Needs Analysis For The Development Of Recycled Paper Stamp Tool Media To Enhance Batik Ornamental Motif Creation Skills Among Students Of Sdn Kalisemo

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Abstract

The ability to create batik ornamental designs among elementary school students requires direct experience through contextual, affordable, and locally relevant physical learning media. The Merdeka Curriculum mandates meaningful visual arts learning grounded in cultural heritage; however, preliminary observations at SDN Kalisemo, Purworejo, indicate that fifth-grade students' batik-making abilities remain suboptimal, as instruction has been limited to conventional motif drawing on paper, compounded by budget constraints for copper stamping tools and the inefficiency of hand-drawn (tulis) batik. This study aims to analyze teachers' and students' needs regarding the development of a batik stamping tool medium made from recycled paper. Using a qualitative descriptive approach within the field-survey component of the Preliminary Study (Studi Pendahuluan) stage of Sukmadinata's Research and Development (R&D) model, data were collected through in-depth interviews, needs questionnaires, and observations involving two teachers and 29 fifth-grade students. The results show that teachers require media that are practical, affordable, and capable of producing tangible works, while 92.8% of students expressed strong enthusiasm for direct batik-making practice. This study concludes that there is an urgent need to develop a prototype batik stamping tool made from recycled milk-carton paper as an innovative, economical, and environmentally friendly solution. The novelty of this research lies in identifying specific, previously unaddressed media needs at the elementary school level, with the limitation that these findings remain at the preliminary-study stage and therefore require further development, trial, and validation.

Keywords: needs analysis; batik stamp tool; recycled paper; creative skills; batik ornamental motif.

Introduction

Visual arts creative ability, particularly in producing batik ornamental designs, is a competency of strategic value in primary education. Creating visual art is not merely a technical activity but a process of developing creativity, aesthetic sensitivity, and appreciation of national cultural identity that needs to be cultivated from an early age (Eisner, 2002; Bamford, 2006). Vygotsky (1978) asserted that children's creative abilities develop optimally through direct experience facilitated by appropriate media and instruments, rather than through passive approaches that position children merely as observers. In this study, creative ability encompasses the competencies of planning motifs, operating tools, applying dyes, and independently evaluating the resulting work (Anderson & Krathwohl, 2001).

Batik ornamental design, as one of Indonesia's intangible cultural heritages recognized by UNESCO since 2009, constitutes important content in fifth-grade primary school Visual Arts learning (Wulandari, 2011). Ornamental design is a basic repeating decorative pattern that carries

both aesthetic value and profound philosophical meaning within Indonesian (Nusantara) cultural traditions (Soepratno, 2004). Kusumawati et al. (2024) asserted that learning ornamental design in primary schools not only develops technical skills but also strengthens students' cultural literacy and national identity. Qomaruddin and Sa'diyah (2024) demonstrated that exploring ornamental design based on local wisdom significantly and effectively develops elementary students' visual creativity compared with generic approaches not rooted in local culture. Batik ornamentation in particular possesses a rich visual system that provides complex cognitive and motor stimulation for the development of primary-school-age learners.

Stamped batik (batik cap), the technique most suitable for the primary school learning context, works on the principle of pressing a patterned stamping tool onto wax-coated cloth (Wulandari, 2011). Compared with hand-drawn batik using a canting, the stamping technique is far more time-efficient and easier for fifth-grade students to master (Fisnani & UZ, 2020). Prasetiyo, Sulaiman, and Prastyanti (2022) demonstrated that batik-making instruction using appropriate, age-suitable tools consistently produces measurable improvements in creative competence. Fifiafianti and Gunadi (2025) reinforced this finding by showing that simplified stamping techniques adapted to students' developmental characteristics can increase active engagement in the batik-making process.

Learning media based on manipulative physical objects play a central role in optimizing students' creative ability. Arsyad (2019) asserted that good learning media must be able to stimulate students' thoughts, feelings, and willingness to actively engage in the learning process. Kong (2021) demonstrated that physical engagement through manipulative media significantly increases students' intrinsic motivation and learning retention compared with passive, text-based approaches. Sadiman et al. (2020) added that the feasibility of learning media is determined by four main aspects: alignment with learning objectives, content clarity, operational ease, and production cost affordability. Mayar (2022) emphasized that craft-based media involving direct hands-on activity consistently stimulate elementary schoolchildren's creativity more effectively than purely representational or digital media.

The availability of appropriate media is a key prerequisite for developing students' batik ornamental design abilities. Widyaningrum, Suwandi, and Wardani (2023) demonstrated that the relevance of learning media to students' local context consistently produces higher learning outcomes. Frontiers in Education (2025) asserted that developing design skills in art education requires media that provide authentic creative experiences, not merely visual representations. Taqiyyah et al. (2023) confirmed that local-material-based creative activities in primary schools not only enhance creativity but also build students' confidence and pride in the resulting products.

Various studies on the development of visual arts learning media in primary schools have been produced in recent years. Nuryani et al. (2021) developed a Batik Lasem Pop-Up Book medium using an R&D model, which was shown to significantly increase primary school students' motivation and interest in Arts and Crafts (SBdP) learning. Shokiyah et al. (2024) developed a batik art book medium for deaf students, deemed feasible based on an Aiken's V value above 0.72. Nirwana (2024) developed a Project-Based Learning-based visual arts e-module using the ADDIE model, achieving 95% content validity and a 97.1% positive student response. Carolin and Nurharini (2024) demonstrated that interactive visual arts media for fourth-grade students had a positive impact on student engagement and learning outcomes.

Nevertheless, these studies present significant limitations regarding the improvement of students' batik ornamental design creative ability. Prior research has tended to develop digital or print-based media that are informative and appreciative in nature, rather than manipulative physical media that directly train students' batik-making skills. No study to date has developed a stamping-tool medium made from recycled materials that allows students to practice the batik stamping technique directly and affordably. This gap constitutes the starting point of the present study. This study aims to conduct an in-depth analysis of teachers' and students' needs regarding the development of a recycled-

paper-based stamping tool medium to enhance fifth-grade students' batik ornamental design creative ability at SDN Kalisemo, Purworejo Regency, as a scientific foundation for developing innovative, contextual, and environmentally conscious learning media

Method

Setting and Participant

This study employed a qualitative descriptive approach positioned within the field-survey component of the Preliminary Study (Studi Pendahuluan) stage of Sukmadinata's Research and Development (R&D) model (Sukmadinata, 2009). Sukmadinata's model comprises three main stages: (1) Preliminary Study, consisting of a literature review, a field survey, and the drafting of an initial product design; (2) Model Development, involving limited and broader field trials accompanied by product revision; and (3) Model Testing/Validation, involving experimental testing of the developed product's effectiveness. The present study is situated within the field-survey component of the Preliminary Study stage, which aims to identify the gap between actual and ideal conditions as the empirical basis for drafting the initial design of the intended product (Sukmadinata, 2009). A qualitative approach was chosen because the purpose of this study is exploratory and in-depth, namely to obtain a holistic picture of the needs, problems, and expectations of teachers and students regarding a recycled-paper-based stamping tool medium (Creswell & Poth, 2018)

This study was conducted at SDN Kalisemo, Loano District, Purworejo Regency, Central Java, during the 2025/2026 academic year. The research site was purposively selected based on three criteria: (1) the school had fully implemented the Merdeka Curriculum at the fifth-grade level; (2) the school held provincial Adiwiyata (environmental) status with a structured waste-recycling program; and (3) there was a genuine gap between the curriculum's demands for batik ornamental design competence and the actual classroom learning reality (Patton, 2002; Lincoln & Guba, 1985).

The participants consisted of one fifth-grade teacher from SDN Kalisemo and 29 fifth-grade students. Participants were determined using purposive sampling based on criteria of direct involvement and relevance to the research focus (Merriam & Tisdell, 2016). The instrument validation process also involved one learning-media expert and one visual-arts content expert from a university, who provided input on the quality of the instruments used

Data Collection

Data collection employed three complementary methods. First, semi-structured in-depth interviews with the fifth-grade teacher explored teaching experience with batik ornamental design, challenges encountered, and expectations regarding the needed learning media. Second, a structured needs questionnaire was administered to students to obtain data on their preferences, enthusiasm, and expectations regarding batik-making instruction using physical media. Third, non-participant observation of classroom visual arts instruction was conducted to verify the actual conditions obtained from the interviews and questionnaire (Miles, Huberman, & Saldana, 2014). The needs questionnaire was developed with reference to the needs-analysis dimensions of Dick, Carey, and Carey (2015), covering actual conditions, competency gaps, media needs, and user expectations.

Data Analysis

Data trustworthiness was ensured through source and technique triangulation (Creswell & Poth, 2018). Data from the teacher were cross-checked against data from the students, while interview data were confirmed through observation and questionnaire results. Data analysis employed the interactive model of Miles, Huberman, and Saldana (2014), comprising data condensation, data display, and conclusion drawing/verification, as illustrated in Figure 1. Questionnaire data were analyzed using descriptive percentage analysis to produce a quantitative picture of users' level of need and enthusiasm regarding the medium being developed.

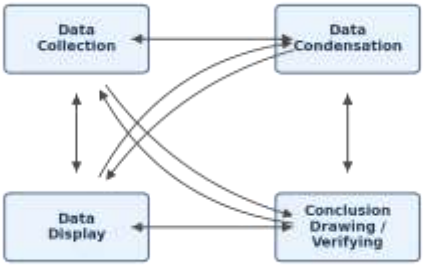

Figure 1. Interactive model of analysis

Result and Discussion

Actual Condition of Students' Batik Ornamental Design Creative Ability at SDN Kalisemo

In-depth observation and interviews revealed that the batik ornamental design creative ability of fifth-grade students at SDN Kalisemo had not developed optimally. Visual arts instruction to date had been limited to drawing motifs on paper using pencils and crayons, without accompanying batik-making practice using either stamping tools or a canting. The teacher stated: "We actually want to teach batik-making, but there is no tool we can use. Copper stamps are too expensive, while the canting is too difficult and takes too long." This statement confirms that the main obstacle lies not in teacher competence but in the absence of an appropriate and affordable learning medium.

The questionnaire administered to the 29 fifth-grade students produced representative data. As many as 85.7% (24 of 28) of students reported that they had never practiced batik-making using a stamping tool in school learning activities. Additionally, 78.6% (22 of 29) of students acknowledged that their ability to create batik ornamental designs remained very limited because they had never had the opportunity to practice directly. This finding is consistent with Fisnani and UZ (2020), who asserted that the absence of appropriate media directly hinders the development of primary school students' batik creativity and skills.

Teachers' Needs Regarding a Recycled-Paper-Based Stamping Tool Medium

Interviews with the teacher produced a comprehensive and consistent map of needs. The teacher identified six main criteria required of a stamping tool medium: (1) capable of producing clear, repeating batik ornamental motifs on fabric; (2) made from affordable materials that are readily available within the school environment; (3) safe for fifth-grade students to use without risk of injury; (4) durable enough for use over at least one semester of instruction; (5) easy to make; and (6) consistent with the school's Adiwiyata program, which prioritizes the use of recycled materials.

The teacher further specifically highlighted the potential of milk-carton paper, abundantly available through SDN Kalisemo's waste bank program, as a raw material for the batik stamping tool. The availability of this abundant, cost-free raw material constitutes a strategic added value, as it eliminates the cost barrier that has long been the main obstacle to media procurement. Sadiman et al. (2020) asserted that material accessibility is one of the determining factors in the successful implementation of learning media, particularly in schools with limited budgets. The integration of the Adiwiyata program is also consistent with Minister of Environment Regulation No. 52 of 2019 concerning the Environmental Care and Culture Movement in Schools.

Students' Needs Regarding a Recycled-Paper-Based Stamping Tool Medium

Analysis of the students' needs questionnaire produced highly significant data supporting the urgency of media development. As many as 92.8% (26 of 29) of students expressed a strong desire to try batik-making directly using a stamping tool. Furthermore, 96.4% (27 of 29) of students stated that their batik ornamental design creative ability would develop further if carried out through direct practice using manipulative physical media. Additionally, 82.1% (23 of 29) of students expressed interest in the concept of making their own stamping tool from recycled materials before using it to create batik work.

In terms of motif preference, 89.3% (25 of 29) of students indicated a wish to use distinctively Indonesian (Nusantara) batik ornamental motifs in their work, rather than generic motifs. This finding reinforces the argument of Qomaruddin and Sa'diyah (2024) that primary school students have a strong interest in ornamental designs rooted in local

cultural richness. This high level of student enthusiasm reflects an authentic need rather than a mere artifact of questionnaire design, as confirmed by classroom observations showing students' heightened attention when the teacher discussed batik ornamental design material.

Potential and Urgency of Developing a Recycled-Paper-Based Stamping Tool Medium

The synthesis of needs-analysis results from teachers and students produced a clear picture of the specifications required for the medium. A stamping tool made from recycled milk-carton paper was found to best satisfy all identified need criteria. Milk-carton paper was selected because of its dense, polyethylene-coated material characteristics, resistance to moisture, and a surface that can be shaped into the desired batik ornamental motif pattern. These characteristics make it a viable substitute for copper stamps in the primary school learning context.

Developing this medium also offers layered pedagogical value. First, students develop batik ornamental design creative ability through authentic direct experience. Second, student involvement in making the stamping tool itself develops creativity, understanding of batik motifs, and visual design competence, consistent with the findings of Taqiyyah et al. (2023). Third, the use of recycled paper integrates environmental education values that form part of SDN Kalisemo's identity as an Adiwiyata school (Jurnal Ilmiah Pendidikan Citra Bakti, 2024). Kong (2021), writing in Frontiers in Psychology, asserted that learning that combines physical experience with contextual values produces outcomes that are far more meaningful and durable than one-dimensional instruction.

These findings reinforce the importance of an in-depth, contextual preliminary field survey as the foundation for developing effective learning media within Sukmadinata's R&D framework (Sukmadinata, 2009). Unlike Nirwana (2024), who developed a digital e-module medium using the ADDIE model, or Nuryani et al. (2021), who developed a printed Pop-Up Book medium, this study pioneers a new direction in visual arts media development based on recycled physical instruments that are more contextually suited to the realities of schools in budget-constrained areas. This novelty makes it highly urgent for subsequent stages of Sukmadinata's model — namely Model Development and Model Testing/Validation — to be carried out for the recycled-paper-based stamping tool medium.

Conclusion

The needs analysis conducted at SDN Kalisemo, Purworejo Regency, yielded four main conclusions. First, fifth-grade students' batik ornamental design creative ability has not developed optimally, as instruction remains limited to conventional drawing without direct batik-making practice, with 78.6% of students acknowledging their limited creative ability due to the unavailability of appropriate media. Second, teachers require a stamping tool medium that is practical, affordable, safe, durable, and capable of producing tangible batik ornamental works as evidence of student competency achievement. Third, students display very high enthusiasm for learning to create batik ornamental designs directly, with 92.8% expressing a strong desire to use a stamping tool in batik-making practice. Fourth, as an Adiwiyata school, SDN Kalisemo has an abundant supply of recycled milk-carton paper with substantial potential to be developed into an innovative batik stamping tool medium. Based on these conclusions, developing a prototype recycled-paper-based batik stamping tool medium is strongly recommended as a concrete solution to bridge the gap between the batik ornamental design competency demands of the Merdeka Curriculum and the reality of limited school facilities. As this study represents the field-survey component of the Preliminary Study stage in Sukmadinata's R&D model, future research needs to proceed to the Model Development stage drafting, expert validation, and limited and broader field trials of the prototype followed by the Model Testing/Validation stage to empirically measure its effectiveness in improving fifth-grade primary school students' batik ornamental design creative ability

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