

USABILITY TESTING OF THE DIGITAL PUBLIC LIBRARY OF AMERICA WEBSITE: A CASE STUDY ON DIGITAL ARCHIVES

¹Maryam Az-Zahra Suharwoto, ²Andreas Rio Adriyanto,

³Maria Josef Retno Budi Wahyuni

¹Telkom University, Indonesia

¹maryamazhara@student.telkomuniversity.ac.id, ²andreasrio@telkomuniversity.ac.id

Abstract

User experience is part of the most important aspects to consider in developing a website. Measuring user experience would lead to creating better websites, especially websites that specialize in digital archives such as Digital Public Library of America. As one of the leading countries in digital preservation and specializing in manuscripts and historical artifacts, the Digital Public Library of America website is one of the main sources of information that people access to retrieve information regarding that subject. Large amounts of preserved manuscripts are digitalized and open to public access. Users are able to reach a wide category of historical archives through a single medium, thus allowing a larger audience as it can reach people outside of America. Through usability testing, interviews and systematic literature review, several aspects of user experience become the main highlights and key points of the Digital Public Library of America website. This study employs a qualitative methodology by gathering data through interviews, direct observations, and literature review. Its main contribution is offering a strategic framework for developing comparable websites while addressing user requirements.

Keywords: *User experience; usability testing; digital public library of america; manuscripts; digital archives.*

INTRODUCTION

The rapid advancement of digital technology has transformed the way individuals access, store, and preserve information, including cultural heritage and historical archives. In this digital era, traditional libraries and archives are undergoing a major shift toward digitization, enabling broader access without geographical limitations. UNESCO (2015) emphasizes three main principles relevant to the context of this research, namely authenticity, integrated, and accessible. The principle of authenticity is related to the authenticity and credibility of data, where digital cultural heritage must be accountable in terms of the source, context, and integrity of the information (Edmondson, 2017). As defined in the Implementation Guidelines, the definition of authenticity of a cultural heritage is the credibility of the source (Edmondson, 2017, p. 3). Without a guarantee of authenticity, the scientific and historical value of a digital archive will experience a degradation of meaning. These three principles position digital archives as an information service system, not just a

data repository (UNESCO, 2015). Edmondson (2017) asserts that public trust in memory institutions is maintained through access to the scope of material in its collection and its preservation methods (p. 18).

The integrated principle emphasizes the urgency of digital cultural heritage management that includes the integration of collections, management systems, and inter-institutional relationships and media formats (UNESCO, 2015). Fragmented or partial preservation will actually hinder users in understanding the context and relationship between information. An integrated system is seen as one of the requirements to create sustainable access.

Meanwhile, the accessible principle asserts that digital cultural heritage must be widely accessible to the public. Accessibility is not limited to the availability of data online, but also includes the clarity of information structure and content variation for users. Implementation Guidelines define access as any form of collection, service, or memory institution knowledge, which can be proactive (initiated by the institution) or reactive (initiated by the user). This includes the provision of copies of materials, digitization and availability of content online, as well as exhibitions in various forms (Edmondson, 2017, p. 3). Thus, accessibility is closely related to user experience.

UNESCO formulated a number of fundamental principles in the preservation of digital cultural heritage that emphasize that the main purpose of preservation is not only to maintain the existence of data, but also to ensure the continuity of its meaning and accessibility for current and future generations (UNESCO, 2015). One of the key principles that states that preservation without access has no substantive value is "there is no point in preservation unless it leads to access" (Edmondson, 2017, p. 18). This principle affirms that preservation and access are two dimensions that cannot be separated in the management of digital cultural heritage. One of the prominent initiatives in this domain is the Digital Public Library of America (DPLA), a platform dedicated to preserving manuscripts, historical artifacts, and diverse digital archives. By digitizing valuable collections, DPLA not only safeguards cultural heritage but also opens them to a global audience, thereby expanding knowledge dissemination and promoting cultural preservation.

A Previous study on a structured and integrated digital platform that has a significant effect on increasing public awareness of research heritage can be seen in the Taiwan Cultural Memory Bank 2.0, where it was found that the incorporation of well-curated content is able to expand the reach of cultural access to the public compared to when digital content is only available in the form of ordinary digital archives (Hsu et al., 2026). In addition, evidence from a number of museums and institutions that utilize digital media shows that digital engagement expands the visibility and public participation of cultural heritage (British Council, 2025). This context supports the statement that the development of an integrated service

directory not only consolidates data, but also contributes to cultural awareness significantly.

Within this context, user experience has become a crucial factor in determining the effectiveness and efficiency of digital archive platforms. According to theories of user experience, the quality of interaction between users and an information system strongly influences how successfully users achieve their goals and how they perceive the platform as a whole. Evaluating user experience in the context of digital archives such as DPLA is therefore essential to identify strengths and weaknesses in design, usability, and content presentation. The targeted audience is the key factor in determining user satisfaction. Unspecified content without clear classification could lead to wasted resources, where it does not reach the suitable audience that would seem uninterested in the related topic. Classifying the targeted audience would enable these groups of people to obtain useful information and share it to more members of their community.

Usability testing has been widely recognized as one of the primary methods to assess user experience, as it provides practical insights into how users interact with a website and highlights potential barriers in navigation and information retrieval. Complementary methods such as interviews and systematic literature review further enrich the evaluation process by offering both empirical and theoretical perspectives. Together, these approaches provide a comprehensive understanding of user experience and inform strategic improvements for digital archive platforms. To evaluate this matter, several methods of research should be conducted to review the user experience of the individuals. Usability testing as one of the main methods of data collection is used to measure the user experience of the research subjects. The aspects of the Digital Public Library of America website are evaluated through several theories under the scope of digital archives.

This study focuses on evaluating the user experience of the Digital Public Library of America by employing a qualitative methodology that integrates usability testing, interviews and literature reviews. The main objective is to identify key aspects influencing user satisfaction and interaction while offering a strategic framework that can guide the development of comparable digital archive websites. Ultimately, this research aims to contribute to the broader discourse on digital heritage by emphasizing user-centered design principles that address the evolving needs of global audiences. Moreover, the additional expected output from this research is to become one of the benchmarks of other researches about digital archives with similar frameworks.



Figure 1. Digital Public Library of America Website
Source: DPLA, 2025

LITERATURE REVIEW

Modern digital archives serve not only as repositories for information but also as political spaces where various narratives compete for preservation. Representation in archives is deeply influenced by power relations that determine who deserves to be remembered and who is forgotten. Caswell and Cifor (2021) state that digital archives carry ethical and social dimensions closely related to practices of radical empathy for marginalized communities. Therefore, the archiving process is not a neutral activity, but rather an act that directly impacts information justice and collective history. The selection of data, access methods, and the organization of digital content reflect dominant cultural values and power structures.

Usability testing is a primary evaluation method in interactive systems testing that involves real users directly observing how they interact with a digital product. This method allows evaluators to identify specific obstacles or problems faced by users. Testing can take various forms, such as on prototypes, mock-ups, or final products, with approaches varying from direct observation, performance measurement, and eye tracking. Techniques such as "think aloud," interviews, questionnaires, and data logs from actual interactions are often combined to obtain comprehensive results (Ntoa, 2025).

Meanwhile, User Experience (UX) is the perception and response of users when they interact with digital products, systems, or services. UX not only assesses functional aspects, but also emphasizes satisfaction, comfort, and the relevance of user experiences in the context of increasingly complex digital technology. In the rapidly evolving digital environment, UX has become multidimensional because users now access media from various devices with different interaction characteristics. According to Wiryawan (2011), UX empowers users to determine their own level of satisfaction, emphasizing that design quality is judged based on actual experiences, not just technical features. Therefore, UX design needs to consider psychological, social, and contextual variables so that the results are meaningful and accepted by target users.

UNESCO (2015) emphasizes three key principles relevant to the context of this research: authenticity, integration, and accessibility. The principle of authenticity relates to the authenticity and credibility of data, where digital cultural heritage must be accountable in terms of source, context, and information integrity (Edmondson, 2017). As defined in the Implementation Guidelines, the definition of authenticity for cultural heritage is the credibility of the source (Edmondson, 2017, p. 3). Without guaranteed authenticity, the scientific and historical value of a digital archive will experience a degradation of meaning. These three principles position digital archives as information service systems, not simply data repositories (UNESCO, 2015). Edmondson (2017) asserts that public trust in memory institutions is maintained through access to the scope of materials in their collections and their preservation methods (p. 18).

RESEARCH METHOD

According to the Digital Preservation Coalition (2015), digital preservation is a systematic activity carried out to ensure long-term and sustainable digital access to materials. A service directory is one way to achieve preservation through digital media. In order to systematically evaluate the user experience of the Digital Public Library of America (DPLA) website, this research adopts a qualitative research approach to gain an in-depth understanding of user interactions and the factors influencing usability and satisfaction. This method is also known as an interpretive method because it emphasizes the interpretation of field data. The data obtained consists of human words and behavior collected through interviews, observations (usability testing), and literature studies. Thus, this research method is interpreted as an effort to gain understanding of a particular phenomenon through structured procedural steps (Rakha et al., 2021). Therefore, this method is considered quite appropriate for the solution sought in this research using data from user experience on the service directory website. This method consists of three main phases: data collection, data analysis, and synthesis of results.

A. Data Collection

In a qualitative approach, data is considered valid if the research results obtained by the researcher truly reflect the actual state of the object being studied (Sugiyono, 2019). To test data validity, data triangulation is generally required to complement qualitative methods. Triangulation is based on a multi-perspective perspective, meaning that conclusions are not drawn from only one direction. Researchers need to consider various perspectives to obtain a more complete picture and thus formulate comprehensive conclusions about the object being observed (Patton, 1984). Data triangulation and method triangulation can be carried out in similar types of qualitative research (Soewardikoen, 2019). Data collection

triangulation is conducted via three complementary methods. First, usability testing by assigning participants specific tasks on the DPLA platform, such as manuscript searches, exploration of historical collections, and metadata retrieval. This allows direct observation of the system's effectiveness and efficiency. Second, semi-structured interviews capture users' perceptions, difficulties, and overall experiences beyond quantitative metrics of usability. Third, a systematic review of existing literature is performed to identify theoretical foundations, previous assessments of digital archives, and best practices in user-centered design.

B. Data Analysis

This research involved interviews with several sources relevant to the research topic. These sources were selected because they align with the user persona of the study: members of the academic community or cultural activists who actively use the internet in Indonesia. Therefore, the interviews are expected to yield relevant and contextual information for this study. Observations from usability sessions are categorized into usability issues, navigation patterns, and user behaviors. Interview transcripts undergo thematic analysis to extract recurring themes related to user satisfaction, challenges, and expectations. Findings from the literature review were synthesized to establish contextual grounding and to compare the practices of DPLA with established digital heritage and user experience frameworks.

C. Synthesis of Findings

The final integration phase combines results from usability testing, interviews, and literature review to present a holistic evaluation of the DPLA website's strengths and weaknesses. This triangulation approach ensures the reliability and validity of findings through cross-verification across multiple sources. Subsequently, these insights inform the development of a strategic framework that emphasizes user-centered design principles to enhance digital archive platforms.

RESULT AND DISCUSSION

Findings

A. User Persona

The research is conducted on 3 user persona groups of people from the academic community and cultural enthusiasts using qualitative usability testing. Three generational groups are selected based on a 2023 Telecommunication Statistics publication released by the Indonesian Central Bureau of Statistics (BPS) that reports that approximately 47.19% of internet users in Indonesia fall within the 25-49 age group. This demographic represents individuals in their productive years who are actively engaged in educational and cultural activities. In contrast, the Indonesian Higher Education Statistics 2020 published by the Ministry of Research, Technology, and Higher Education indicates that the majority of university lecturers in Indonesia in 2020 were aged between 56 and 65 years.

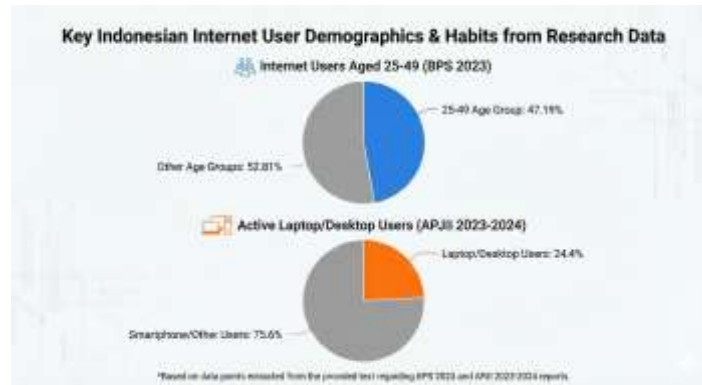


Figure 2. Pie chart of internet users in Indonesia

Source: APJII, 2023-2024

Furthermore, the APJII Internet Usage Report 2023-2024 shows that although most Indonesian internet users primarily access the internet via smartphones, nearly one quarter of users (24.4%) continue to actively use laptops or desktop computers to access websites. These findings suggest that individuals aged 19-54 constitute a productive group that is actively involved in academic activities and remains the most dominant segment of laptop and PC users. Consequently, website-based service directories are particularly relevant for this demographic. The 19–54 age range can be further categorized into three generational groups: Generation Z, Generation Y, and Generation X. Although quantitative indicators (time-on-task and confidence ratings) were collected, they are used solely as supporting evidence to inform a thematic and interpretive analysis of user experience patterns.

Generation Z:

This generation is commonly defined as individuals born between the mid-1990s and the early 2010s (McKinsey & Company, 2024). This cohort, typically those born after 1996, represents the first generation to grow up with continuous exposure to the internet, smartphones, and digital technologies from an early age, and is therefore often referred to as digital natives. A 2024 report by the Pew Research Center indicates that 46% of Generation Z individuals aged 13-17 are “almost constantly online,” highlighting their intensive engagement with digital environments.

Furthermore, recent data from Deloitte (2025) reveal that more than 98% of Generation Z users access the internet on a regular basis, with an average daily usage duration of approximately 6 hours and 40 minutes. Within this group, 81% are also reported to be active on social media platforms on a daily basis (Attest, 2025). As a result, Generation Z can be characterized as the most digitally immersed cohort in terms of media consumption. In the Indonesian context, out of the total active internet user population of 79.5% equivalent to approximately 221.56 million individuals in 2024. Generation Z constitutes the largest user segment, accounting for 34.4% of all internet users nationwide.

Generation Y:

Commonly referred to as the Millennial generation, Generation Y comprises individuals born between 1981 and 1996 (Pew Research Center, 2019). This cohort represents a transitional generation that matured alongside the expansion of the internet and digital technologies. Unlike Generation Z, however, Millennials are not entirely digital natives, as a portion of their early life was shaped before widespread internet accessibility became common.

According to the Millennial Content Consumption Fact Sheet (2025), nearly all Millennials are regular internet users, with approximately 86% actively engaging in digital platforms (Content Science Review, 2025). Due to their frequent use of digital media for information seeking, communication, and professional activities, Millennials constitute a substantial proportion of active internet users. Their digital engagement patterns reflect a balance between adaptability to emerging technologies and familiarity with pre-digital information practices.

Generation X:

Generation X refers to individuals born between 1965 and 1980 (Pew Research Center, 2023). This generation is often characterized as independent and pragmatic, having grown up during a technological transition period. Their early years were largely untouched by internet access, while the rapid development of information technology occurred when they had already entered adulthood and their productive years (Britannica, 2024).

Despite not being digital natives, Generation X remains actively engaged with digital media in contemporary contexts. A survey conducted in 2023 found that approximately 92% of individuals in this cohort access the internet on a daily basis, spending an average of 1.5 hours per day scrolling through digital content (Sprout Social, 2023). Although their level of digital engagement is lower compared to younger generations such as Generation Y and Generation Z, Generation X continues to represent a significant and active user group of digital technologies and online platforms.

B. Usability Testing and Post-Task Interview Findings

Table 1. Standardization of Usability Testing Based on Customer Journey

Source: Suharwoto, 2025

No.	Customer Journey Mapping Stages	DPLA
1	<i>Entry / Orientation</i>	Go to the Exhibitions page
2	<i>Search / Browse</i>	Choosing an exhibition theme
3	<i>Filtering / Refining</i>	Filtering content through the exhibition structure
4	<i>Detail Exploration</i>	Opening an object in an exhibition
5	<i>Understanding</i>	Reading a storyline & caption
6	<i>Evaluation / Decision</i>	Determining the most interesting objects

After testing the 3 user personas and observing their interactions based on the theories used in this research, it is proven that DPLA provides a robust, inclusive, and institutionally grounded usability experience. Variations in interaction patterns reflect generational differences in cognitive and interpretive preferences rather than disparities in usability quality. The platform's emphasis on narrative coherence and contextual depth particularly resonates with Generation X and Generation Y, while remaining accessible to Generation Z through flexible exploration pathways.

The main key points of differentiation among the personas are that Generation X appeared most comfortable with DPLA's text-rich, institutionally structured presentation, reflecting familiarity with traditional archival and library systems. Generation Y balanced narrative reading with selective scanning, adapting smoothly to the platform's hierarchical structure. Generation Z relied more on visual anchors such as images, headings, and highlighted sections to navigate the narrative flow, indicating a preference for rapid information access.

In correlation to the functional classification of the website being a service directory, The usability findings across Generation X, Y, and Z reinforce this classification. All generational groups were able to complete the standardized task without errors, indicating that DPLA's navigation depth and aggregation logic effectively support exploratory information retrieval. However, generational differences in interaction pace suggest varying levels of comfort with the inherent complexity of service directories. While Generation X and Y demonstrated linear navigation patterns aligned with directory-based exploration, Generation Z adopted a more selective and comparative approach, reflecting different strategies for engaging with multi-offering systems.

DPLA's high confidence ratings across all generations indicate strong usability performance in terms of learnability, memorability, and satisfaction. However, the generational differences in interaction behavior highlight how UX is shaped by contextual and psychological variables. Generation X users exhibited high tolerance for text-heavy interfaces and institutional framing, reflecting familiarity with traditional archival systems. Generation Y balanced efficiency and exploration, while Generation Z showed heightened sensitivity to narrative density and relied more on visual anchors.

Interface-wise, DPLA exhibitions are displayed in a well-curated grid structure with well-organized image thumbnails, backed by a header that is consistent and easily navigable across pages. Simple menus (such as Exhibitions and Primary Source Sets) are positioned in both the header and footer, making navigation simple and linear. The overall structure successfully separates exhibition titles from their descriptions for better readability, and the use of a white and gray color palette with balanced serif and sans-serif typography produces an academic and polished image. DPLA's design

effectively manages cognitive load overall, but its narrative density may place higher processing demands on users accustomed to faster, chunked information consumption.

Generation Z seemed to have a slight hesitation when facing multiple contents as a result of a smaller capacity in receiving information. While all users traversed identical journey stages, their emotional and perceptual responses varied. Generation X experienced the journey as coherent and reassuring, Generation Y as efficient and purposeful, and Generation Z as exploratory and evaluative. These variations reveal subtle misalignments between institutional narrative design and generational expectations.

The usability testing approach aligns with Ntoa's (2025) emphasis on observational and qualitative evaluation. Metrics such as time-on-task and confidence ratings were not used for statistical comparison, but as indicators supporting behavioral interpretation. DPLA's consistent layout and visual grouping support Gestalt principles such as proximity and continuity, aiding user orientation across exhibitions. Generation X and Y benefited from this visual stability, whereas Generation Z relied more on emergent patterns and prominent visual elements to navigate dense narratives.

DPLA provides rich contextual data, which aligns well with the processing preferences of Generation X and Y. For Generation Z, however, the same richness prompted selective engagement strategies to regulate information intake. Strong institutional credibility and narrative authority reflect core principles of digital preservation: authenticity, integrity, and long-term access. High trust levels across generations indicate successful preservation communication, not merely technological sustainability.

Based on post-task interviews, Generation Z demonstrated a strong preference for clean visual displays, clear hierarchies, and structured exploration paths. They can navigate English-language websites without significant difficulty, but quickly lose focus when too much information or objects are displayed on a single page. This generation understands and retains information more easily when it's presented visually, concisely, and with clear storytelling.

Generation Y has a higher tolerance for complex information structures than Generation Z. This group is more oriented towards system stability, navigation consistency, and neatness of information structure rather than purely visual aspects. They are able to understand both text-based and visual content as long as the presentation is systematic and not confusing. Storytelling and visual experiences are considered added value, but not a primary requirement for accessing the service directory. In general, Generation Y feels comfortable if the display is neat, stable and supports efficient information retrieval, although not always immersive.

Generation X exhibits a strong orientation toward functionality, clarity of structure, and efficiency in accessing information. They don't particularly care about the visual or narrative aspects of the experience as long as the service directory is easy to understand and the navigation is consistent. This generation tends to use service directories in a straightforward manner to complete tasks, rather than for exploration. A simple layout, easy-to-read text, and a stable structure are key factors in their comfort. Websites that are overly complex, inconsistent, or navigationally confusing can potentially undermine the confidence and comfort of Generation X users.

Table 2. Post-Test Results

Source: Suharwoto, 2025

No.	Generation	Time on Task	User Confidence
1	Generation X	±2,2 Minutes	High (5)
2	Generation Y	±2,2 Minutes	Minutes (5)
3	Generation Z	±2,7 Minutes	Minutes(5)

Analysis/Discussion

Observations were conducted through usability testing on benchmark websites by five individuals from the user persona group (Generation Z, Generation Y, and Generation X) who are active internet users, academics, or cultural activists with basic English language skills (EPRT 499-450). Users were given 30 minutes for independent exploration before being given a task with the same customer journey flow for each website. All five websites were tested using an equivalent customer journey mapping flow, allowing for comparable user experience and cognitive load differences.

Cognitive load was also assessed from the initial search, filtering, detailed exploration, and comprehension to decision-making. This was observed through visual density, navigation complexity, and the amount of information users had to process. specifically to create a simpler and more efficient navigation structure, information hierarchy, and exploration flow to minimize user cognitive load. This study examined intergenerational usability experiences on the Digital Public Library of America (DPLA) using a qualitative usability testing approach and a standardized customer journey framework. The findings demonstrate that DPLA provides a functionally robust and cognitively accessible digital heritage platform that supports task completion across Generation X, Generation Y, and Generation Z without observable usability breakdowns.

The research results indicate that three target audience groups are also active internet users and cultural activists: Generations X, Y, and Z. Through a simple and user-friendly homepage, the interactive design of the service directory has been shown to increase user interest in searching for and learning new information and improve memory. Easy-to-read typography also helps users more quickly understand scientific papers and manuscripts. In general, users with the current persona

demonstrate good digital literacy and can understand English-language content without translation.

Post-task interviews revealed differences in cognitive patterns and website usage preferences between Generations Z, Y, and X. Generation Z tends to be oriented toward visual experiences and narrative exploration flows, while Generation Y places greater emphasis on structural stability and system consistency. Generation X, on the other hand, demonstrates a strong orientation toward efficiency, clarity, and system functionality as a means of information retrieval. Based on this analysis, an empathy map for each user persona can be compiled to identify pain points.

A. Empathy Maps

Generation Z:

Users like visually appealing, easily navigable interfaces that are free of language barriers. They can easily access service directories as long as the content is succinct and organized. When faced with more than seven items at once, they frequently become distracted, suggesting that they are sensitive to cognitive overload. In order to improve comprehension and recall, Generation Z prefers clear layouts, a strong visual hierarchy, intelligible font, and adequate spacing between items. On the other hand, their capacity to process content is adversely affected by cluttered pages, ambiguous hierarchies, and dense information, which results in confusion and decreased engagement.

Generation Y:

Users favor structured, consistent, and predictable information over solely visual appeal, based on the which enables them to methodically explore even complicated service directories. As long as the information is clear, well-organized, and supported by logical navigation or search options, they feel at ease reading a lot of text. Professional, reliable, and effective interfaces that improve usability and satisfaction are valued by Generation Y. However, dissatisfaction, exhaustion, and decreased attention can result from inconsistent organization, excessively dense information without obvious visual distinction, or a lack of relevant context.

Generation X:

Users prioritize easily accessible and well-organized information over visual complexity or interactivity which shows a strong preference for simplicity, clarity, and functionality. They frequently use menus or search functions to navigate directly, concentrating on doing activities quickly and without needless interruptions. Overly complicated structures, cluttered designs, or unclear menus cause confusion and aggravation, especially when they have to repeat processes or struggle to discover necessary information. In contrast, they are most at ease with consistent, simple navigation and understandable layouts.

B. Pain Points:

Generation Z's sensitivity to visual clutter and cognitive overload is their main source of discomfort. Users quickly become distracted and find it difficult to digest information efficiently when interfaces display more than seven components at once or lack a clear hierarchy. Confusion and disengagement result from dense layouts, inadequate spacing, and illegible font that further impair comprehension. Therefore, their capacity to engage with service directories effectively is hampered by interfaces that are excessively crowded and unstructured.

Overly complex information display and inconsistent structure are the biggest issues facing Generation Y. Their experience suffers when material is poorly organized or visually separated, even though they are capable of handling complicated and text-heavy content. Their capacity to explore methodically is disrupted by irregular navigation patterns or sudden structural changes, which leads to frustration and cognitive exhaustion. Additionally, their engagement and general contentment are decreased when content lacks significant context or clarity.

Complexity and unclear navigation are the main sources of discomfort for Generation X. They find it challenging to find information quickly on interfaces that are too complex, visually busy, or inconsistent, which causes confusion and frustration. Because of their task-oriented approach, usability is severely hampered by unclear menus or the requirement to repeat procedures. Gen X consumers may feel overwhelmed and ineffective in achieving their objectives when service directories do not offer clear, consistent navigation and readable layouts.

Across all generational groups, participants were able to complete the assigned task effectively and expressed high levels of confidence in the platform. This consistency indicates that DPLA's information architecture, navigational structure, and institutional presentation successfully minimize extraneous cognitive load while maintaining clarity and predictability. The absence of usability errors further confirms that the platform meets core usability criteria related to effectiveness and efficiency.

Despite this overall consistency, meaningful generational differences emerged in interaction style and interpretive behavior. Generation X and Generation Y demonstrated linear, goal-oriented navigation patterns that aligned closely with DPLA's text-rich, narrative-driven structure. In contrast, Generation Z exhibited a more exploratory and selective engagement strategy, characterized by visual scanning, comparative evaluation, and fragmented reading. Importantly, these differences did not reflect usability deficiencies but rather distinct cognitive and meaning-making strategies shaped by generational digital experiences.

The findings suggest that DPLA's service-directory model and curatorial storytelling are particularly effective for users accustomed to structured information environments, while remaining sufficiently flexible to accommodate younger users through alternative exploration paths. However, the observed interaction patterns

indicate potential opportunities for enhancing inclusivity, such as incorporating visual summaries or modular narrative elements to better support rapid orientation and information processing for Generation Z.

CONCLUSION

Overall, this study contributes to digital heritage and UX research by demonstrating that usability in cultural platforms should be evaluated not only through efficiency metrics but also through interpretive engagement, cognitive alignment, and generational context. The case of DPLA illustrates how a single, standardized task flow can reveal nuanced experiential differences, reinforcing the value of qualitative usability testing in the design and evaluation of digital heritage systems. Hopefully, this research will help further studies on this topic or on similar subjects within the scope of digital archives.

REFERENCES

- Digital Preservation Coalition. (2015). *Digital preservation handbook* (2nd ed.). Digital Preservation Coalition.
- Deloitte. (2025). *Global Gen Z and Millennial survey*. Deloitte.
- Fränti, T., Gali, G., & Istodor, L. (2017). Web page classification based on the combination of URL and content features. *Information Sciences*, 414, 146–161. <https://doi.org/10.1016/j.ins.2017.06.003>
- Interaction Design Foundation. (2023). *Gestalt principles of visual perception*. <https://www.interaction-design.org>
- International Organization for Standardization. (2018). *ISO 9241-11:2018 ergonomics of human-system interaction—Part 11: Usability: Definitions and concepts*. ISO.
- Nielsen, J., & Molich, R. (1990). Heuristic evaluation of user interfaces. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 249–256). ACM. <https://doi.org/10.1145/97243.97281>
- Ntoa, C. (2025). Usability testing methods and practices in human–computer interaction. *Journal of Usability Studies*, 20(1), 22–35.
- Pew Research Center. (2019). *Defining generations: Where Millennials end and Generation Z begins*. Pew Research Center.
- Pew Research Center. (2024). *Teens, social media and technology*. Pew Research Center.
- Rogers, E. M., Miller, D. M., & Judge, W. Q. (1999). Organizational information processing theory. *Organization Science*, 10(3), 346–365. <https://doi.org/10.1287/orsc.10.3.346>
- Shiratori, T., Kato, K., & Sato, Y. (2021). Customer journey mapping as a design research tool in product–service systems. *Sustainability*, 13(3), 1–17. <https://doi.org/10.3390/su13031307>
- Sprout Social. (2023). *The Sprout Social Index: Digital consumer trends*. Sprout Social.
- Sweller, J. (2024). Cognitive load theory: Foundations, recent developments, and future directions. *Educational Psychology Review*, 36(1), 1–25. <https://doi.org/10.1007/s10648-023-09770-3>

Wiryawan, A. (2011). User experience (UX) sebagai bagian dari pemikiran desain. *Humaniora*, 2(2), 1158–1166.