# Designing Shared Cultural Activities to Connect Generations: A Scoping Review

Li Jiang
School of Design
Queensland University of Technology
Brisbane, Australia
l24.jiang@hdr.qut.edu.au

Sajini Lankadari
School of Design
Queensland University of Technology
Brisbane, Australia
sajini.lankadari@hdr.qut.edu.au

Beheshteh Atrian
School of Design
Queensland University of Technology
Brisbane, Australia
beheshteh.atrian@hdr.qut.edu.au

Bernd Ploderer
Digital Wellbeing Lab
Queensland University of Technology (QUT)
Brisbane, Australia
b.ploderer@qut.edu.au

Shital Desai
Social and Technological Systems (SaTS) Lab
York University
Toronto, Ontario, Canada
desais@yorku.ca

Yuehao Wang
School of Design
Queensland University of Technology
Brisbane, Australia
hayley.wang@qut.edu.au

Alethea Blackler
QUT Design Lab
Queensland University of Technology
Brisbane, Australia
a.blackler@qut.edu.au

## Abstract

As geographically dispersed families become increasingly common, digital technologies have emerged as a vital means of supporting intergenerational shared activities. Cultural elements such as oral traditions, crafts, or festivals are often integrated into shared activities as key components for fostering intergenerational connection and transmitting family memories and values. However, in existing research, culture is frequently referenced in broad and ambiguous terms. Therefore, the aim of our study is to clarify the types of intergenerational shared cultural activities, their sharing mechanisms, and the role of digital technology in supporting them. This paper reviews 48 relevant publications from 2000 to 2025. Through our analysis, we propose future design opportunities, including expanding interaction approaches for material and embodied cultural activities in geographically dispersed families; designing incentive mechanisms that support diverse family role dynamics; and introducing interpretive support at key moments of shared cultural activities to help technology convey and mediate cultural meanings.

## CCS Concepts

• **Human-centered computing**; • **HCI design and evaluation methods**;

## Keywords

Cultural activity, Intergenerational shared activity, Intergenerational interaction, Long-distance family


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## 1 Introduction

Intergenerational shared activities are regarded as an important means of promoting intergenerational interaction and building emotional bonds [54]. Engaging in shared activities creates a common ground for participants, facilitates more effective communication, and enhances positive social interactions [43]. Culture is often regarded as a central component of shared activities, commonly expressed through language [50], handicrafts [8], music [67], values, and social norms [13]. Although current discussions of cultural practices often focus on traditional or ethnic elements [72], equating cultural activities solely with such practices overlooks the profound impact culture has on individuals' emotions and ideologies. As Inglis [38] points out, the significant influence of culture on individuals stems from its nature as a form of social practice embedded in everyday life, encompassing the continuous negotiation and construction of meaning within families, communities, and even transnational contexts. Therefore, this paper focuses on intergenerational cultural sharing activities as a process in which members of different generations collaboratively construct meaning through negotiation and interaction in everyday life.

Among the various cultural settings, the family remains the most fundamental unit for cultural construction and intergenerational transmission [10, 57]. Intergenerational cultural activities carried out among family members, such as storytelling [14, 21, 49, 77], festive celebrations [30, 75], family traditions [80], and religious

rituals [70] are considered to play a significant role in constructing cultural identity, maintaining family bonds, and fostering intergenerational identification. For example, family stories transmitted through intergenerational narration help construct a sense of family identity [25, 41], cooking activities strengthen family bonds by using food as a carrier of memory [17, 71], and traditional festivals shape social connections through collective celebrations and ritual participation [62].

The benefits of cultural activities for intergenerational relationships have been widely discussed. However, due to domestic and international migration, geographically dispersed family structures have become increasingly common. As a result, human-computer interaction (HCI) practices aimed at supporting remote intergenerational engagement have grown more diverse and complex. Some studies focus on the technological representation of cultural content. For example, Li et al. [49] explored the use of augmented reality (AR) to support intergenerational storytelling. Kim et al. [42] demonstrated how AI-assisted tools can facilitate co-creation between generations. Other researchers have examined the participatory structures of cultural activities and the relational and emotional dynamics they generate. For instance, Shen et al. [69] introduced "LegacySphere," a VR perspective-taking experience that combines embodiment, role-playing, and storytelling to help intergenerational groups foster empathy by seeing from others' viewpoints. Li et al. [48] also analysed the age-integrated online community r/AskOldPeople, revealing how different generations use the platform to revisit memories, share perspectives, understand each other's experiences, and build intergenerational understanding through collaborative discussion. However, given the diversity of cultural activities, how to design effective technologies to support such sharing, particularly in the context of geographically dispersed families, remains an area in need of further exploration. Therefore, this paper focuses on how different types of culture are shared in intergenerational activities and aims to propose design principles that can inform future HCI applications. Therefore, this study adopts a scoping review approach to address the following research questions (RQs):

RQ1: What types of cultural activities are used to promote intergenerational connection?

RQ2: What are the mechanisms through which different types of cultural activities are shared across generations?

RQ3: What types of technologies are used, and how do they support the intergenerational sharing of cultural activities?

To address the above research questions, we reviewed 48 publications related to intergenerational cultural sharing activities. This paper focuses on identifying the types of cultural activities, the mechanisms through which culture is shared across generations, and the ways in which technology supports these activities. Based on the findings, we further discuss the current limitations within the field of HCI on this topic and propose directions for future research. The significance of this study lies in advancing a more culturally sensitive design perspective within HCI, supporting future interaction design research in the context of geographically dispersed families.

## 2 Methodology

Research questions in scoping reviews are often relatively broad, as the aim is to map the field and explore the nature of research on a given topic [1, 47, 60]. Our research questions mentioned above focus specifically on the design of sharing cultural activities that promote intergenerational interaction. We managed the literature screening process following the PRISMA-ScR guidelines [74], with the specific process comprising four stages: Identification, Screening, Eligibility, and Included (Figure 1).

Considering that the research topic spans the fields of human-computer interaction, sociology, education (intergenerational learning), public health, gerontology, developmental psychology and cultural studies, the literature search needed to encompass technological, humanistic, and social perspectives. Therefore, we selected five databases for our search: Scopus, ACM Digital Library, EBSCOhost, WoS, and PubMed. Although we also considered other databases during this process (such as Google Scholar, IEEE Xplore, and PsycINFO), they were not included. This is because the disciplines covered by these sources were either too broad , leading to substantial overlap with the databases we had already selected.

In addition, we observed that although some studies do not focus specifically on family members, they demonstrate the potential for cultural transmission through social intergenerational relationships within communities (e.g., activities between children and unfamiliar older adults) [24, 28]. Therefore, in our literature screening process, we broadened the inclusion criteria from family kinship structures to a wider definition of social intergenerational structures, to include a wider range of cultural activities that can be conducted across generations. The detailed search strings are provided in Appendix A.1.

A total of 338 publications were initially identified. After removing duplicates, 237 records remained. Three authors independently screened the titles and abstracts based on predefined criteria (Appendix A.2). Any discrepancies during the screening process were resolved through discussion, with the final decisions made by the first author. In the end, 48 publications were included in the review. Given the diversity in research methods, theoretical frameworks, and data presentation among the included studies, we adopted the "charting the data" strategy proposed by Arksey and O'Malley (2005) for data extraction and coding. We then categorised the findings according to types of intergenerational cultural sharing activities and types of technological mediation (Figure 2). we identified six types of intergenerational cultural activities and four categories of technological mediation, which will be discussed in detail in the next section.

## 3 Findings

### 3.1 Types of Cultural Activities for Intergenerational Connection(RQ1 & RQ2)

Based on the literature included in this study, we categorised intergenerational shared cultural activities into five main types according to the cultural content they convey, their practical purposes, and their functional characteristics in intergenerational interaction: narrative, food-related, creative, ritual, and educational activities. Table 1 shows these activities alongside the forms each one took

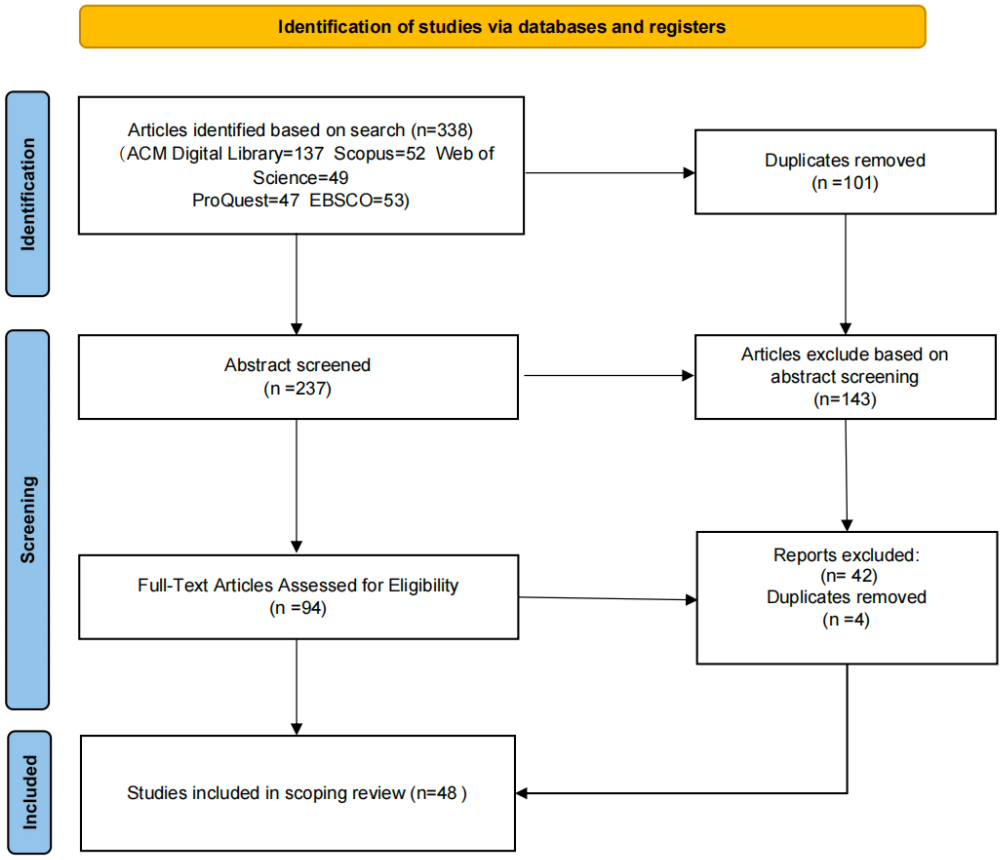


**Figure 1: PRISMA Flow Diagram of Study Selection for Scoping Review**

across the papers reviewed, how people of different ages participated in them, and the context of use (remote or face-to-face).

*3.1.1 Narrative Activities.* Narrative cultural activities emphasise an intergenerational sharing process conducted primarily through oral narration. In the included literature, this is the most frequently applied type. Based on the content of the narratives, these can be further subdivided into three categories:

(1) Stories related to family members, such as life experiences [63, 86], migration experiences [20, 75], etc. These narratives centre on family memories and help construct identity and foster emotional bonds [12, 70, 77, 84].

(2) Historical stories, such as grandparents' firsthand accounts of social changes or landmark events in history [2, 3, 23, 36]. These narratives typically serve to transmit cultural knowledge and historical awareness [11, 65].

(3) Fairy tales and folk legends. These stories often contain fictional elements but convey the storyteller's values and wisdom [45]. For younger generations, they play a role in imparting moral standards, shaping behaviour, and constructing social roles [30, 73].

Narrative activities are often led by elders as the primary storytellers, with younger generations participating as listeners, questioners, or cues for shared recollection [19, 21, 43, 66]. A feature of narrative activities is their capacity to convey historical memories and cultural values through dialogue alone [14, 27, 28, 31], without requiring complex physical spaces or operational media. They can facilitate intergenerational sharing across distances synchronously and asynchronously. Other research has shown that narrative activities are often linked to specific family objects and everyday settings, such as photographs, antique furniture, traditional foods, or religious artifacts [49, 59]. These object-mediated cues not only spark memories but also lend storytelling a sensory and symbolic dimension [51]. However, we found that narrative intergenerational sharing activities are highly dependent on elders' willingness and ability to express themselves. Additionally, younger generations may lose interest or struggle to resonate as they grow older.

*3.1.2 Food-related Activities.* Food-related cultural activities primarily include family meals, traditional cuisine preparation, and ceremonial feasts on special occasions (festivals and religious events). Wiscott and Kopera-Frye [86] quantified the frequency of such

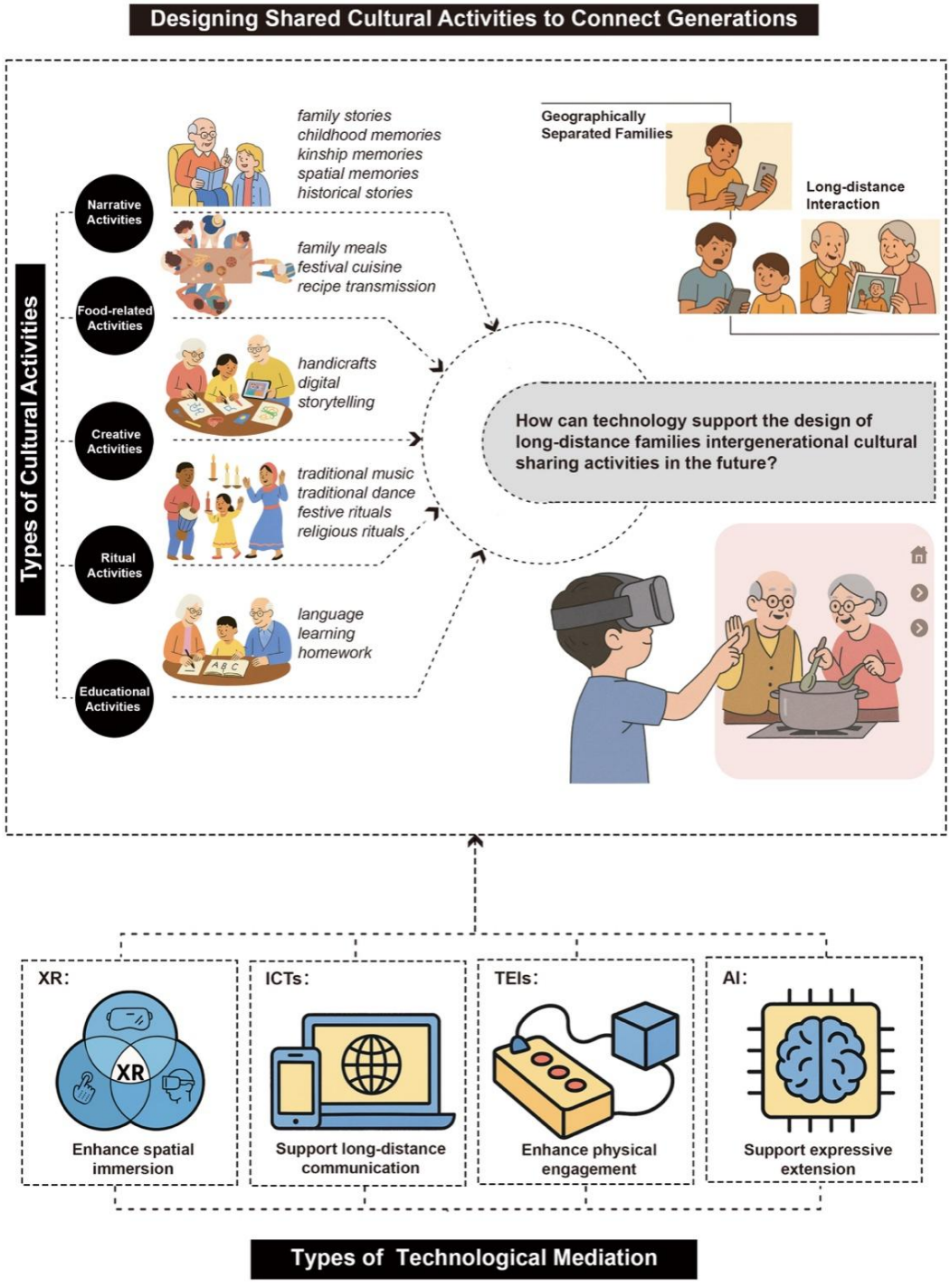


**Figure 2: Classification Framework of Intergenerational Cultural Activity Types and Technological Mediation**

**Table 1: Overview of Intergenerational Cultural Activity Types and Their Characteristics**

| Activity Type(frequency) | Content and Forms | Participation Mechanism | Context of Use (frequency) |
|---|---|---|---|
| Narrative Activities (28) | Family stories, childhood memories, kinship memories, spatial memories, historical stories, folk tales, fairy tales | Elder narration, younger listening | Remote (4) Face-to-face (24) |
| Food-related Activities (8) | Family meals, festival cuisine, recipe transmission, food cultivation | Co-preparation and shared tasting | Face-to-face (8) |
| Creative Activities (23) | Handicrafts (sewing, paper cutting, weaving), digital storytelling (re-creating around family memories), image creation and collage (drawing, moodboard collage, digital image generation), creative application development | Joint ideation and co-creation | Remote (2) Face-to-face (21) |
| Ritual Activities (21) | Traditional music, traditional dance, festive rituals, religious rituals, family rituals | Intergenerational co-performance and symbolic transmission | Remote (2) Face-to-face (19) |
| Educational Activities (10) | Language learning, homework tutoring, traditional skills, elders' experiences | Elder instruction, younger acquisition | Remote (2) Face-to-face (8) |

activities between grandparents and grandchildren, demonstrating that tasting and preparing traditional foods serve as a strong exemplar of intergenerational cultural transmission. Jane and Robbins [39] found that many grandparents and grandchildren share kitchen cooking experiences, during which grandparents pass on food-related knowledge to their grandchildren. Similarly, Marcelo Rodriguez et al. [64] noted that shared meals (lunch, dinner, tea, etc.) are the most common form of shared activity between grandchildren and their grandparents.

Food-related activities often carry strong regional and ethnic cultural characteristics. Umaña-Taylor and Yazedjian [75] noted that U.S. Latino mothers use traditional foods and cooking techniques from holiday meals and religious celebrations to help their children understand their cultural heritage and strengthen their cultural identity. Avcı's [3] study of the Barak room in Turkey found that through intergenerational communal eating, younger generations learn etiquette norms and collective memories. During these feasts, elders recount family histories and epic stories, further reinforcing emotional bonds and cultural transmission across generations. Food-related activities typically revolve around the preparation and consumption of food, relying on real ingredients, shared spaces, and sensory experiences [19, 32]. While this mode of interaction has been discussed in many studies, the investigation by Wei et al. [83] found that participants considered these activities too complex and difficult to operate using remote technologies. Their study pointed out that, for older adults, although VR can recreate the activity settings, engaging in these activities within virtual environments was reported to be physically exhausting.

*3.1.3 Creative Activities.* Co-creative cultural activities emphasise joint creation and expression through equal collaboration between generations, aiming to enhance interaction frequency, intergenerational understanding, and emotional connection. These activities mainly include the following forms:

(1) Handicraft making, such as sewing, paper cutting, gardening, and weaving, which often involve elders passing down traditional skills while the younger generation imitates and learns [19, 30, 34, 51, 66, 79].

(2) Digital storytelling, which centres on processing and recreating family memories [20, 43, 53, 90].

(3) Image creation and collage, such as painting, moodboard collaging, and digital image generation, which use visual formats to foster imaginative resonance and conversational extension between generations [7, 11, 27, 28].

(4) Creative tool development, including co-participation in programming, developing mobile applications, or interactive games, which emphasises mutual learning and collaboration between both generations [4, 24, 26, 40, 44, 61, 78].

Co-creative cultural activities transform individual experiences, family memories, and cultural symbols into creative forms of expression through intergenerational negotiation and collaboration [58, 64]. These activities can stimulate participants' initiative by leveraging their unique traits, for instance, sparking children's curiosity, while drawing on elders' experiences and knowledge, thereby fostering understanding between generations. However, such activities often rely on structured organization and guided facilitation. They require effective coordination of collaborative rhythms and place relatively high demands on participants' communication skills and cooperative awareness.

*3.1.4 Ritual Activities.* Ritual-based cultural activities are typically held at specific times, such as birthdays, Christmas, Easter, and Chinese New Year and Mid-Autumn Festival [14, 30, 31, 45, 58, 75], or follow certain procedures, such as decorations, prayers, traditional clothing and actions, such as religious ceremonies, traditional dances, mourning and prayers [37, 70, 77, 86]. These practices help reinforce family cohesion, cultural transmission, and value identification [11, 21, 31, 32, 66]. Some ritual-based cultural activities also possess distinct ethnic or familial characteristics. These are

often manifested through unique patterns of repetition and symbolism formed within specific communities or families [2, 65, 80]. Examples include the regular meetings held in the Barak room by the Barak Turkmens [3], the poetic drama Araquio in the Philippines [37], and cross-border shopping involving three generations in Mexican families [15]. Such practices continue to serve as significant channels for intergenerational cultural transmission. This type of activity is often carried out in specific spaces [3] and revolves around certain symbolic objects [59]. Although some scholars have argued that social change poses challenges to such activities [14], the potential for participating in these rituals within virtual spaces has increasingly been explored. For example, Di Giuseppantonio Di Franco et al. [23] reconstructed post-disaster communities using virtual reality (VR), allowing family members to identify childhood rooms or ancestral homes within VR environments and engage in storytelling and reminiscence around symbolic objects.

*3.1.5 Educational Activities.* Educational activities typically involve formal instruction from older generations (such as parents or grandparents) to younger individuals. Unlike general entertainment-based shared activities, this type emphasises the elder's guiding role in transmitting knowledge and skills [26, 36, 73]. It should be noted that while other types of intergenerational cultural sharing activities (such as ritual-based or co-creative activities) may also contain implicit educational elements, these activities typically serve other primary purposes (e.g., sustaining traditions or providing entertainment opportunities). In contrast, the core feature of the educational activities defined in this study lies in the structured transmission of knowledge and skills [86]. Such activities may include language learning, academic tutoring, and the teaching of traditional crafts. For example, the study by Umaña-Taylor and Yazedjian [75] noted that Mexican immigrant mothers in the United States used teaching Spanish writing and explaining Mexican history as educational methods. Little and Little [52] documented a two-and-a-half-year structured language intervention program that involved journaling, assessment, and reflection throughout the parent-child language learning process.

These types of activities often have a bidirectional empowering effect: they not only enhance children's cognitive abilities and cultural identity but also reinforce grandparents' roles in family education and their sense of psychological value [30, 80]. Castañeda García et al. [14] and Viguer et al. [77] point out that grandparents often assume a "quasi-teacher" role in academic tutoring, shared reading, and offering learning advice, and this support also strengthens emotional bonds between generations. However, such activities often carry a certain level of seriousness and rigidity. Elders tend to adopt directive or lecture-based methods during instruction, lacking interactivity and enjoyment, which may reduce young participants' willingness to engage [77].

## 3.2 Technological Mediation in Intergenerational Cultural Sharing (RQ3)

When analysing the role of technology in supporting intergenerational cultural sharing activities, we adopt the perspective of technological mediation theory proposed by Verbeek (2016) [76]. He argues that technology is not a passive intermediary but actively participates in the construction of human experience and values. In intergenerational cultural sharing, technology functions as a co-constructor of family culture by creating a sense of presence, supporting expression and collaboration, and preserving memories. Therefore, based on different supportive functions, we categorise existing studies into four groups: extended reality technologies, information and communication technologies, tangible embedded and embodied interfaces Technologies and artificial intelligence technologies. In addition, we counted the number of studies applying each type of technology in face-to-face and remote contexts. Among the 28 papers included that involved technological support for intergenerational cultural activities, 24 focused on face-to-face interactions, while 4 addressed remote interactions (Table 2).

*3.2.1 Extended Reality Technologies.* In intergenerational shared cultural activities, extended reality technologies refer to those that simulate or enhance real-world spaces to create a sense of co-presence and immersion for both generations. The main applications include Augmented Reality (AR) and Virtual Reality (VR). Their core feature lies in enhancing users' sensory experiences by transcending the limitations of physical space [65, 83]. In the study by Li et al. [49], AR technology was used to overlay 3D models, such as tractors or New Year paintings, next to old photos, restore photo details, and simulate ambient sounds (like market vendors or ocean waves) to support grandparents in telling stories about their past. Additionally, role-playing activities, such as grandchildren virtually trying on traditional clothing, were used to spark engagement and help younger participants immerse themselves more deeply in the stories of their elders. In the study by Wei et al. [83], VR technology was employed to enable grandparents and grandchildren to interact as avatars in a 3D space using Oculus Quest 2 and the social platform Rec Room. Activities included virtual travel and simulated family meals, with interactions such as virtual high-fives and hugs. However, some older participants reported difficulties using the controllers and expressed concerns about falling due to obstructed vision. Marín Trejos et al. [73] developed three XR prototypes using Web 360°, AR interactive cards, and VR games to respectively showcase community panoramas, animated representations of traditional figures, and task-based cultural skill transmission. Children interviewed their grandparents and participated in co-creating the content. XR technology enabled the visualization of elders' knowledge, stimulating grandchildren's understanding of and interest in cultural heritage. Castañeda García et al. [14] pointed out that such technologies can create numerous possibilities for remote intergenerational sharing activities. However, in practice, challenges remain, including the high cost of devices, limited internet coverage [73], complex operations [83], and interaction models that are not user-friendly for older adults, and only one of the papers addressed remote interaction with XR technologies.

*3.2.2 Information and Communication Technologies (ICTs).* ICTs primarily support intergenerational shared cultural activities through the capture, editing, and presentation of visual, audio, and video content [2, 12, 14, 27]. Their core application logic lies in using visual and auditory recordings to build shared memories across generations [2, 12, 27], stimulate narrative exchanges [7, 11, 19, 28, 30, 45, 51, 61], and facilitate co-creation [4, 7, 44, 79, 90]. For example, Caprani et al. [12] employed the wearable camera SenseCam to automatically record everyday moments between

**Table 2: Technological Mediation Types and Their Characteristics**

| Technology Type | Technical Function | Context of Use (frequency) |
|---|---|---|
| XR | Simulates or enhances real-world environments to provide immersive spatial and sensory experiences | Face-to-face (6) |
| ICTs | Captures, edits, and disseminates images, audio, and video content | Remote (4)<br>Face-to-face (13) |
| TEIs | Combines physical objects with bodily interaction | Face-to-face (2) |
| AI | Supports image and text generation, facilitating co-creation and expressive extension | Face-to-face (3) |

grandparents and grandchildren, providing image-based materials to help geographically distant family members stay connected to each other's lives. Lamb et al. [45] introduced participatory visual methods such as Photovoice and Cellphilm, encouraging youth to produce short videos and engage in intergenerational discussions on social issues, thus fostering cross-generational understanding. Paper authors found that the strengths of ICTs lie in their intuitive interaction modes and low technological barriers [24, 90]. However, the content captured through these technologies is often immediate and fragmented, which can lead to superficial engagement and limit the depth of cultural sharing and the formation of meaningful family memories [24, 34]. ICTs are widely used in intergenerational cultural activities, providing familiar and commonly adopted technological means for cultural exchange among family members [24, 90]. However, some studies have also pointed out that ICT-based media still pose challenges for older users in terms of technical operation, device accessibility, and interface design [27, 30].

*3.2.3 TEIs (Tangible Embedded and Embodied Interfaces) Technologies.* TEI technology supports intergenerational cultural sharing activities by combining tangible objects with bodily participation. This type of technology is particularly suited for cultural practices with strong materiality and embodied characteristics, such as food preparation, craft making, and interactive play. For instance, Jones et al. [40], in the "FamJam!" project, facilitated family-based narrative construction around lived experiences (e.g., soccer, stories, food) by using tools such as 3D printing pens, laser cutters, and paper circuits to support parent-child co-creation of physical game components. Wang et al. [78] developed the BioMingle system, consisting of six interactive stools, a ground matrix, and an animation screen. By combining tangible operations (e.g., moving stools, triggering animal sounds) with digital feedback (e.g., animated visuals and sounds), the system enables intergenerational co-participation in interactive puzzles. The advantage of TEIs lies in their ability to stimulate tactile and embodied sensory experiences through interaction with physical objects, thereby enhancing intergenerational engagement. However, most existing studies remain at the prototype testing stage and lack longitudinal tracking of long-term impacts.

*3.2.4 Artificial Intelligence technologies.* Artificial intelligence technologies are primarily used in intergenerational shared cultural activities as tools to support co-creation, lower participation barriers, and facilitate negotiation. Current applications can be divided into two main categories: The first involves "text-based generation tools". For example, Kim et al. [42] designed a story co-creation platform that uses CHATGPT as both an idea generator and language enhancer. The platform employs a "Milestones" structure and a "Help Me" button to support grandparents and grandchildren in collaboratively creating characters, scenes, and narratives. In this context, AI not only polishes content but also acts as a facilitator, posing questions, easing technological challenges for older participants, and enhancing intergenerational expression. The second category involves "image-based generation tools". Liu et al. [53] incorporated the Midjourney image generation tool into a family art therapy setting, where grandparents and children collaboratively crafted characters and scenes using traditional materials. AI was then used to generate corresponding visuals, which were further transformed into tangible outputs such as stickers, stand-up cards, and storybooks, bridging the digital and physical realms. AI-generated technologies offer several advantages: they expand the creative boundaries of intergenerational collaboration, enhance the vividness of expression, and enrich visual storytelling [53]. Researchers have successfully stimulated participants' imagination and expressive desires by integrating suggestion mechanisms and real-time feedback. However, current uses of AI in this domain remain at the small-scale experimental stage, and participants still express scepticism regarding the authenticity of AI-generated outputs [42]. Nonetheless, AI-generated technologies have shown strong potential in enhancing the quality of activity content and facilitating intergenerational expression. More importantly, AI can serve as a guide, editor, and bridge within shared activities, opening new possibilities for supporting richer and more dynamic intergenerational cultural engagement.

## 4 Discussion

In this scoping review, we reported the current types of intergenerational cultural sharing activities, the mechanisms of sharing, and the mediating roles of technology. In this section, we discuss the gaps identified in the review based on the three aspects reported in the findings, and propose opportunities for future research and the design of intergenerational cultural sharing activities.

### 4.1 Expanding Interaction Approaches for Material and Embodied Cultural Activities

In terms of cultural activity types, most intergenerational cultural sharing activities were conducted face-to-face, with only a few studies exploring remote settings. Specifically, there were four studies

on remote narrative activities, two on co-creative activities, two on educational activities, and two on ritual activities. No remote cases were found for food-related activities. This result reflects that current technologies have yet to effectively support the remote migration and reconstruction of highly embodied and physically interactive cultural practices, such as shared meals, cooking, and festive interactions. Future research could explore remote interaction designs that incorporate haptic feedback [56], embodied interaction [29], and a sense of spatial co-presence [68], features that are considered important for fostering physical connection and emotional resonance at a distance. Additionally, Wei et al. [83] found that participating in these activities within virtual environments may lead to physical fatigue. Therefore, remote cultural activity design must also balance immersion with physical demands, avoiding excessive interaction or device burden that could compromise the quality of engagement.

## 4.2 Designing Incentive Mechanisms to Support Diverse Family Role Dynamics

In terms of intergenerational sharing mechanisms, we found that in narrative [63], food-related [19, 32], and educational activities [26, 36, 73], older adults often take the lead, while younger participants tend to play more passive roles. In contrast, some ritual [37, 77] and co-creative [7, 28] cultural activities exhibit more interactive and egalitarian collaboration structures. Notably, several studies pointed out that cultural sharing within families is often led by female members [15, 16, 86]. Building on the above findings, we further examined the regional factors in the included literature and found that the extent of family role participation in intergenerational cultural sharing not only varies but is also deeply influenced by cultural values and social divisions of labour. For example, in East Asian families, the dominance of elders in narrative and educational activities is often associated with traditions of filial piety and Confucian values [49, 80]. In Latin American families, female leadership is particularly evident, partly due to mothers taking on core organisational roles in daily family activities, as well as women's specific responsibilities in certain religious contexts [15, 75]. These findings suggest that different family roles contribute with varying degrees of involvement in intergenerational cultural sharing. However, current designs often overlook the asymmetrical participation dynamics within families. Future research could explore how design can identify and support role-based contributions that are shaped by cultural contexts [46, 87], as well as how to create incentive-driven interaction mechanisms [88] that, while respecting cultural diversity, encourage the participation of all family members and foster deeper engagement.

## 4.3 Introducing Interpretive Support at Key Moments of Cultural Sharing

In terms of technological mediation, current technologies have explored various ways of facilitating intergenerational cultural sharing activities. For example, ICTs are used for recording and sharing, helping family members build shared memories. XR technologies can create a sense of spatial co-presence [65, 83], providing geographically dispersed families with virtual environments for togetherness. However, based on the studies we reviewed, these technologies are still largely applied in face-to-face settings, with only ICTs (4 studies) being used for remote intergenerational cultural activities. ICTs often lack the sense of presence required for cultural sharing, while XR, though capable of offering immersive environments, faces challenges in remote collaboration (e.g., network latency and device endurance [33, 89]), making it difficult to sustain long-term and stable intergenerational engagement. This suggests that the real bottleneck lies in remote collaboration and coordination, rather than in the usability of individual devices. At the same time, AI has been applied to image and text generation [42, 53], supporting intergenerational collaboration and communication, and fostering the co-construction of shared meaning in creative activities. Tangible Embedded Interactions (TEIs) enhance intergenerational interaction through engagement with physical objects [40, 78], thereby strengthening embodied experience and perception. This indicates that AI and TEIs hold strong potential for carrying cultural meanings and deepening interaction; however, in the studies we reviewed, these technologies have not yet been systematically explored in remote settings.

In addition, intergenerational differences in technological literacy also influence the development of shared cultural activities. Blackler et al. (2012) [9]pointed out that older adults, due to cognitive decline and unfamiliarity with new interactive products, often interact more slowly, less intuitively, and with more errors. While much research has focused on making new technologies more age-friendly, for geographically dispersed families already accustomed to voice or video calls, the introduction of new technologies goes beyond the lifestyle older adults are familiar with. This, to some extent, may lead them to opt out of or discontinue using such technologies [82]. Similar challenges are also observed among younger grandchildren. Children face limitations in cognitive development and motor skills when using technology, for example, insufficient understanding of abstract representations and complex interfaces [35], and thus require more intuitive and low-threshold interaction methods [22]. At the same time, we also note that technology can pose additional challenges in terms of physical adaptability for both generations. For example, Wang et al. (2025) [81] highlighted that VR relies on various input devices, such as head-mounted displays, motion controllers, and gesture trackers. However, these devices often present physical incompatibilities for older adults and children, including unsuitable sizing, susceptibility to dizziness, and added strain on vision [6, 55].

Based on these observations, we argue that relying solely on existing technologies is insufficient to bridge the gap in fostering deep cultural interactions within geographically dispersed families. However, prior research has shown that introducing appropriate interpretive support mechanisms can help users better understand abstract concepts and values at key moments. For instance, Wen et al. (2025) [85]designed the WooGu educational game, which incorporated multimodal prompts (such as sensor feedback and digital visual elements) into agricultural learning. This design enabled children to gain a deeper understanding of farming knowledge and cultural values through embodied interaction. Although the study focused on an educational context, it demonstrates the effectiveness of interpretive mechanisms in supporting users' comprehension of complex cultural content. Such an approach can be transferred to remote intergenerational cultural sharing activities, helping to

compensate for the limitations of technological coordination and amplifying the expression and understanding of cultural meaning within shared activities. Therefore, in future designs, cultural exchange could be supported by identifying key moments [18], and integrating appropriate feedback mechanisms [91] (e.g., sensory cues, rhythm prompts, emotional indicators), along with symbolic interaction components [5] such as meaningful objects or gestures, to enhance the capacity of technology to carry and interpret cultural meanings. For example, grandparents could adjust the tempo of preset music to enhance the rhythm of the story, while children could touch symbolic icons (such as a shield representing courage, a heart representing love, and a flame representing hope) to grasp a story's meaning.

## 5 Conclusion

This scoping review included 48 empirical studies describing intergenerational cultural sharing activities and systematically examined the types of cultural activities, participation mechanisms, and technological interventions. Our findings show that most activities are conducted face-to-face, while remote practices are mainly found in narrative and educational activities. This highlights the current limitations of technology in supporting embodied and physically interactive cultural practices. Participation also varies by gender and generation, with women often serving as primary organisers, yet existing technology designs rarely respond to these role dynamics. Most technological applications still focus on content presentation, overlooking key aspects of cultural interaction such as symbolism, rhythm, and emotional negotiation. Therefore, we propose that future designs for remote intergenerational cultural activities should enhance bodily engagement, recognise familial role differences, embed responsive feedback mechanisms, and support the shift of technology from representation to a tool for fostering intergenerational cultural understanding. In future work, we plan to develop a design framework for intergenerational cultural sharing activities based on the key characteristics of activity interactions. This review provides concrete design directions for intergenerational design in the HCI field and highlights the potential of culturally sensitive approaches in expanding technological design practices.

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# A APPENDICES

## A.1 SEARCH STRATEGY

Table 3 presents the literature search strategies used in this scoping review, including the databases searched, search strings, filters applied, and search results.

**Table 3: Literature Search Strategies and Results**

| Database | Search String | Filters | Results |
|---|---|---|---|
| ACM Digital Library | (intergeneration* OR grandparent* OR grandchild* OR "across generation*" OR "cross generation*" OR "across the generation*" OR "spanning the generation*") AND (cultur* OR tradition* OR heritag*) AND ("shared activit*" OR "joint activit*" OR "shared experienc*" OR "co-experienc*" OR "co-creation") | Content type: research article + extended abstract + short paper | 137 |
| Scopus | (intergeneration* OR grandparent* OR grandchild* OR (generation* W/3 cross) OR (generation* W/3 across)) AND (cultur* OR tradition* OR heritag*) AND ("shared activit*" OR "joint activit*" OR "shared experienc*" OR "co-experienc*" OR "co-creation") | Document type: Article + Conference paper | 52 |
| Web of Science | (intergeneration* OR grandparent* OR grandchild* OR "across generation*" OR "cross generation*" OR "across the generation*" OR "spanning the generation*") AND (cultur* OR tradition* OR heritag*) AND ("shared activit*" OR "joint activit*" OR "shared experienc*" OR "co-experienc*" OR "co-creation") | Document Types: Article+ Proceedings Paper+ Early Access | 49 |
| ProQuest | noft((intergeneration* OR grandparent* OR grandchild* OR "across generation*" OR "cross generation*" OR "across the generation*" OR "spanning the generation*") AND (cultur* OR tradition* OR heritag*) AND ("shared activit*" OR "joint activit*" OR "shared experienc*" OR "co-experienc*" OR "co-creation")) | Filters: (Article OR Conference Proceeding) NOT (Dissertation/Thesis AND Book AND Book Chapter) | 47 |
| EBSCO | (intergeneration* OR grandparent* OR grandchild* OR "across generation*" OR "cross generation*" OR "across the generation* OR "spanning the generation*") AND (cultur* OR tradition* OR heritag*) AND ("shared activit*" OR "joint activit*" OR "shared experienc*" OR "co-experienc*" OR "co-creation") | Filters: Academic Journals AND Peer-reviewed | 53 |

## A.2 Inclusion and Exclusion Criteria

Table 4 presents the inclusion and exclusion criteria applied in this scoping review, specifically covering aspects such as research methods, target population, activity content, and modes of engagement.

**Table 4: Inclusion and Exclusion Criteria**

| Criteria | Description |
|---|---|
| IC1 | The study must be empirical, involving real user data or user research. |
| IC2 | The study must involve interaction between two or more generations (including adjacent and non-adjacent). |
| IC3 | The study must involve cultural activities or cultural elements. |
| IC4 | The study must include activities involving joint or shared participation. |
| EC1 | Theoretical or conceptual literature without empirical research data. |
| EC2 | The study included only one generation. |
| EC3 | The study does not involve cultural activities or cultural elements. |
| EC4 | The study does not involve any components of joint participation. |