Upcycling Used Cement Sacks into Wayang Beber Paintings: A Participatory Approach to Environmental Sustainability and Cultural Preservation in Rural Schools

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Abstrak

Meningkatnya akumulasi limbah industri, khususnya sak semen bekas yang sulit terurai secara alami, telah menjadi permasalahan lingkungan yang signifikan dan mendesak. Seni tradisional Wayang Beber sebagai warisan budaya bangsa turut menghadapi ancaman degradasi yang perlahan namun nyata, akibat berkurangnya relevansi medium penyajian konvensionalnya di kalangan generasi muda. Penelitian ini bertujuan mengeksplorasi potensi sak semen bekas sebagai media alternatif lukisan Wayang Beber, sekaligus mengevaluasi kontribusinya terhadap pengurangan limbah non-organik dan revitalisasi seni tradisional. Penelitian ini menggunakan model Participatory Rural Appraisal (PRA) yang dilaksakan di dua lokasi yaitu SDN Widoro dan MI Guppi Widoro. Hasil eksperimen menunjukkan bahwa karakteristik fisik sak semen, meliputi daya serap dan tekstur permukaannya yang khas, menghadirkan dimensi estetik baru yang memperkaya ekspresi visual Wayang Beber. Pemanfaatan material ini juga berkontribusi nyata pada pengurangan limbah industri, sejalan dengan prinsip-prinsip pembangunan berkelanjutan. Respons positif dari masyarakat, khususnya generasi muda, mengindikasikan bahwa pendekatan berbasis daur ulang mampu meningkatkan daya tarik seni tradisional tanpa mengorbankan nilai autentisitas kulturalnya. Untuk nilai keberlanjutan kegiatan ini dilakukan secara periodik dengan motif batik pengembangan lanjutan.

Kata kunci*: seni lukis, sustainable development, Wayang Beber*

Abstract

The increasing accumulation of industrial waste, particularly used cement sacks that are difficult to decompose naturally, has become a significant and pressing environmental problem. The traditional art of Wayang Beber, as a national cultural heritage, also faces a slow but real threat of degradation, due to the decreasing relevance of its conventional presentation medium among the younger generation. This study aims to explore the potential of used cement sacks as an alternative medium for Wayang Beber paintings, while also evaluating their contribution to the reduction of non-organic waste and the revitalization of traditional art. This study uses a Participatory Rural Appraisal (PRA) model, which was implemented in two locations: SDN Widoro and MI Guppi Widoro. The experimental results show that the physical characteristics of cement sacks, including their absorbency and distinctive surface texture, present a new aesthetic dimension that enriches the visual expression of Wayang Beber. Utilization of this material also significantly contributes to the reduction of industrial waste, in line with the principles of sustainable development. The positive response from the community, especially the younger generation, indicates that a recycling-based approach can increase the appeal of traditional art without sacrificing its cultural authenticity. For the sustainability value, this activity is carried out periodically with further development of batik motifs.

Keywords: *painting, sustainable development,* Wayang Beber

1. INTRODUCTION

Indonesia possesses a rich diversity of traditional arts, one of which is *Wayang Beber*, a narrative performance art featuring illustrated stories unrolled on sheets of paper or cloth. As a long-standing cultural product of Indonesia, *wayang* is a traditional Javanese art form that has undergone a process of cultural transformation. This evolution is evidenced by the wide variety of *wayang* types and the extensive repertoire of stories known to the public. According to [1], the visual hallmarks of *Wayang Beber* encompass color gradations, intricate filling ornaments (*isi-isian*), and compelling characters, which collectively form its distinctive identity. The narrative of

Wayang Beber predominantly chronicles the romantic journey of Panji Asmorobangun and Dewi Sekartaji.

However, *Wayang Beber* is one of the traditional Indonesian performance arts increasingly marginalized amidst the currents of cultural modernization. The Pacitan variant of *Wayang Beber* is recognized as a national intangible cultural heritage. Yet, in the city of Pacitan itself, the younger generation's interest in *Wayang Beber* is experiencing a declining trend [2]. Consequently, innovation is essential to revitalize this art form, ensuring it remains relevant and engaging in the contemporary era. The urgency of this preservation is further underscored by the fact that *Wayang Beber* was officially designated as an intangible cultural heritage by UNESCO in 2015.

Concurrently, environmental concerns regarding industrial waste are becoming increasingly pressing, particularly non-organic waste such as discarded cement sacks that are difficult to decompose naturally. According to data from Statistics Indonesia (BPS), the construction sector in Indonesia generates a significant volume of cement sack waste annually. The high production of cement in Indonesia, driven by its role as a primary raw material for development projects, directly contributes to the escalating accumulation of used cement paper waste. Data from the Indonesian Cement Association (ASI) indicates that the domestic cement market grew by 3.6% (64,016,000 tons), with the bagged cement market growing by 0.1% (45,436,000 tons) and the bulk cement market by 13.3% (18,580,000 tons). If not managed properly, the accumulation of cement paper waste will become a serious environmental problem, particularly around construction project sites and landfills.

Cement sacks possess strong and durable physical characteristics. However, their utilization as a recycled material, particularly within the arts, remains limited. Therefore, in response to these dual challenges, repurposing discarded cement sacks as an alternative painting medium specifically for *Wayang Beber* represents a strategic step that not only contributes to cultural preservation but also supports environmental sustainability practices. The thick and sturdy nature of cement paper can facilitate the creation of sustainable and contemporary product innovations. Furthermore, the application of a double-coating technique renders the cement sacks notably thick and rigid [3]. Moreover, by leveraging recycled materials, the art of *Wayang Beber* can be reintroduced in a manner that is innovative, eco-friendly, and economical. Utilizing cement sack waste as a painting medium to replace conventional canvas aligns directly with Sustainable Development Goal (SDG) 12 on responsible consumption and production, thereby promoting environmental and societal well-being for the future. Heidari [4] explains that the “Tache with Trash” approach integrates art with waste upcycling, using recycled waste to create colorful artwork. This concept can be applied in public spaces such as shopping malls or campuses to raise awareness of sustainability.

Although *Wayang Beber* is known to originate from Pacitan, East Java, a significant portion of the local younger generation, particularly elementary school students, remains unaware of this traditional art form. Conducting *Wayang Beber* painting workshops using cement sack media for elementary students serves as a fundamental step in introducing this cultural heritage while actively engaging children in environmental conservation efforts. This initiative represents a tangible form of participation in both cultural preservation and environmental protection. Consequently, the researchers organized this *Wayang Beber* painting training in elementary schools to introduce the art form and broaden the perspectives of the students as the nation's future generation.

2. METHODS

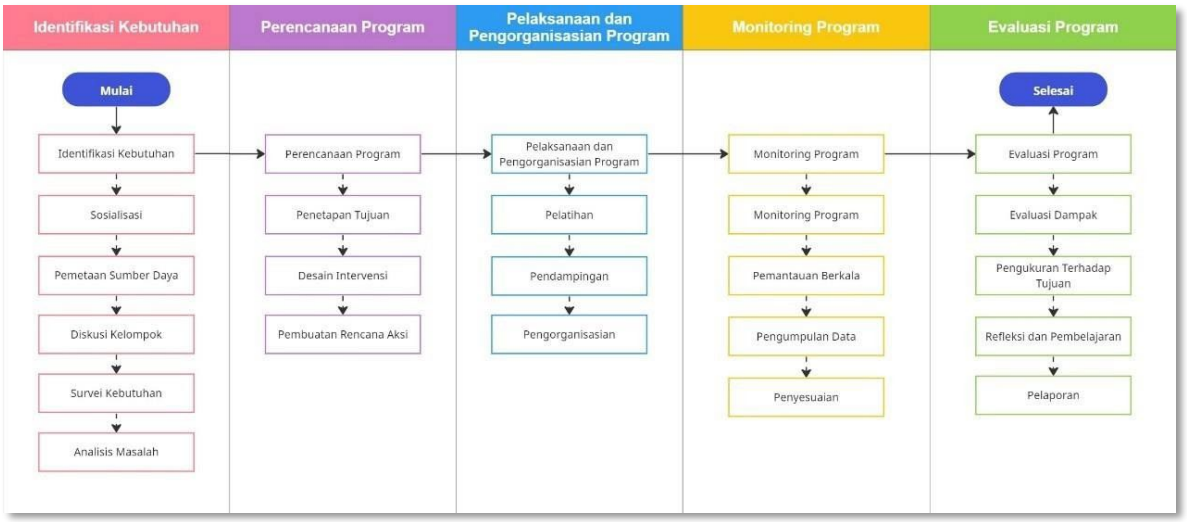

Figure 1. Diagram of the Participatory Rural Appraisal (PRA) Approach
Sources: Data Processed by Researchers, 2026

This activity was conducted from August 26 to 27, 2024, involving two public elementary schools in Pacitan Regency, namely SDN Widoro and MI Guppi Widoro. This research employed the Participatory Action Research (PAR) method, actively engaging students in the process of repurposing cement sack waste into *Wayang Beber* crafts. The program was collaboratively organized by the Pacitan Cerdas Community (PACE), a community service team from Universitas Negeri Malang (UM), and 247 Creative Space. It involved a committee of 35 members and targeted a total of 91 students from SDN Widoro alongside 33 students from MI Guppi Widoro. During this training, cement packaging, typically regarded as waste, was transformed into a medium for cultural and artistic expression. "Recycling cement packaging into artworks is not merely about protecting the environment, but also about saving the nearly extinct *Wayang Beber*," explained Dr. Iriaji.

Through this project, students not only acquired new skills but also played an active role in promoting local culture. The implementation process commenced by providing an in-depth theoretical understanding of *Wayang Beber*, an art form whose existence dates back to the Majapahit era. Furthermore, students were educated on the importance of utilizing surrounding waste by recycling discarded materials. This approach aims to foster the students' environmental awareness through the creation of artworks. Ultimately, these newly acquired skills are expected to provide long-term benefits, particularly in generating eco-friendly products that possess economic value. In a study by [6], which also used the same method, the results also showed that at TPQ Darul Falah Mojo, hard and soft skills training is very important in today's era.

3. RESULT & DISCUSSION

The traditional art of *Wayang Beber* is increasingly being abandoned by the younger generation, as it is often perceived as irrelevant and outdated In *Wayang Beber*, the narrative relies heavily on the audience's comprehension of the displayed visual illustrations. Grasping the storyline solely through these visual cues can be challenging, particularly for audiences unfamiliar with the underlying cultural context or the specific tales being portrayed. Consequently, this limitation renders *Wayang Beber* less effective in conveying its messages to a broader audience, especially in the modern era.

Furthermore, cement sack waste generated by the construction industry often ends up as trash, polluting the environment due to its non-biodegradable nature. Cement sacks constitute one of the largest contributors to solid waste in Indonesia. In response to the annual increase in waste volume, the Environmental Agency advocates for the 3R principles (Reduce, Reuse,

Recycle), emphasizing that waste management practices must be instilled from an early age. Reduce refers to minimizing factors that generate waste; Reuse involves utilizing salvageable waste materials; and Recycle entails processing waste into new, beneficial products [5].

Motivated by this, the younger generation is striving to introduce and preserve this signature *wayang* of Pacitan Regency by creating *Wayang Beber* from cement sacks, serving as an engaging alternative medium for children. Upon closer examination, cement sacks offer several distinct advantages: they are highly durable due to their textile or plastic composition, and they possess significant strength and resistance to physical damage. Furthermore, their surface provides a unique texture that differentiates them from conventional media. Consequently, this initiative simultaneously educates children about the 3R principles, particularly Recycle by demonstrating how discarded materials can be reprocessed into highly useful and educational items.

Through this approach, it is expected to cultivate a deeper appreciation for this UNESCO-designated intangible heritage while simultaneously imparting an understanding of the 3R principles, thereby encouraging students to be more caring and protective of the environment. Furthermore, the utilization of recycled materials or waste as an artistic medium carries a profound narrative and significance, inherently illustrating themes of environmental awareness. Therefore, the integration of cement sack waste with *Wayang Beber* painting techniques can generate a more relevant art form within a contemporary context. Ultimately, this serves as a progressive step that elevates traditional art onto a new platform, making it more acceptable and accessible to a younger generation that is increasingly concerned with sustainability and waste reduction issues.

The utilization of cement sacks as a canvas substitute serves as a concrete example of productive waste utilization that not only reduces solid waste but also imparts a high artistic value. Characterized by its unique texture and inherent artistic qualities, cement sack waste presents a compelling alternative to conventional canvas. This approach brings a fresh nuance to the realm of *Wayang Beber* and introduces the traditional art to a broader audience, particularly among the younger generation who are increasingly attentive to environmental issues.

Stages of Processing Cement Sacks into Crafts Using the PRA Method

A. Identifying Potential and Problem

The initial stage involved participatory discussions with the community to identify the environmental impacts of cement sack waste, the quantity of available cement sack waste, human resource potential, and community needs. At this stage, participants also identified a potential development of cement sack crafts, such as Wayang Beber paintings, to meet school needs. The identification results indicated that much cement sack waste is still being wasted and underutilized, while the community expressed interest in acquiring skills that could increase family income.

B. Joint Planning

Once the potential and problems were identified, the community and the facilitator developed an activity plan. The planning included:

a. Determining training objectives.
b. eveloping an activity schedule.
c. Assigning tasks to participants.
d. Preparing tools and materials.
e. Determining the type of craft product to be made.

At this stage, all decisions were made through consensus, ensuring that each participant shared responsibility for the program's success.

C. Training and Practical Implementation.

The training is conducted using a learning-by-doing method. Participants directly process used cement sacks into Wayang Beber painting materials. The processing stages include:

1) Collecting used cement sacks that are still suitable for use.
2) Cleaning off excess cement and dirt.
3) Drying the materials until they are completely clean.
4) Cutting according to the product pattern.
5) Joining the parts using glue according to the design.
6) Applying a protective coating, coloring, or decorating to make the product more attractive.
7) Finishing the product so it is ready for use or marketing.

D. Monitoring and Mentoring

During the training process, mentoring is provided to ensure participants are able to apply processing techniques correctly. Facilitators provide input on product quality, design innovation, production efficiency, and promotional marketing strategies to ensure participants' skills continue to develop.

E. Participatory Evaluation

The evaluation was conducted with all participants to assess the success of the activity based on the level of community participation, skills improvement, product quality, economic benefits, and environmental impact. Participants also reported any challenges they encountered and developed a follow-up plan to ensure the activity could continue independently.

Procedures of the Painting Implementation in Elementary Schools

A. Introducing the Tools and Materials for *Wayang Beber* Painting

Picture 3. Implementation Activities at MI Guppi Widoro

The *Wayang Beber* painting training commenced with a foundational introduction to *Wayang Beber* as a traditional art form, subsequently followed by a presentation of the required tools and materials to the participating students. This preliminary stage was designed to provide a comprehensive understanding of the media and instruments employed throughout the painting process. Furthermore, students were guided through the preparation of cement sacks, transforming them from raw industrial waste into a ready-to-use painting medium as a functional substitute for conventional canvas. The materials and tools utilized throughout this activity included cement sack canvas, acrylic paint, water, and brushes.

B. Designing the *Wayang Beber*

The prepared cement sacks were subsequently utilized as a painting medium upon which students sketched the *Wayang Beber* figures. In this stage, students were introduced to the proper techniques for producing neat and well-structured sketches. Beyond providing a hands-on artistic experience, the sketching process also served as an effective means of cultivating precision and patience among the students.

Picture 4. Designing the Wayang Beber on Cement Sack
Sources: Data Processed by Researchers, 2026

3. Introducing Color Types and Painting Techniques

Proper painting techniques are fundamental in ensuring that the resulting artworks are neat and visually appealing. The sketched figures of *Wayang Beber* characters, previously drawn onto the painting medium, were subsequently painted in accordance with each student's individual creativity. Students were provided exclusively with primary colors, granting them the freedom to develop and interpret their paintings as they saw fit. This approach was designed to refine fine motor skills while simultaneously cultivating creativity, perseverance, planning skills, and problem-solving abilities among the students. Upon completion, the paintings were left to dry until the applied paint had fully set, marking the finalization of the artwork.

Figure 4. The Production Process of *Wayang Beber* from Used Cement Sacks
Sources: Data Processed by Researchers, 2026

Throughout this activity, students demonstrated remarkable enthusiasm, diligently and patiently following each stage of the process of transforming cement sacks into a *Wayang Beber* painting medium. The completed paintings were subsequently brought home by the students as a memento of their newly acquired experience.

4. CONCLUSION

Indonesian traditional art, particularly *Wayang Beber*, constitutes one of the nation's most culturally rich heritages, distinguished by its own unique visual and narrative characteristics. *Wayang Beber*, which chronicles the romantic journey of Panji Asmorobangun and Dewi Sekartaji, has been officially recognized as an intangible cultural heritage by UNESCO. However, the interest of younger generations in this art form has experienced a declining trend as a direct consequence

of cultural modernization. Consequently, innovation is deemed essential to ensure that *Wayang Beber* remains both relevant and engaging in the contemporary era. One of the efforts undertaken in this regard is the utilization of discarded cement sacks as an alternative medium in *Wayang Beber* painting, an approach that not only supports cultural preservation but also contributes to environmental sustainability by reducing the accumulation of non-organic waste.

Through *Wayang Beber* painting training employing cement sack media, conducted across two public elementary schools in Pacitan Regency, students not only acquired new artistic skills but also actively engaged in the preservation of local cultural heritage and environmental stewardship. The participatory method implemented throughout this activity successfully cultivated a heightened sense of environmental awareness among the students, while simultaneously providing them with a valuable hands-on experience in producing eco-friendly artworks. Furthermore, this initiative is expected to strengthen the younger generation's understanding of the importance of preserving both cultural heritage and the natural environment, thereby fostering the creation of artistically and economically valuable products in the future. This activity is expected to improve local skills and well-being. Research by [7] explains that quality education can improve the well-being of residents and inspire other regions.

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