

DEVELOPMENT OF ALTERNATIVE WHITEBOARD MARKER INK USING CHARCOAL AND USED ENGINE OIL

ABSTRACT

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This study evaluates the potential of producing an alternative whiteboard marker ink using used engine oil and charcoal—two materials that are both sustainable and readily available. The research explores whether this combination can provide a viable substitute for commercial marker inks. Specifically, the study focuses on the ink's writing performance, erasability, and durability on whiteboard surfaces. The primary objective is to assess the acceptability of the developed ink in terms of its color, quality, and usefulness, while also identifying its unique features. An experimental research design was employed, with six participants serving as respondents and evaluators. Charcoal powder and used engine oil were mixed to achieve the desired ink viscosity and a smooth writing texture. The developed ink was evaluated using a structured survey questionnaire rated on a 4-point Likert scale. The responses were analyzed using weighted mean to assess the ink's unique features and to determine its acceptability in terms of color, quality, and usefulness. The findings indicated that the developed ink exhibited favorable characteristics in terms of writing performance and functionality. The average rating for the unique features was 3.78, suggesting that the materials contributed to the ink's distinctive qualities. The ink's color received an average rating of 3.77, while quality and usefulness each received 3.78 and 3.77 respectively. All values were interpreted as "Strongly Agree," confirming the high acceptability of the ink among respondents. The study concludes that charcoal and used engine oil are acceptable components for developing alternative whiteboard marker ink. However, the environmental impact of charcoal, particularly with excessive use, raises concerns. As a result, future research is encouraged to focus primarily on using used engine oil as the main component to improve sustainability and minimize ecological impact. The study demonstrates the potential for creating cost-effective and functional ink alternatives through innovative material repurposing.

RECOMMENDED CITATION

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