspects. These results indicate that the multimedia elements used in the developed product including animation, narration, visual illustrations, and contextual storytelling meet pedagogical and technical standards for elementary education. The innovation of the developed product lies in the integration of digital animation media with local wisdom values, which allows learning materials to be delivered in a way that is both interactive and culturally contextualized. Unlike many digital learning media that focus primarily on visual attractiveness, this product embeds local cultural values such as cooperation, religiosity, and environmental awareness within the narrative structure of the animation, thereby connecting academic content with students' socio-cultural experiences. The positive responses from teachers during the limited field testing further indicate that the developed media is practically applicable in classroom contexts. Teachers reported that the media was easy to operate and capable of increasing students' motivation and engagement during learning activities. Several factors may have contributed to these positive results, including the simplicity of the Doratoon platform interface, the use of contextual storytelling based on local culture, and the integration of multimedia elements such as animation and narration that make the learning materials more engaging and easier to understand.

From a theoretical perspective, these findings support Mayer's Multimedia Learning Theory, which states that learning becomes more effective when verbal and visual information are presented simultaneously through dual processing channels (Mayer, 2021). The synchronization of narration, animation, and visual representation in the developed media reflects key multimedia principles such as multimedia, coherence, and contiguity, which are known to enhance students' comprehension and engagement in digital learning environments. Furthermore, the integration of local wisdom values in the developed media reflects the principles of culturally responsive pedagogy, which emphasize connecting instructional content with students' cultural backgrounds and daily experiences. Previous studies have shown that culturally contextualized learning materials can strengthen students' identity development, character formation, and environmental awareness (Hutauruk, Subakti, et al., 2022; Lestari et al., 2020).

In this study, embedding local cultural values within digital animation media enables teachers to simultaneously promote academic learning and character education. When compared with previous research on animation-based learning media, the results of this study are consistent with findings that digital animation can enhance students' motivation, engagement, and conceptual understanding (Rum et al., 2025). However, the present study contributes additional value by combining animation-based digital learning media with local wisdom integration, thereby providing a culturally contextualized instructional model for elementary education. This integration represents an important innovation in digital learning media development, as it bridges technological advancement with local cultural preservation.

The results of this study demonstrate that Doratoon-based learning media integrated with local wisdom can serve as an innovative instructional tool that supports teachers in creating interactive, meaningful, and culturally relevant learning experiences. The findings also imply that the integration of digital technology with local cultural knowledge can provide a practical approach for strengthening teachers' digital pedagogical competence while promoting culturally responsive learning in elementary education.

## CONCLUSION

This study developed a Doratoon-based learning media integrating Pamijahan local wisdom as an innovative instructional resource for elementary school teachers. The development results indicate that combining accessible digital animation technology with culturally contextualized learning content can produce instructional media that is pedagogically

feasible and practically applicable in elementary education. The validation results and teacher responses demonstrate that the developed media supports teachers in designing more interactive, engaging, and culturally meaningful learning experiences. The main contribution of this study lies in proposing a digital learning media model that integrates multimedia technology with local wisdom values, thereby bridging the gap between technological innovation and culturally responsive pedagogy in elementary education. By embedding cultural elements such as cooperation, religiosity, and environmental awareness into animated learning media, the developed product not only supports the integration of ICT in classroom instruction but also promotes character education and cultural awareness among students. However, this study focused primarily on product development, validation, and limited trials involving teachers. Therefore, future research should examine the effectiveness of Doratoon-based local wisdom learning media on students' learning outcomes, including cognitive achievement, learning motivation, and character development in real classroom settings with larger samples. Further studies may also explore the adaptation of similar culturally integrated digital media in different regional contexts to expand the implementation of culturally grounded digital learning innovations.

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