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CULTURAL HERITAGE AND NEW TECHNOLOGIES: EXPLORING OPPORTUNITIES FOR CULTURAL HERITAGE SITES FROM GEN Z'S PERSPECTIVE

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Abstract:

The preservation and promotion of cultural heritage has been a major focus of European and international policy makers and researchers. Access to it is transformational (europeana.eu), which is why new technologies seem to be a good opportunity in doing so, especially in education. The young generation (Gen Z) is one of digital natives, as a result of their early exposure to the Internet and electronic gadgets. Thus, they usually expect more engaging experiences. At the same time, games have a powerful role in improving key skills and competencies required for success in education and professional life (Pellegrino, Hilton, 2012). Thus, this paper reviews available literature, exploring opportunities for cultural heritage sites through digital storytelling and gamification. A detailed bibliometric analysis provides insights about the progression of scientific papers related to cultural heritage and new technologies. Data was extracted from Scopus and mapped with VOSviewer visualization tool. Literature on Generation Z perception on cultural heritage is scarce. Even research on perception on cultural heritage of different generations is limited, with papers published in the last 2-3 years.

Key words: *cultural heritage, Gen Z, digital storytelling, gamification, secondary research*

1. Introduction

Generation Z (born 1995 - 2009) is a generation that grew up in the digital age. The youngsters comprising this generation are values-driven, concerned about the environment, and the state of the world (Deloitte, 2023). Social media platforms like TikTok, Instagram, Snapchat, and Twitch are central to their daily life, with TikTok leading in time spent (Brito, 2023). They use social media for news, relationships, and inspiration. Gen Zs sum about 40% of all consumers of today. 79% of them actively seek authenticity in their chosen brands and they usually spend 8 seconds to decide whether content is worth their time (Chauhan).

Cultural heritage encompasses the tangible and intangible legacies of a society, including "sites, objects and intangible things that have cultural, historical, aesthetic, archaeological, scientific, ethnological or anthropological value to groups and individuals" (unesco.org). It represents a collective memory and identity of people, providing a sense of belonging. Thus, the preservation and promotion of cultural heritage are essential for understanding the past, enriching the present, and shaping the future.

The (new) technologies available drive digital applications for cultural heritage. 3D modeling and Virtual Reality (VR) can be used for reconstructing historical sites, artifacts, and buildings in three-dimensional space, allowing for virtual tours and detailed analysis. Augmented Reality (AR), on the other hand, enhances real-world environments by overlaying digital information on top of them, providing interactive experiences at heritage sites. Digital archiving and databases with digitized documents, photographs, and artifacts (like europeana.eu, for example), make them accessible for online research and public viewing. Geographic Information Systems (GIS) can be used for mapping and spatial analysis of heritage sites, enabling better management and conservation planning. Digital storytelling can be used to engage a broader audience through social media platforms, while mobile applications can offer guided tours, detailed information, and interactive experiences for visitors at cultural heritage sites.

This paper contributes to the existing literature with a detailed bibliometric analysis (using data extracted from Scopus) about the progression of scientific papers related to cultural heritage and new technologies.

2. Understanding Generation Z

Generation Z (born 1995 - 2009) is a generation that is getting more and more attention from researchers worldwide. This generation has been described under different terms: iGeneration, Gen Tech, Online Generation, Post Millennials, Facebook Generation, Switchers, “always clicking”, C Generation, R Generation (Dolot, 2018).

Being raised with access to internet, smartphones, laptops, and other IoT devices, they are digital natives. They have integaretd technology in their lives and through this (the technology they use), globalisation and culturally diverse times, they are truly global, part of large, 24/7 connected (social media) networks. Gen Zs prefer visual content, opting to watch a video summarising an issue rather than reading an article discussing it (Mccrindle). Watched on a mobile of course, bite sized, personalised information defines this generation (Fell, 2020). Thus, they are likelier to engage with brands with a solid online presence, particularly on platforms like TikTok and Instagram (Brito, 2023). 75% of the Gen Z audience wants brands to do something new and unique (SuperAwesom report, 2023).

Taken all of the above in consideration, it can be said that Gen Z want institutions / brands that speak their language, meaning brands with personality (brand voice, humor and authenticity), a human touch in a world of digital noise. They want institutions / brands to engage with them in conversations and to listen to their feedback. Also, they prefer content that is engaging, shareable, and buzzworthy (like videos, memes, and interactive experiences). Thus, institutions / brands can use their (customer) feedback and reviews as user-generated content in order to earn the trust of other potential customers and make the current ones feel like they’re a part of something bigger. Along this last idea, building a community (of people “like them”, according to SuperAwesom report, 2023) or spaces for them to connect (for example offline events, social media groups, forums, gaming platforms) is another way in which institutions / brands could better interact with them.

As regards learning preferences, their main learning style is multi-modal. Gen Z learners have a strong inclination towards gamified learning experiences (Saxena, Mishra,

2021). Hence, institutions / brands should consider integrating gamification elements such as points, badges, levels, quests or collectible items in their interactions with this generation, because they are particularly effective in engaging and motivating Gen Zs.

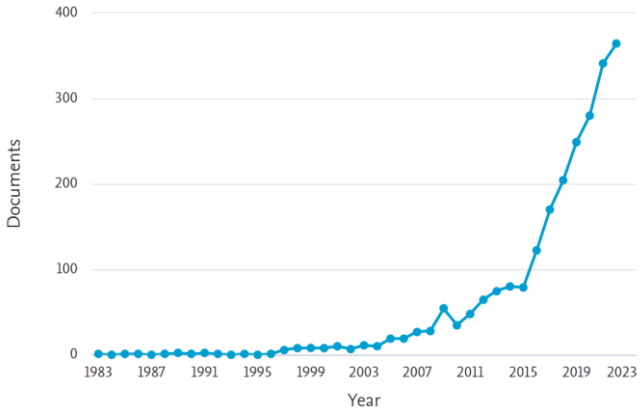
3. An overview of the existing literature on cultural heritage and new technologies

Research on Generation Z perception on cultural heritage is still in its early stages. A search in the Web of Science database on the keywords "cultural heritage", “perception" and "generation Z" has returned only 3 results. A more general one, about perception on cultural heritage of different generations has returned 25 results, with articles covering this topic written between 2010-2022, with a visible increase in 2019 and 2021.

Thus, for a comprehensive view on the literature on cultural heritage and new technologies, bibliographical information was drawn from Scopus. The search in the database took place on April 10, 2023 and considered four main categories of keywords: “cultural heritage”, “digitalization”, “technology” and “gamification”. All these were search results in the titles, abstracts and keywords of Scopus documents (TITLE-ABS-KEY), as follows’: “(TITLE-ABS-KEY ("cultural heritage") AND TITLE-ABS-KEY ("digitalization" OR "technology" OR "gamification"))”. The timeframe covered in the search was 1980-2022. The search was further limited to journals with the subject areas of (1) Social Sciences, (2) Business, Management and Accounting, and (3) Economics, Econometrics and Finance and to articles in journals in their final publication stage. Any other type of documents (review papers, letters, erratum, etc.) as well as publication outlet (books, conferences, etc.) were excluded from the search. No restrictions on the articles’ publication languages has been imposed.

The search returned 2,339 articles, published between 1983-2022, with a visible increase since 2015 (see Figure 1). For example, in 1983 there was only one paper published on this topic, but the number of papers increased to 79 in 2015 and then skyrocketed to a whooping 364 in 2022. These numbers are a reflection of both heightened interest in this research areas, but also of the flamboyant evolution of open access publication – of the 2,339 articles, 978 were published in open access format.

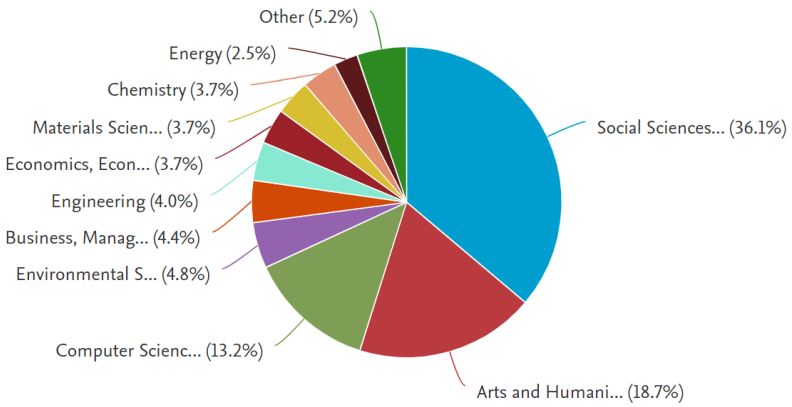
Figure 1. Evolution of number of articles per year, 1983-2022



Source: Author’s work on Scopus

As regards the subject areas associated with the journals where these studies were published, Figure 2 shows that Social Sciences (36.1%), Arts and Humanities (18.7%) and Computer Science (13.2%) included most articles. Most journals are included by Scopus in more than one Subject area, which explains the diversity of areas illustrated in Figure 2.

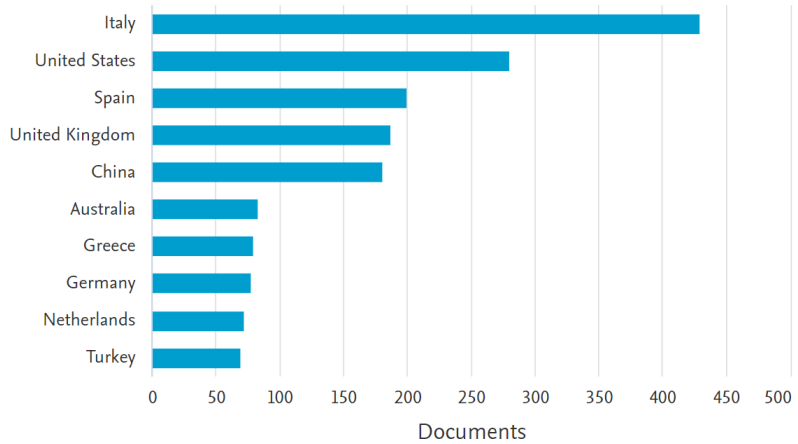
Figure 2. The most important subject areas



Source: Author's work on Scopus

The existing literature on these topics is a result of the contributions of authors from all around the world, as it can be seen in Figure 3, which presents the countries with most contributions. Italy is on the first place, with 429 articles, followed by the United States (279), Spain (199 articles) and the United Kingdom (186 articles). Other countries such as China, Australia, Greece, Germany, Netherlands and Turkey are present in the top ten countributing countries to this field of research. However, it should be noted that many of the articles are co-authored by scholars from different countries, therefore these figures are a reflection of this reality.

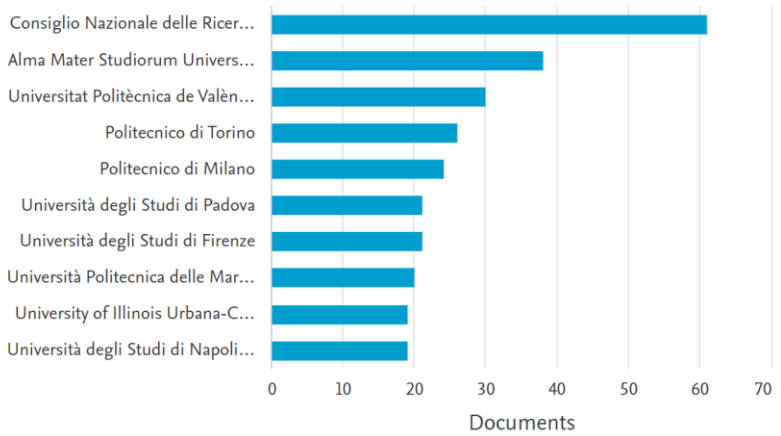
Figure 3. Countries with most articles about cultural heritage and new technologies



Source Author's work on Scopus

Next, I took a closer look at authors' affiliations (Figure 4), observing that especially Italian academics (universities and research institutes) research these topics. Among Italian institutions, Consilio Nazionale delle Ricerche is present in 61 articles, Alma Mater Studiorum Università di Bologna in 38 articles, Politecnico di Torino in 26 articles, Politecnico di Milano in 24 articles, Università degli Studi di Padova in 21 articles and Università degli Studi di Padova also in 21 articles. This suggests that Italy is a significant research pole in this field, and Italian researchers are involved in research partnerships with scholars from around the world (over the timeframe of our analysis, scholars from Italian institutions collaborated with other European institutions for 83 papers, but also with authors from the North-America - United States and Canada - (16 papers), Asia (11 papers), South-America (4 papers) and Africa (7 papers).

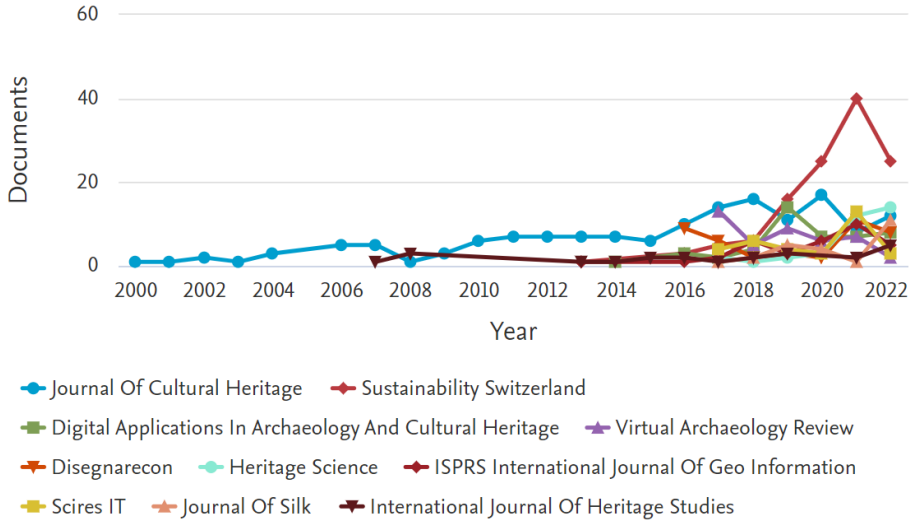
Figure 4. Institutions with most articles contributed to the research on cultural heritage and new technologies



Source Author's work on Scopus

Narrowing down the time frame to 2002-2022, I looked further into the journals which published the most articles. As it can be seen in Figure 5, the Journal of Cultural Heritage hosted papers on these topics since 2002, which makes it the oldest journal in this research field. It is followed by the International Journal of Heritage Studies which published the first article in 2007. As we come closer to present times, most articles were published in Sustainability, with a striking growth since 2018, although the number of articles dropped in 2022 compared to 2021 (25 against 40). Heritage Science had also a gradual growth in the last 3 years. By contrast, the other journals consistently published in this area of research, although with fluctuations from one year to another.

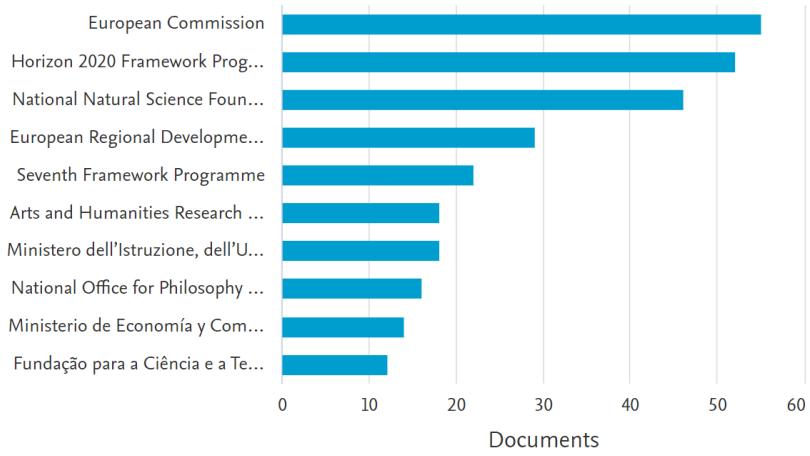
Figure 5. Articles per year per journal



Source: Author's work on Scopus

Taking a closer look at the sponsors which funded research on these topics, it is easy to observe the European Commission's interest, followed by the Horizon 2020 Framework Programme, National Natural Science Foundation of China, the European Regional Development Fund, the Seventh Framework Programme and other founders. The prevalent interest within the European Union in these topics is most visible in Figure 6, with financing being offered by EU-wide programs, but also by national funders.

Figure 6. Funding sponsors with most articles about cultural heritage and new technologies



Source: Author's work on Scopus

With the aim of identifying the most approached aspects of cultural heritage and new technologies, I used VosViewer, one of the literature mapping tools available, which is used a lot in bibliometric analysis in various fields (van Eck, Waltman, 2010; Ding, Zhang, 2020; Kuzior, Sina, 2022). VoSViewer was used to construct maps of research directions

based on author-provided keywords, details available in Scopus. Each keyword is assigned a strength, which is weighted by the software based on the number of occurences in different publications (van Eck and Waltman, 2010). As such, the map depicts the keywords with the highest occurrences as well as the relationships between the keywords using colored clusters. The circles around the keywords on the map show the number of occurrences (the larger they are, the more frequently used the keyword is) and the thickness of the lines linking the keywords represents the strength of the linkages between the keywords (the thicker the line, the more frequently the two keywords appear together in research publications).

Figure 7 shows the keywords mapping for the papers on cultural heritage and new technologies available in Scopus. Only Authors' keywords were selected and the number of minimum 8 occurences was imposed to identify co-occurences. This generated 125 keywords. The keyword "cultural heritage" was most used in the research (532 occurrences), followed by "digitization" (69 occurences), "virtual reality" and "photogrammetry" (62 occurrences each), and ''heritage" (61 occurences). Table 1 presents the top fifteen keywords used by scholars, their occurrences and total link strength.

Table 1. Keywords occurrences and link strengths

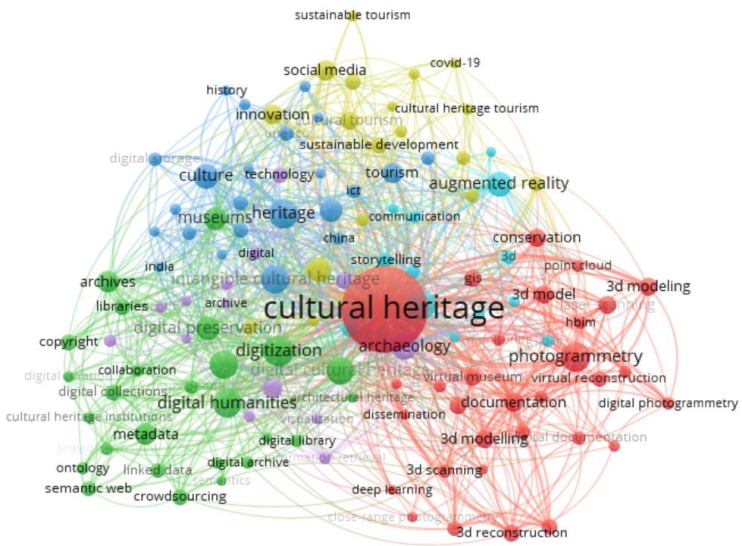
Keyword	Occurrences	Total link strength
cultural heritage	532	653
digitization	69	107
virtual reality	62	123
photogrammetry	62	117
heritage	61	95
intangible cultural heritage	46	37
digital libraries	58	61
digital humanities	57	74
archeology	48	96
digital heritage	47	59
augmented reality	45	69
culture	44	74
digital preservation	43	61
sustainability	38	56
museum	38	82
metadata	36	46
archives	33	62
social media	31	44

Source: Author's work in VoSViewer using Scopus data

As regards the clusters of topics, I found 6 clusters after imposing a minimum of 5 keywords per cluster, visible with different colors in Figure 7. The existence of keywords in a cluster implies that they were frequently used together in publications, indicating the presence of a research sub-topic (such as digital preservation and archiving; virtual and augmented reality in heritage; 3D modeling and reconstruction; interactive exhibits and digital storytelling; cultural heritage and social media; remote sensing and GIS in archaeology, etc.). Cluster 1 includes the largest number of keywords (31) and is colored in red, showing research focused on cultural heritage (the keywords with the most occurrences

in the cluster), 3d modelling and printing, archeology and architecture, photogrammetry and virtual museums, reconstruction and archeoology. The second most populated cluster, colored in green, which contains 26 items, is concentrated on digital cultural heritage, including digital libraries, digital humanities, digital curation, digital archives and collections, but also collaboration, metadata and linked data. The keywords with the highest number of occurrences in this cluster is digitization (69 occurences). The third cluster, colored in blue and containing 23 keywords, has heritage as the keyword with most occurrences (61), accompanied by culture, sustainability, tourism, community, Internet and social networks as most important keywords. In the fourth cluster (18 items), colored in ochre, digital heritage shows most occurrences (47) and is surrounded by cultural tourism, social media, innovation, and digital technology. The fifth cluster, in mauve, includes 14 items and is centered on archaeology (the keyword with most occurrences, 48), preservation technology, information retrieval, and artificial intelligence. In the last cluster, colored in turquoise, there are 13 items with virtual reality as the keyword with most occurrences (62), accompanied by augmented reality, gamification, education, communication and storytelling. An important thing to mention is that this entire research field displays significant connections between the keywords, which indicates the complexity of the topic and the multiple ramifications among the sub-topics.

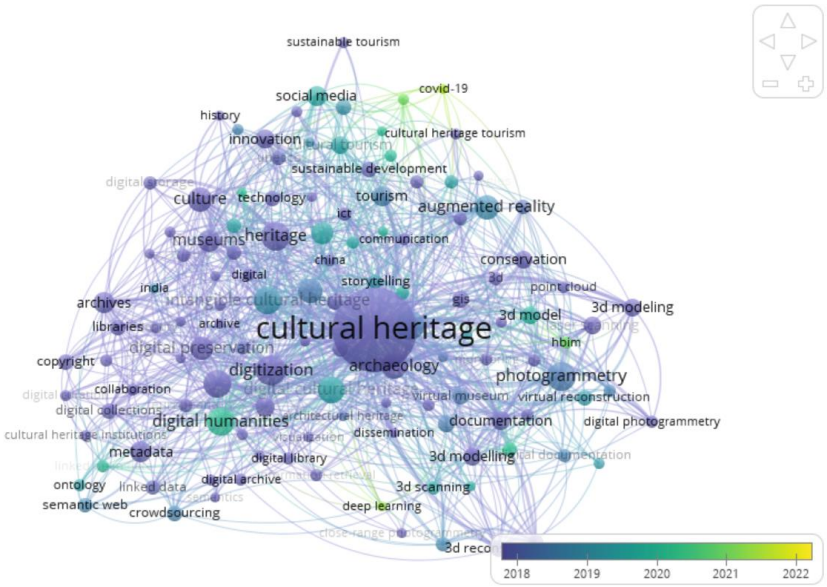
Figure 7. Mapping of keywords used in research on cultural heritage and new technologies



Source: Author's work in VoSViewer using Scopus data

Finaly, taking a closer look at the clusters of topics based on more recent papers (2018-2020), it can be seen that almost all topics relevant to our research topic were prevalent in the literature after 2018. The topics with most occurrences after 2018 are deep learning, digital transformations and covid-19, all connected with cultural heritage, but also with digitization, archeology, remote sensing and artificial intelligence (for deep learning), with augmented reality, 3d model, cultural tourism, museums (for digital transformation), and social media, cultural tourism and digital technologies (for covid-19) – see Figure 9.

Figure 8. Mapping of keywords used in research on cultural heritage and new technologies in the timeframe 2018-2022



Source: Author's work in VoSViewer using Scopus data

As previously remarked, the connections between topics that are included in different clusters is easily observable in Figure 9. In order to have a more comprehensive image of the recent developments in the field of cultural heritage, Figure 10 presents the clusters of keywords created from articles published only in 2021 and 2022. This time, because the number of keywords was smaller, the minimum imposed number of items per cluster was 5. The minimum occurrences to identify keywords is also 8.

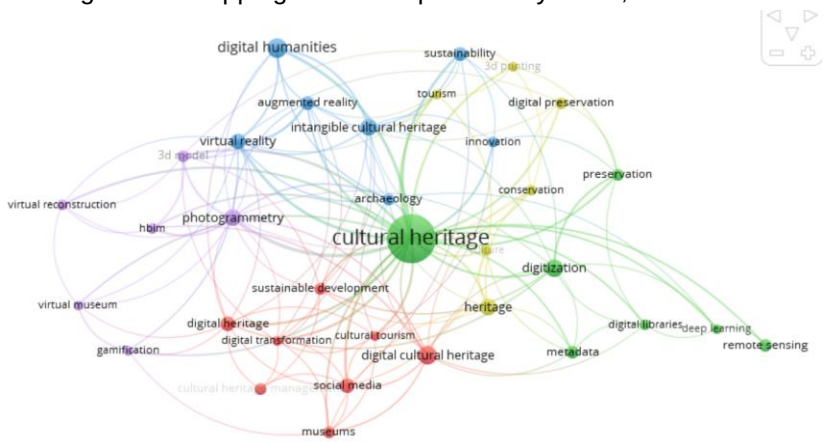
Figure 9. Connections of the most important keywords, 2021-2022



Source: Author's work in VoSViewer using Scopus data

In the papers published between 2021 and 2022, 34 keywords were identified, included in 5 clusters. In all these five clusters, keywords such as digitalization, virtual reality, gamification, digital cultural herigage are present, clearly indicating the relevance of technology for research in cultural heritage in recent years.

Figure 10. Mapping of most important keywords, 2021-2022



Source: Author's work in VoSViewer using Scopus data

As such, few more details about cultural heritage, new technologies and gen Zs are briefly presented in the table below. Given that gen Zs are interested in interactive, immersive experiences, digital technologies can be used to provide these. Digital experiences can take many forms, such as Virtual Reality (VR) exhibitions (relevant for example for history or science museums), Augmented Reality (AR) exhibits (useful for exploring a 3D model of an exhibit), interactive kiosks and touchscreens (with video content, quizzes), online resources and digital collections (are a valuable resource for researchers, educators, people who can not travel to certain destinations/institutions). Last but not least, social media can be used to reach a wider audience and build a sense of community (Gallico, 2023).

Table 2. Summary of literature on the topics of cultural heritage, new technologies and Gen Z

Authors	Publication outlet	Methodological approach	Main findings
Jacob, J.T.P.N.; Coelho, A.F. (2011)	International Journal of Computer Games Technology	Descriptive approach and case study	Smarter mobile devices like smartphones, tablets, and PDAs introduce new interaction methods for consumers and developers to explore. These gadgets enable innovative applications by integrating many inputs and sensors, including accelerometers, light sensors, electronic compasses, and GPS sensors, enabling personalized and ubiquitous experiences. This paper examines game development and design challenges and possible solutions. Finally, the authors provide a paradigm for developing location-based games. A location-based trial game (Geo-Wars) was used to develop and test this framework.
Alivizatou-Barakou, M.; Kitsikidis, A.; Tsalakanidou, F.; Dimitropoulos, K.; Chantas, G.;	Mixed reality and gamification for cultural heritage (Chapter in edited book)	Descriptive approach	This chapter discusses gaps and limits in Intagible Cultural Heritage (ICH) resources, projects, and technology. It draws on i-Treasures collaborative research. It covers the state of the art in ICH access, capture, and analysis technologies to show how specific new technologies can help transmit and protect ICH.

Nikolopoulos, S. et al. (2017)			
Dolot, A. (2018)	E-mentor	Survey on 1162 respondents conducted in Poland in 2018	This paper analyses the characteristics of Generation Z in the literature and verifies them with a sample group. The study confirms that modern technologies are a natural environment for Generation Z. While willing to travel abroad for business, they are not willing to relocate for work. Generation Z is not necessarily loyal to their employers, but they are willing to work for a long period with one employer (even for life) if the work is enjoyable.
Gallico, D. (2023)	Conference paper	Literature review and case studies	The paper examines the possibilities of digital experiences in cultural heritage (museums) and identifies best practices for producing immersive and instructive digital experiences that engage and educate consumers. The new technologies for cultural heritage are presented, then market figures and target users. The authors identifies the critical criteria that make digital experiences applied to cultural assets effective through a literature analysis and case studies and then build a implementation strategy for sector actors.
Podara, A.; Giomelakis, D.; Nicolaou, C.; Matsiola, M.; Kotsakis, R. (2021)	Sustainability	Case study	This study explores cultural heritage storytelling in interactive documentary based on several research hypotheses: (i) interactive documentaries are valuable for cultural heritage sustainability, and (ii) digital documentary storytelling can give a sustainable viewing experience over time. Using the Greek interactive documentary NEW LIFE (2013) as a case study, the authors analyse a seven-year database of web metrics to assess user involvement. Findings suggest that the interactivity affordances of this genre enhance the social aspect of culture, while key sustainability factors include constant transmedia promotion, data-driven evaluation and reform, and a compelling story that attracts relevant niches.
Hiererra, S.E.; Meyliana; Ramadhan, A.; Purnomo, F. (2022)	Conference papers	Descriptive qualitative, based on interpreting data analysis outcomes. Investigation at Borobudur temple (UNESCO cultural heritage and Indonesian government super-priority tourism site) in June 2022.	This study aims to identify the processes of UX designing a mobile application, augmented reality based on gamification for cultural heritage tourism, and to provide the prototype design and the testing result. The authors have designed the home page, landing page, augmented reality, and gamification feature consisting of gameplay levels, questions, experience points, leaderboard, badges, and feedback review. The practical implication is that this application can be used in various historical and cultural tourist destinations.

Tănase, M.O.; Nistoreanu, P.; Dina, R.; Georgescu, B.; Nicula, V.; Mirea, C.N. (2023)	Sustainability	Online survey on 280 Gen Z respondents (university students) conducted in November-December 2022; Romania; Logistic regression	Gen Z's relationship with tourism has been approached in recent years from various perspectives. According to this study, Gen Z values off-the-beaten-path destinations and experiences. The aim was to identify the relationship between Gen Z and rural tourism and its components defined by cultural heritage and traditional gastronomy, as well as to construct a predictive model regarding Gen Z's behavior when traveling to rural destinations. The results showed they enjoy local food and unique attractions, which can be seens as elements of material cultural heritage.
Yun, H. (2023)	Sustainability	Qualitative study	The study suggests a methodology for integrating cultural heritage and location-based games, based on Generation Z experiences. The constructivist grounded theory was used to analyze the play-testing of the location-based game *Jungdong Milseo* by 15 participants. Generation Z prefers games that provide unique historical and cultural content. The study suggests a model centered on site-based play, loose plot, and a pervasive environment.
Wu, G.M.; Chen, S.R.; Xu, Y.H. (2023)	Journal of Heritage Tourism	Multiple linear regression analysis applied to questionnaire data (233 college students)	Cultural heritage tourism (CHT) appeals to the public, enriching cultural experiences and meeting their requirements. This study examined college students' generativity and created an enhanced theory of planned behavior model to examine factors affecting travel intention in CHT. The study found that college students' generativity, attitude towards CHT, subjective norm, and perceived behavioral control positively influenced their intention to participate in CHT. A positive association between young people's generativity and travel intention in CHT has been added to the literature on tourist behavior.

4. Conclusions

To conclude, people who belong to Generation Z (born 1995 - 2009) are digital natives who spend 8 seconds to decide whether content is worth their time. They prefer visual content, are looking for engaging conversations and feedback, and are interested in belonging to a community. Thus, in order to remain relevant to them, cultural heritage institutions need to adapt to their needs and interests. This can be done by using technology, in order to enhance the visitor experience (for example by offering interactive exhibits and programs, location-based games), as well as through social media, in order to better connect with Gen Zs.

Digitization has had a significant impact on how cultural heritage assets are handled, both online and on site. As such, digital storytelling can be a valuable tool for cultural preservation, by attracting and engaging audiences (including younger generations, as it resonates with their media consumption habits, thus making the content relevant and accessible). For example, interactive documentaries (i-docs) are a hybrid media genre combining various multimedia tools to document reality, hence aiding in preserving cultural

heritage sustainably (Podara et al., 2021). The use of multimedia tools for documenting and presenting cultural elements allows to effectively preserve them for future generations. For example, by documenting and recreating intangible cultural heritage elements such as traditions and social values, digital storytelling helps in maintaining the continuity of cultures, especially in today's context of rapid changes.

This study reviewed available literature related to cultural heritage and new technologies and further connected this literature with Generation Z choices. According to the bibliometric investigation (using data extracted from Scopus), interest in this research topic has increased significantly since 2019, across a wide collection of journals and geographic locations. Scholars throughout the world are looking into cultural heritage, new technologies, digital behaviours and more recently differences among generations.

The limitations of this paper arise from the subjectivity inherent in any review and the limited relevant literature available. Further studies might improve on this work by studying how generation Z perceives cultural heritage: are they interested or not in this topic, which factors influence their decision of visiting certain institutions or cultural heritage sites, what makes them return to these, do they tell others about their experiences.

5. References

Alivizatou-Barakou, M.; Kitsikidis, A.; Tsalakanidou, F.; Dimitropoulos, K.; Chantas, G.; Nikolopoulos, S. et al. (2017). Intangible Cultural Heritage and New Technologies: Challenges and Opportunities for Cultural Preservation and Development, Ioannides M. et al. (eds.). Mixed Reality and Gamification for Cultural Heritage, Springer International Publishing, pp.129-158, https://doi.org/10.1007/978-3-319-49607-8_5

Brito, M. (2023). 2023 Gen Z Trends, Facts & Statistics & Media Consumption, Retrieved from: https://www.britopian.com/data/gen-z-trends-2023/

Buhalis, D.; Karatay, N. (2022). Mixed Reality (MR) for Generation Z in Cultural Heritage Tourism Towards Metaverse. In: Stienmetz, J.L., Ferrer-Rosell, B., Massimo, D. (eds) Information and Communication Technologies in Tourism 2022. ENTER 2022. Springer, https://doi.org/10.1007/978-3-030-94751-4_2

Chauhan, R. Marketing To Gen Z: Ignite Engagement And Drive Results, Retrieved from: https://taggbox.com/blog/marketing-to-gen-z/

Deloitte (2023). Deloitte's 2023 Gen Z and Millennial Survey reveals workplace progress despite new setbacks, Retrieved from: https://www.deloitte.com/global/en/about/press-room/2023-gen-z-and-millenial-survey.html

Ding, X.; Yang, Z. (2020). Knowledge mapping of platform research: a visual analysis using VOSviewer and CiteSpace. Electronic Commerce Research, pp. 1-23, https://doi.org/10.1007/s10660-020-09410-7

Dolot, A. (2018). The Characteristics of Generation Z, e-mentor, 2(74), pp. 44-50, Retrieved from: https://www.ceeol.com/search/article-detail?id=737237

Fell, A. (2020). Generation Z – The future consumer, Retrieved from: https://mccrindle.com.au/article/topic/generation-z/generation-z-the-future-consumer/

Gallico, D. (2023). Digital experiences for the promotion of cultural heritage, Multi Conference on Computer Science and Information Systems (MCCSIS 2023)

Guan-Ming, Wu; Shi-Ru, Chen; Yu-Hua, Xu (2023). Generativity and inheritance: understanding Generation Z's intention to participate in cultural heritage tourism, Journal of Heritage Tourism, 18:4, pp. 465-482, https://doi.org/10.1080/1743873X.2023.2178927

Hiererra, S.E.; Meyliana; Ramadhan, A.; Purnomo, F. (2022). Prototype UX Design: Mobile Augmented Reality Application based on Gamification for Cultural Heritage Tourism, 8th International HCI and UX Conference in Indonesia, https://doi.org/10.1109/CHIuXiD57244.2022.10009802

Jacob, J.T.P.N.; Coelho, A.F. (2011). Issues in the Development of Location-Based Games, International Journal of Computer Games Technology, Vol. 2011, https://doi.org/10.1155/2011/495437

Kim, S.; Chee, K.H.; Gerhart, O. (2017). Redefining generativity: Through life course and pragmatist lenses, Sociology Compass, 11(11), e12533, https://doi.org/10.1111/soc4.12533

Kuzior, A.; Sira, M. (2022). A bibliometric analysis of blockchain technology research using VOSviewer. Sustainability, 14(13), 8206, https://doi.org/10.3390/su14138206

Luo, J.M.; Ye, B.H. (2020). Role of generativity on tourists' experience expectation, motivation and visit intention in museums. Journal of Hospitality and Tourism Management, 43, pp. 120-126, https://doi.org/10.1016/j.jhtm.2020.03.002

Mccrindle. Gen Z and Gen Alpha Infographic Update, Retrieved from: https://mccrindle.com.au/article/topic/generation-z/gen-z-and-gen-alpha-infographic-update/

Pellegrino, J.W.; Hilton, M.L. (Eds.) (2012). Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century. National Research Council of the National Academes. Washington DC: The National Academies Press

Podara, A.; Giomelakis, D.; Nicolaou, C.; Matsiola, M.; Kotsakis, R. (2021). Digital Storytelling in Cultural Heritage: Audience Engagement in the Interactive Documentary New Life. Sustainability, 13, 1193, https://doi.org/10.3390/su13031193

Saxena M.; Mishra D.K. (2021). Gamification and Gen Z in Higher Education: A Systematic Review of Literature, International Journal of Information and Communication Technology Education (IJICTE), 17(4), https://doi.org/10.4018/IJICTE.20211001.oa10

Skinner, H.; Sarpong, D.; White, G.R.T. (2018). Meeting the needs of the Millennials and Generation Z: gamification in tourism through geocaching, Journal of Tourism Futures, 4(1), pp. 93-104, https://doi.org/10.1108/JTF-12-2017-0060

SuperAwesome Ltd (2023). Gen Z's Digital Discovery: Strategies for Brands to Connect, Retrieved from: https://www.superawesome.com/gen-z-report/

Tănase, M.O.; Nistoreanu, P.; Dina, R.; Georgescu, B.; Nicula, V.; Mirea, C.N. (2023). Generation Z Romanian Students' Relation with Rural Tourism - An Exploratory Study, Sustainability, 15, 8166, https://doi.org/10.3390/su15108166

Timothy, D.J. (2011). Cultural heritage and tourism: An introduction, Channel View Publications

van Eck, N.; Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics, 84(2), pp. 523-538, https://doi.org/10.1007/s11192-009-0146-3

Wu, G.M.; Chen, S.R.; Xu, Y.H. (2023). Generativity and inheritance: understanding Generation Z's intention to participate in cultural heritage tourism, Journal of Heritage Tourism, 18(4), pp. 465-482, https://doi.org/10.1080/1743873X.2023.2178927

Yun, H. (2023). Combining Cultural Heritage and Gaming Experiences: Enhancing Location-Based Games for Generation Z, Sustainability, 15, 13777, https://doi.org/10.3390/su151813777

https://en.unesco.org/themes/information-preservation/digital-heritage/concept-digital-heritage

https://www.europeana.eu/en