

Supporting Cultural Heritage Learning in The Digital Era: User Experience of a QR Code-Based Video Tutorial for Modern Modified Solo Putri Bridal Makeup

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Abstract

This study aimed to analyze the user experience quality of a QR Code-based video tutorial for modern modified Solo Putri bridal makeup instruction across three core dimensions: usefulness, ease of use, and interface quality. This research employed a descriptive quantitative approach involving 175 active Cosmetology Study Program students at Universitas Negeri Yogyakarta selected via simple random sampling from a population of 284 students. Data were collected using a 5 points Likert scale questionnaire comprising 12 statement items. Item-level validity testing confirmed that all items were statistically valid ($r = 0.785 - 0.924$, $p < 0.001$, exceeding $r_{table} = 0.148$, and reliability testing yielded a Cronbach's Alpha of 0.941. Data were evaluated using normalized mean scores on a 1–5 scale and percentage of the ideal score. The media achieved an overall aggregate mean score of 4.32 out of 5.00 (86.40% of the ideal score), demonstrating a very high level of user acceptance. Among the dimensions, usefulness recorded the highest mean score of 4.48 (89.60%), followed by ease of use at 4.35 (87.00%), and interface quality at 4.18 (83.60%). These findings indicate that the video tutorial was perceived as highly beneficial for supporting independent practical learning, user friendly on digital devices, and visually appealing. This study demonstrates that simple digital technology, such as QR Code-based video tutorials, is positively perceived and highly feasible as a supporting medium in vocational makeup education. It further illustrates how low-barrier digital tools can facilitate flexible access to traditional cultural makeup knowledge for contemporary learners.

Keywords: User Experience, Vocational Education, Cultural Heritage Education



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INTRODUCTION

Intangible cultural heritage represents a nation's identity, transmitted through knowledge, skills, social practices, and cultural expressions. UNESCO, through the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage, emphasizes the necessity of preservation through documentation, education, and intergenerational transmission. Education plays a strategic role as it enables cultural knowledge and skills to be learned systematically without eroding the values inherent in those traditions (Blake, 2023). One of Indonesia's intangible cultural heritage assets is the Solo Putri bridal makeup, originating from the Surakarta Palace (Keraton Surakarta). This makeup tradition not only serves an aesthetic function but also carries symbolic

meaning through the Paes (forehead ornament), Sanggul (hair bun), attire, and accessories, each representing values of purity, harmony, wisdom, and the hope for a prosperous household life (Santoso, 2010).

The development of the beauty industry and shifting societal preferences have driven the emergence of modifications to Solo Putri bridal makeup with contemporary touches. Although culture is inherently dynamic and adaptable, this phenomenon presents preservation challenges because modifications are often more oriented toward market trends than toward cultural conventions (Pakem), potentially diminishing authenticity. Similar challenges occur in the educational process at the Cosmetology Study Program, Faculty of Vocational Studies, Universitas Negeri Yogyakarta, where learning still faces limitations in terms of resources that systematically document procedures while simultaneously explaining the cultural meaning embedded within them. Practical sessions are conducted through direct demonstration within limited time, while students lack independent learning resources that can be accessed repeatedly in detail. This situation poses the risk of fostering understanding that focuses more on technical aspects than on cultural philosophy.

The development of digital technology opens new opportunities through cultural digitization, enabling systematic and accessible documentation of knowledge (Wei et al., 2026). One such form is video tutorials integrated with Quick Response (QR) Codes, which allow rapid access through digital devices without spatial or temporal limitations (Febrianti et al., 2024; Wu et al., 2025). In vocational education, video tutorials offer distinct advantages because they can present visual and procedural information sequentially, facilitating students' understanding of complex practical skills (Karim et al., 2026). Previous studies have shown that video tutorials can enhance understanding, practical skills, and learning autonomy (Fitri et al., 2025), while also serving as a means of cultural documentation that helps maintain procedural consistency and traditional skill standards (Intawong et al., 2025). From a user experience perspective, the success of a digital learning medium is influenced by users' perceptions of ease of use, interface quality, and usefulness (Alqurni, 2023).

Recent studies indicate that education and digital technology have significant potential to support the revitalization and sustainability of cultural heritage. Education can serve as a medium for revitalizing intangible cultural heritage through educative and participatory approaches (Reina Ortiz et al., 2026; X. Ren et al., 2026), while the integration of technology, culture, and community can expand access to cultural knowledge while simultaneously supporting engagement in preservation processes (K. Ren & Lam, 2026). However, the utilization of technology in the context of cultural preservation must maintain the authentic meanings and values inherent in cultural practices so that digitization does not stop at mere visual documentation

Based on the above elaboration, a research gap exists indicating that few studies have examined the quality of user experience of digital learning media that not only function as a means of improving makeup skills but also as a medium for documenting and transmitting the cultural values of modern modified Solo Putri bridal makeup. Therefore, this study aimed to analyze the quality of user experience of the QR Code-based video tutorial for modern modified Solo Putri bridal makeup based on indicators of ease of use, interface quality, and usefulness. Thus, research on user experience of QR Code-based video tutorials is not only relevant for developing vocational learning media but also for ensuring that digital technology genuinely functions as a feasible supporting medium for supporting access to cultural knowledge, rather than merely a practical tool that disregards the philosophical depth of the heritage being conveyed. The results of this study are expected to contribute to the development of vocational learning media while simultaneously supporting efforts to preserve intangible cultural heritage through the use of digital technology.

METHODOLOGY

Table 1. Respondent Characteristics

No	Characteristic	Category	Frequency (n)	Percentage (%)
1	Gender	Female	175	100%
		Male	0	0%
2	Age	18–20 years	65	37,1%
		21–25 years	110	62,9%
3	Occupation/Profession	Student	175	100%
4	Educational Background	Senior High	175	100%
		School/Vocational High		
5	Experience in Makeup Field	School	61	34,9%
		<1 year		
		1–3 years		
6	Experience Using Digital Learning Media/Modules	>3 years	78	44,6%
		Never	36	20,6%
		Never	25	14,3%
		Rarely	48	27,4%
		Often	72	41,1%
		Very often	30	17,1%

Source: Primary Data, 2025

This study employed a descriptive quantitative approach, as this approach was deemed appropriate for obtaining an objective description of the quality of user experience of the QR Code-based video tutorial for modern modified Solo Putri bridal makeup through measurement and quantitative data analysis (Sugiyono, 2018). The quality of user experience in this study was reviewed based on three main indicators: ease of use, interface quality, and usefulness (Alqurni, 2023). The population of this study comprised all 284 active students enrolled in the Cosmetology Study Program, Faculty of Vocational Studies, Universitas Negeri Yogyakarta during the academic

year. The sampling frame was obtained from the official student academic database provided by the faculty administration. To determine an adequate sample size representing the population, Slovin's formula was applied with a 5% margin of error ($e = 0.05$), which yielded a minimum required sample of 166 respondents. To ensure higher statistical power, a total of 175 respondents were selected using a simple random sampling technique. The characteristics of the 175 participants are summarized in Table 1.

The research instrument was a 5-point Likert scale questionnaire distributed via Google Form to respondents based on their experience using the QR Code-based video tutorial for modern modified Solo Putri bridal makeup. Data were analyzed using descriptive quantitative methods through frequency distribution, percentages, and mean scores for each indicator. The instrument consisted of 12 statement items covering three indicators of user experience quality. The indicator framework is presented in Table 2.

Table 2. Indicator Framework of the Instrument

No	Indicator	Item Code	Number of Items
1	Usefulness	KBF1–KBF4	4
2	Ease of Use	KMD1–KMD3	3
3	Interface Quality	KTP1–KTP5	5
Total			12

Source: Adapted and modified from (Alqurni, 2023)

The validity of the research instrument was evaluated at the item level using the Pearson Product-Moment correlation coefficient in SPSS 25. Each item score (KBF1–KBF4, KMD1–KMD3, and KTP1–KTP5) was correlated with the total score of its respective indicator dimension. An item was considered valid if its calculated correlation coefficient (r -calculated) exceeded the critical table value (r -table = 0.148 for $N = 175$ at a significance level of $\alpha = 0.05$). The analysis confirmed that all 12 statement items were statistically valid ($p < 0.001$), with item-total correlation coefficients ranging from 0.785 to 0.924 across all dimensions: Usefulness items ($r = 0.842$ – 0.924), Ease of Use items ($r = 0.810$ – 0.895), and Interface Quality items ($r = 0.785$ – 0.870). Reliability was assessed using Cronbach's Alpha, yielding an overall coefficient of 0.941, which significantly exceeds the standard threshold of 0.70 and confirms high internal consistency across the instrument.

RESULT AND DISCUSSION

Based on the descriptive analysis of 175 respondents, user experience quality was evaluated using normalized mean scores on a 1–5 scale and percentage of the ideal score (calculated as $[\text{Mean Score} / 5.00] \times 100\%$) to account for varying item counts across indicators (Usefulness: 4 items; Ease of Use: 3 items; Interface Quality: 5 items). Overall, the learning media

achieved an aggregate mean score of 4.32 out of 5.00 (86.40% of the ideal score), demonstrating a very high level of acceptance. The breakdown across dimensions is illustrated in Figure 1.

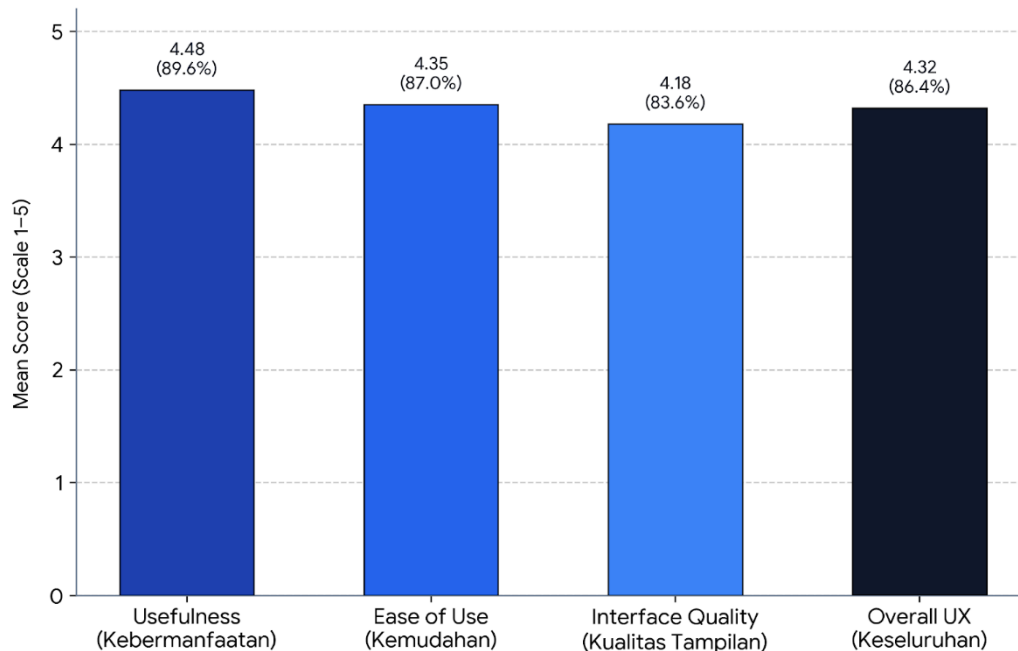


Figure 1. Comparison of Normalized Mean Scores
Source: Primary Data, 2025

As detailed in Figure 1, usefulness emerged as the most prominent dimension, achieving a mean score of 4.48 (89.60% of the ideal score). This finding suggests that the QR Code-based video tutorial effectively helps students comprehend complex materials and supports practical skill development outside face-to-face sessions. The ease-of-use aspect obtained a mean score of 4.35 (87.00%), indicating that the media is readily accessible and user-friendly on digital devices, consistent with technology-accustomed vocational students. Meanwhile, interface quality recorded a mean score of 4.18 (83.60%), reflecting high visual appeal, image clarity, and viewing comfort. Collectively, these results confirm that the QR Code-based video tutorial is a highly feasible and supporting learning medium for modern modified Solo Putri bridal makeup instruction.

These findings can be understood within the perspective of intangible cultural heritage preservation, which positions culture not as a static object but as knowledge and practices that are inherited and continuously reconstructed. UNESCO, through the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage, emphasizes the importance of education in the process of intergenerational transmission of cultural knowledge, while (Smith, 2006) emphasizes that cultural preservation must maintain the meanings and social practices that live within communities. In the context of this study, the use of QR Code based video tutorials demonstrates

that technology can serve as a medium for supporting cultural heritage learning to younger generations through media that are closer to digital learning habits. Thus, technology is not positioned as a replacement for cultural practices but as a supporting medium that helps document, access, learn, and transmit Solo Putri makeup knowledge. This finding reinforces the view that cultural preservation through education needs to be adaptive to technological developments, as long as the philosophical values and cultural meanings embedded in those practices are maintained.

The findings of this study examine the understanding that cultural preservation cannot be achieved merely through documentation or knowledge storage; rather, it requires a transmission process that enables the next generation to understand and practice the knowledge. Solo Putri bridal makeup contains complex cultural knowledge, ranging from Paes, Sanggul, accessories, attire, to the philosophy inherent in each element (Khofifah & Faidah, 2013; Santoso, 2010). When this knowledge is presented in the form of a video tutorial accessible via QR Code, the learning process becomes more flexible and allows users to relearn the stages of makeup application independently. The study results, which showed high ratings for usefulness and ease of use, indicate that digital technology can supporting cultural heritage learning of cultural knowledge in a more contextual manner. However, these findings highlight the boundaries of technology in traditional makeup instruction. Video tutorials effectively convey procedural steps and visual demonstrations, but they are designed to supplement—not replace—hands-on practice, direct interaction with makeup masters (maestro), and deep socio-cultural engagement. Thus, technology serves as an accessible learning support rather than a direct mechanism of cultural preservation.

These results align with (Reina Ortiz et al., 2026) who noted that educational tools facilitate engagement with intangible cultural heritage. While current literature often emphasizes complex immersive technologies such as VR or AR (X. Ren et al., 2026), this study demonstrates that simpler, low-barrier solutions like QR Code-based tutorials effectively satisfy user needs. Furthermore, in line with (Melisa Hazlin et al., 2026) regarding modernization in traditional cosmetics, this media facilitates cultural adaptation by preserving traditional philosophies while modernizing delivery for contemporary learners.

The main contribution of this study lies in the integration of simple learning technology with efforts to preserve intangible cultural heritage, specifically Solo Putri bridal makeup. This study demonstrates that QR Codes connected to video tutorials can serve as a bridge between traditional cultural knowledge and the learning patterns of the digital generation. From an educational perspective, this study provides an alternative learning medium that enables students to learn makeup skills flexibly, repeatedly, and independently outside face-to-face learning sessions. From a cultural preservation perspective, the video tutorial functions as a form of

documentation and a supporting cultural heritage learning that can help maintain the sustainability of Solo Putri makeup practices. This contribution becomes increasingly important because traditional makeup faces challenges from modernization and shifting preferences among younger generations. Nevertheless, digital innovation must remain grounded in an understanding of cultural conventions and philosophy so that the adaptation process does not lead to the loss of cultural meaning. Thus, this study offers a cultural preservation model that connects culture, education, and technology, where technology is used not to replace tradition but to expand access to cultural knowledge and support sustainable cultural inheritance processes.

CONCLUSIONS

This study concludes that the QR Code-based video tutorial for modern modified Solo Putri bridal makeup demonstrates a positive quality of user experience, with usefulness as the most dominant indicator. This finding confirms that simple digital technology is positively perceived and highly feasible as a supporting vocational learning medium, while facilitating flexible and independent access to traditional cultural makeup knowledge. However, the utilization of technology must remain grounded in an understanding of cultural conventions and philosophy so that the adaptation process does not erase the meaning of tradition. This study provides a tangible contribution to the development of learning media in vocational education and efforts to preserve intangible cultural heritage through contextual and sustainable technological integration.

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