https://doi.org/10.21009/JISAE

JISAE (Journal of Indonesian Student Assessment and Evaluation)

ISSN : P-ISSN: 2442-4919 | E-ISSN: 2597-8934
Website : http://journal.unj.ac.id/unj/index.php/jisae

Vol 11 No 1 (2025)

Assessment of Fashion Aesthetic Knowledge among Fashion Design Students: A Study on Educational Measurement

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ABSTRACT

This study aims to assess students' Knowledge of fashion aesthetics through a structured cognitive measurement approach grounded in educational assessment theory. The research focuses on three cognitive domains: understanding (C2), application (C3), and analysis (C4), based on the revised Bloom's taxonomy. A test instrument consisting of 40 true-false items was developed and validated by experts in fashion aesthetics and educational Measurement. The research involved 135 students from the Fashion Design Education Program at Universitas Negeri Jakarta, selected using a multistage random sampling technique from a population of 226 students. The results showed that 106 students demonstrated adequate understanding (C2), 85 students were able to apply the Knowledge (C3), and only 34 students were capable of performing analytical tasks (C4). These findings indicate a strong foundation at the lower cognitive levels but a significant gap in higher-order thinking skills. The study highlights the importance of valid, domain-specific assessment instruments in vocational education and emphasizes the need for instructional strategies that promote deeper conceptual engagement, application in authentic contexts, and critical analysis. The results also suggest a need for curriculum redesign that integrates process-oriented and authentic assessments to prepare students for decision-making in aesthetic contexts.

Keywords: assessment in education, Measurement in education, fashion aesthetics, cognitive domains, vocational learning

INTRODUCTION

Assessment and Measurement in education are fundamental components for evaluating student learning and guiding curriculum improvement (Nitko & Brookhart, 2011; Black & Wiliam, 1998; Pellegrino, Chudowsky, & Glaser, 2001; Brookhart, 2013; McMillan, 2014). In the context of vocational and creative fields like fashion design, assessing aesthetic Knowledge is not only about right or wrong answers, but also about evaluating students' ability to apply, analyze, and reflect on visual and design principles (Marzano, 2001; Anderson & Krathwohl, 2001; Guskey, 2003; Stiggins, 2005; Shepard, 2000). Fashion aesthetics encompasses complex concepts involving color theory, body proportion, material texture, and cultural relevance, all of which can be objectively measured through structured assessments (Anastasi & Urbina, 1997; Messick, 1995; Thorndike & Thorndike-Christ, 2010; DeVellis, 2017; Haynes et al., 1995). However, studies show that educational institutions often lack appropriate assessment tools in creative fields, leading to inconsistent evaluation of student competencies (Brookhart, 2004; Shavelson, 2009; Popham, 2017; Wiliam, 2011; Linn & Gronlund, 2000).

Reliable Measurement of aesthetic Knowledge requires the development and validation of instruments that reflect the intended learning outcomes in fashion education (Cohen et al., 2017; Tuckman & Harper, 2012; Fraenkel et al., 2012; Creswell, 2012; Ary et al., 2010). As emphasized by Bloom's taxonomy, Knowledge acquisition must progress from

remembering and understanding to applying and analyzing (Bloom et al., 1956; Anderson & Krathwohl, 2001; Marzano, 2001; Airasian, 2001; Krathwohl, 2002). In the Fashion Design Study Program at Universitas Negeri Jakarta, the curriculum encompasses aesthetic theory and design principles; however, little is known about how effectively this Knowledge is internalized and applied by students (Shepard, 2000; Brookhart, 2004; Pellegrino et al., 2001; Guskey, 2003; McMillan, 2014). This highlights the importance of systematic assessment in revealing learning gaps and informing instructional interventions.

Based on previous studies, students' understanding of fashion aesthetics is often influenced by lifestyle trends and social contexts rather than theoretical grounding (Mardiana et al., 2023; Jumariah, 2020; Adiningtyas, 2025; Nabila, 2022; Dewi & Wening, 2019). The lack of measurement instruments tailored to aesthetic Knowledge contributes to superficial learning and limited application in real-life contexts (Brookhart, 2009; Wiliam, 2011; Popham, 2017; Shepard, 2000; Shavelson, 2009). Effective assessment strategies in fashion education must capture not only cognitive Knowledge but also the student's ability to synthesize aesthetic elements in practical settings (Messick, 1995; DeVellis, 2017; Nitko & Brookhart, 2011; Thorndike & Thorndike-Christ, 2010; Haynes et al., 1995). Furthermore, students often mimic fashion trends without understanding the fundamental principles of design appropriateness, resulting in inconsistent clothing choices that lack aesthetic cohesion (Indriyati & Kartikasari, 2024; Mardiana et al., 2023; Nabila, 2022; Dewi & Wening, 2019; Adiningtyas, 2025).

Thus, assessment in fashion aesthetics should be designed to evaluate students' awareness of body shape, color coordination, texture selection, and occasion-appropriateness, all of which require both Knowledge and judgment (Bloom et al., 1956; Anderson & Krathwohl, 2001; Shepard, 2000; Marzano, 2001; Popham, 2017). The goal of this study is to measure the extent to which fashion design students understand and apply fashion aesthetic principles during their university learning experiences. Through the use of a validated and standardized fashion aesthetic Knowledge test, this research seeks to contribute to the development of more accurate assessment tools in the field of aesthetic education (Messick, 1995; DeVellis, 2017; Black & Wiliam, 1998; Linn & Gronlund, 2000; Shavelson, 2009).

METHOD

This study adopts a quantitative descriptive research design to assess students' level of fashion aesthetic knowledge through educational measurement principles (Fraenkel, Wallen, & Hyun, 2012; Creswell, 2012; McMillan, 2014; Nitko & Brookhart, 2011; Cohen, Manion, & Morrison, 2017). The test instrument was developed based on A. Riyanto's theoretical framework, which outlines key components of fashion aesthetics, namely: clothing models, body shape compatibility, color theory, patterns, fabric textures, and their contextual use. These components were operationalized into cognitive domains according to the revised Bloom's taxonomy, focusing on the domains of understanding (C2), application (C3), and analysis (C4) (Anderson & Krathwohl, 2001; Bloom et al., 1956; Marzano, 2001; Airasian, 2001; Krathwohl, 2002). The instrument employed in this study consisted of 40 true-false items designed to capture the depth and complexity of students' aesthetic knowledge. As recommended by Messick (1995), Haynes, Richard, and Kubany (1995), and DeVellis (2017), the instrument underwent a construct validity test involving expert judgment from professionals in fashion aesthetics and educational assessment to ensure content relevance and clarity (Anastasi & Urbina, 1997; Thorndike & Thorndike-Christ, 2010).

The research population consisted of 226 fashion design students from Universitas Negeri Jakarta across the 2021–2024 cohorts. The sample size was determined using the Isaac and Michael sample table with a 5% significance level, yielding a total sample of 135 students selected through multistage random sampling, which supports representativeness and reduces

sampling bias (Tuckman & Harper, 2012; Ary, Jacobs, & Sorensen, 2010; Creswell, 2012; Shavelson, 2009; Brookhart, 2009). After administration of the test, student responses were analyzed using correlation analysis to explore the interrelationship between domains of aesthetic knowledge (understanding, application, and analysis) and overall knowledge acquisition (Black & Wiliam, 1998; Shepard, 2000; Popham, 2017; Linn & Gronlund, 2000; Brookhart, 2004). This method allows researchers to measure not only correctness but also the depth of students' cognitive processes in fashion-related decision-making, which is essential in aesthetic education assessment (Stiggins, 2005; Wiliam, 2011; Guskey, 2003; Pellegrino, Chudowsky, & Glaser, 2001; Nitko & Brookhart, 2011).

RESEARCH RESULTS AND DISCUSSION

The fashion aesthetic knowledge test was conducted on 135 students from the 2021 to 2024 batches of the Fashion Design Education Program at Universitas Negeri Jakarta. The largest proportion of respondents came from the 2024 cohort, with 44 students (32.6%), followed by 2023 (40 students or 29.6%), 2022 (32 students or 23.7%), and 2021 (19 students or 14.1%). The instrument used consisted of 40 true-false items, with item validity values ranging from 0.181 to 0.750. Based on the r-table for 135 respondents at a 5% significance level ($r = 0.176$), all items were declared valid, demonstrating acceptable construct validity (Messick, 1995; DeVellis, 2017; Haynes, Richard, & Kubany, 1995; Anastasi & Urbina, 1997; Thorndike & Thorndike-Christ, 2010). These results confirm that the test instrument reliably measures the intended constructs within the domain of aesthetic fashion knowledge, aligning with best practices in educational assessment (Nitko & Brookhart, 2011; Popham, 2017; McMillan, 2014; Shepard, 2000; Wiliam, 2011).

In the domain of understanding (C2), students were evaluated based on their ability to recall and comprehend concepts related to fashion aesthetics, such as model harmony, color theory, and dressing principles. The results indicated that 106 students could understand aesthetic knowledge, while 29 students could not. Specifically, 77 students fell into the "good knowledge" category, and 58 students were categorized as having "poor knowledge." These results suggest that foundational cognitive processes in fashion education are relatively strong among the majority, reflecting effective knowledge transmission at the comprehension level (Bloom et al., 1956; Anderson & Krathwohl, 2001; Marzano, 2001; Stiggins, 2005; Airasian, 2001). However, the 21.5% of students who struggled indicate a need for differentiated instruction to close conceptual gaps, especially in foundational content (Brookhart, 2009; Shepard, 2000; Guskey, 2003; Pellegrino, Chudowsky, & Glaser, 2001; Cohen, Manion, & Morrison, 2017).

For the application domain (C3), students' ability to utilize their understanding of aesthetic principles in practical fashion scenarios was measured. The analysis found that 85 students successfully applied this knowledge, while 50 were unable to do so. Interestingly, the categorization between "good" and "poor" aesthetic knowledge levels mirrored that of the C2 domain, suggesting a consistency in students' ability to transfer knowledge into practice (Anderson & Krathwohl, 2001; Nitko & Brookhart, 2011; Wiliam, 2011; Shavelson, 2009; Linn & Gronlund, 2000). These findings support the theory that application-level competence in vocational education must be scaffolded by both conceptual understanding and exposure to authentic tasks (McMillan, 2014; Marzano, 2001; Brookhart, 2004; Stiggins, 2005; Tuckman & Harper, 2012). Educators should therefore ensure that students receive not only theoretical inputs but also hands-on learning opportunities such as simulations, design practice, and reflective critique to solidify this skill level.

However, a notable performance decline was observed in the analysis domain (C4). Only 34 students were able to analyze and interpret fashion aesthetic principles at a higher cognitive level, while a substantial majority—101 students—were unable to perform at this

level. This indicates a steep drop-off in higher-order thinking skills, which is concerning from an assessment and curriculum perspective (Bloom et al., 1956; Shavelson, 2009; Guskey, 2003; Brookhart, 2009; Popham, 2017). Analysis involves recognizing implicit relationships, evaluating contextual fit (e.g., appropriateness of dress for events), and justifying choices in material, color, or design. The large number of students who could not perform analytical tasks suggests that current instructional strategies may lack emphasis on critical thinking and evaluative judgment in aesthetic decision-making (Messick, 1995; Pellegrino et al., 2001; Shepard, 2000; McMillan, 2014; Nitko & Brookhart, 2011).

The assessment results also underscore the broader implication that the ability to appear appropriately dressed is not merely a matter of taste, but of applied and contextualized knowledge. Selecting suitable clothing based on body shape, skin tone, setting, and social function requires critical aesthetic judgment that is developed through structured learning and robust assessment (Anderson & Krathwohl, 2001; Marzano, 2001; Black & Wiliam, 1998; Haynes et al., 1995; Brookhart, 2004). Unfortunately, many students continue to adopt fashion trends without adequate reflection or understanding of aesthetic principles. This confirms prior findings from Indriyati and Kartikasari (2024), who noted that superficial fashion knowledge leads to inconsistent or inappropriate appearance. The results of this study thus reaffirm the urgency of integrating assessment-driven pedagogy in aesthetic education, where measurement tools serve not only as evaluators of learning, but as instruments for driving deeper comprehension and meaningful application (Wiliam, 2011; Shepard, 2000; Brookhart, 2013; Stiggins, 2005; Guskey, 2003).

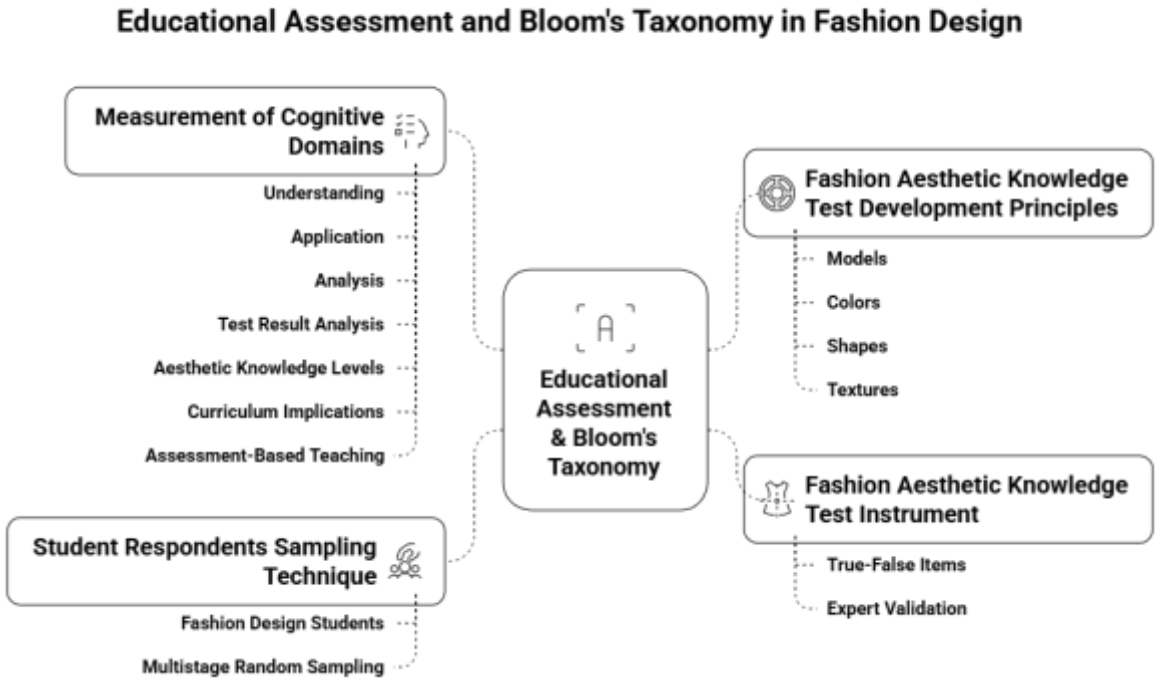

Figure. Conceptual Framework Diagram

Discussion

The findings of this study indicate that the majority of students (78.5%) demonstrated an adequate understanding of fashion aesthetic knowledge within the understanding domain (C2). This suggests that instructional strategies used in earlier semesters may have successfully facilitated conceptual learning related to fashion aesthetics, including elements such as color theory, body proportion, and clothing appropriateness (Anderson & Krathwohl, 2001; Bloom et al., 1956; Airasian, 2001; Marzano, 2001; Nitko & Brookhart, 2011). These results reinforce

the importance of well-designed assessments aligned with curriculum objectives to gauge students' cognitive levels effectively (Black & Wiliam, 1998; Shepard, 2000; McMillan, 2014; Popham, 2017; DeVellis, 2017). However, the presence of 29 students with poor comprehension suggests that despite generally effective instruction, there are still gaps in cognitive accessibility, which must be addressed through formative assessment and feedback (Guskey, 2003; Brookhart, 2009; Tuckman & Harper, 2012; Wiliam, 2011; Pellegrino, Chudowsky, & Glaser, 2001). Addressing these disparities is essential, as understanding is a foundational domain for progressing to higher-order skills such as application and analysis (Krathwohl, 2002; Linn & Gronlund, 2000; Thorndike & Thorndike-Christ, 2010; Shavelson, 2009; Haynes, Richard, & Kubany, 1995).

In the application domain (C3), where students are expected to transfer theoretical knowledge into practical decision-making, such as choosing clothing appropriate for their body type or for academic settings, only 85 students succeeded. The remaining 50 students struggled with this transfer, highlighting a gap between knowing and doing—a key concern in vocational and professional education (Marzano, 2001; Brookhart, 2004; Shepard, 2000; Stiggins, 2005; Black & Wiliam, 1998). This discrepancy may stem from a lack of practical learning opportunities such as guided fashion design labs, case-based learning, or reflective discussions, which are critical in helping students bridge theory and practice (Pellegrino et al., 2001; Wiliam, 2011; McMillan, 2014; Cohen, Manion, & Morrison, 2017; Nitko & Brookhart, 2011). Moreover, the assessment format using true–false items, while effective for knowledge recall, may be limited in measuring deeper judgment and decision-making skills (Messick, 1995; Popham, 2017; DeVellis, 2017; Anastasi & Urbina, 1997; Thorndike & Thorndike-Christ, 2010). This reveals the need for incorporating performance-based assessments or project-based evaluations to capture real-world competence in fashion decision-making (Guskey, 2003; Brookhart, 2013; Shavelson, 2009; Airasian, 2001; Stiggins, 2005).

The most striking finding emerged in the analysis domain (C4), where only 34 students demonstrated the ability to critique or evaluate fashion aesthetics based on context, use, and personal characteristics. This suggests a significant cognitive challenge among students when required to engage in abstract thinking, make evaluative judgments, or synthesize various aesthetic components into coherent fashion decisions (Anderson & Krathwohl, 2001; Bloom et al., 1956; Brookhart, 2009; Shepard, 2000; Marzano, 2001). These low results also reflect limitations in instructional approaches that may emphasize rote memorization or trend-following over critical thinking and reasoning in fashion (Indriyati & Kartikasari, 2024; Mardiana et al., 2023; Jumariah, 2020; Nabila, 2022; Dewi & Wening, 2019). Furthermore, assessment instruments must evolve beyond traditional item formats to include tasks that require justification of design choices, scenario-based critique, or reflective journaling (Popham, 2017; Shavelson, 2009; Messick, 1995; Brookhart, 2013; Wiliam, 2011). Integrating formative assessment practices that promote metacognitive awareness, such as peer feedback and self-assessment, can enhance students' higher-order thinking in fashion design education (Guskey, 2003; Stiggins, 2005; Pellegrino et al., 2001; Tuckman & Harper, 2012; Nitko & Brookhart, 2011). Ultimately, improving student performance in the analysis domain will require a combination of enhanced curriculum design, authentic assessment tools, and pedagogical strategies that emphasize reflection and critique.

CONCLUSION

Based on the assessment results of 135 students from the Fashion Design Education Study Program at Universitas Negeri Jakarta, this study revealed that students' knowledge of fashion aesthetics varies across cognitive domains. The majority of students demonstrated adequate competence in the domains of understanding (C2) and application (C3); however, a significant decline was observed in their ability to analyze (C4) aesthetic concepts at a higher

cognitive level. This indicates that while most learners are able to comprehend and apply fashion knowledge in practical contexts, they still struggle with higher-order thinking skills necessary for making complex aesthetic decisions.

Overall, the validated test instrument used in this study proved effective in measuring students' knowledge of essential aspects of fashion aesthetics. The findings highlight the importance of integrating both formative and summative assessments in vocational education—particularly in fashion design programs—not only to evaluate learning outcomes quantitatively but also to direct meaningful and reflective learning processes.

Recommendations

1. **Enhance Process-Based Assessment:** Lecturers and instructors should develop assessments that go beyond final outcomes and incorporate analysis and evaluative tasks. The use of case studies, fashion design projects, and reflective writing can promote students' higher-order thinking and critical decision-making in fashion aesthetics.
2. **Integrate Authentic Assessment Practices:** It is recommended that fashion education programs adopt authentic assessment approaches relevant to real-world contexts, such as portfolio development, simulated clothing selection for various occasions, and project-based assignments. This promotes both analytical and practical competencies in students.
3. **Provide Assessment Training for Instructors:** Educational institutions should offer professional development for lecturers on how to design and implement valid and reliable instruments to assess aesthetic knowledge, ensuring more objective and standardized evaluations aligned with 21st-century skill development.
4. **Develop a Responsive Curriculum:**The fashion design curriculum should explicitly include learning objectives related to aesthetic analysis, supported by measurable learning indicators that align with industry demands and the dynamic nature of fashion trends.
5. **Conduct Further Research on Affective and Psychomotor Domains:** Future studies are encouraged to explore the relationship between cognitive knowledge of fashion aesthetics and affective aspects (e.g., attitude toward clothing choices) as well as psychomotor skills (e.g., designing or styling outfits), in order to gain a more comprehensive understanding of students' competencies.

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