

Using Interactive Design to Support the Reconstruction of Cultural Identity and Community Necessitated by Migration

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Abstract

Global warming has caused sea levels to rise. Ultimately, low-altitude land will be submerged, necessitating migration to higher altitudes. In this process, people's cultural identity and community structure will be shattered, requiring fundamental reconstruction. Climate migrants face the struggle of adapting to rapid psychological and cultural change.

This dissertation explores ways in which interactive design can be used to support the psychosocial (having both psychological and social parts) adjustments that migrants need to make. The dynamic process of acculturation to the new environment while maintaining cultural continuity is discussed. This study examines the use of interaction design to support migrants' integration into a new society and help them negotiate the bureaucratic challenges that they face in that process. Based on findings from case studies, this study suggests strategies to enhance cultural inclusion and diversity through interaction design.

Keywords: climate migration, cultural identity reconstruction, interaction design, community integration, high-altitude adaptation

1. Literature Review

Existing research has analysed the extensive and wide-ranging impacts of climate migration, including community adaptive changes, the reshaping of cultural identity, and the potential role of interaction design (Fielding & Hornsey, 2016; Parrilli et al., 2018). Researchers have defined 'interaction design' to mean the design of interactive products and services in which a designer's focus goes beyond the item in development to include the way users will interact with it. Thus, close scrutiny of users' needs, limitations and contexts, etc. empowers designers to customize output to suit precise demands (What Is Interaction Design (IxD)?, 2024).

These studies contributed important insights about migration, but more research is needed on the specific strategies and methods that would enable interaction design to facilitate migrants' establishment of new cultural identities and community structures in new living environments.

Early sociological research highlighted the role of social identity theory in understanding changes in attitudes and behaviours relating to environmental issues. Fielding and Hornsey (2016) concluded that individuals are influenced by the social groups to which they belong, thereby influencing their environmental behavior. Kahan (2015) found that cultural values significantly influence how climate science is communicated and perceived. This finding highlights the challenge of overcoming cultural biases in science communication.

2. Theoretical Framework

While existing studies provide a theoretical basis for understanding changes in cultural identity and community structure in response to environmental challenges, they fail to articulate clearly the specific applications and effects of interaction design in promoting sustainable cultural development. The reason may be that the

researchers focused primarily on social and psychological factors without exploring how design principles can be practically applied to enhance communication and engagement strategies in different cultural contexts. More research is needed to fill this knowledge gap. In particular, it is necessary to examine the ways in which interactive design can be used to effectively support sustainable cultural transformation in the context of climate change. To address this knowledge gap, this study focuses on the role of interaction design in facilitating the acclimatization of migrants to high-altitude environments. It investigates how specific design tools and methods can aid in not only adapting to the new physical conditions but also in forging robust community networks essential for sustained cultural integration.

3. Contributions of This Study

This study explores the potential role of interaction design to help migrants build a bridge between their cultural identity and new environment. The ways in which design can promote cultural inclusion and diversity within a community are examined. First, this study will evaluate the practical effectiveness of different interaction design methods and use the findings to make preliminary suggestions of potential strategies. This step will be followed by an extensive literature review and in-depth case analysis. The findings of this process of review and analysis will then be used to refine or substantiate the initial suggested strategies.

4. Introduction

Climate change is challenging communities around the world, ushering in a new ‘era of adaptation’. As rising sea levels threaten traditional coastal habitats, residents are forced to migrate to higher-altitude areas. Such migration triggers complex changes in cultural structure, which can cause migrants to have limited interaction with members of the new community, resulting in their social exclusion.

This dissertation reviews how interactive design can assist high-altitude migrants in re-establishing cultural identity and community following climate change. Case studies and related literature will examine design methods and strategies that can help immigrants adjust to a new environment without losing their cultural pervasiveness. Through this study, the researcher can contribute to creating more inclusive, culturally appropriate design solutions that encourage immigrants to be self-aware and socially integrated in addition to addressing environmental problems (Concilio et al., 2022).

Following the introductory part, this dissertation will present a literature review, describe the research methods, an in-depth analysis of two practical examples, outline the key findings and put forward three design suggestions, with the purpose to leverage interactive design for cultural identity reshaping and community adaptation of climate immigrants. Finally, I plan to conclude the full work by summarizing the main viewpoints, clarifying the research’s importance, and suggesting further research directions.

5. Methodology

This study uses the qualitative research methods of case analysis and literature review. These methods are ideally suited for the exploration of complex social phenomena. The socio-cultural significance of migrants’ experiences, views, and design practices in the context of global climate change is an example of such a phenomenon. Qualitative research facilitates in-depth exploration of personal experiences and reveals the challenges of maintaining cultural continuity while adapting to a new environment (Roer-Strier & Kurman, 2009).



Figure 1. What is case analysis

Source: <https://articlereview.biz/websites-tips/what-is-a-case-analysis>

The case study is a potentially effective qualitative method for exploring the role of interaction design in a specific environment. Following Teegavarapu, Summers and Mocko (2008), this research study adopted a systematic case study method to analyse phenomena, generate hypotheses and validate the design research method. The case studies selected for this research vary in terms of geographic location, migrant context and design practice. This variety allows the researcher to fully demonstrate the application of interaction design in different contexts and its impact on the migrant community. The inclusion criteria were a focus on migration in response to climate change and the involvement of explicit interaction design practices. In addition, case studies were included only if they provided enough information to allow a thorough analysis of the impact of interaction design practices on cultural identity and community structure (Teegavarapu, Summers, & Mocko, 2008).

In accordance with the suggestions of Baxter and Jack (2008), data collection relied primarily on secondary sources, including academic papers, project reports, design archives and media reports. These sources are invaluable providers of detailed background information for each case, a description of the design process, and an evaluation of project results.

In addition to these secondary sources, e-mail interviews were conducted with designers and project managers involved in cases. These interviews gave the researcher access to deeper personal insights, thus enhancing the qualitative case study method's ability to study complex phenomena (Baxter & Jack, 2008).

6. Case Studies

In this section, I will analyse two case studies. The first case is the Sit with Me and SitAdapt projects, and the second is the easyRights project. The analyses are preceded by a review of relevant literature. By structuring this section in this way, the two case studies enhance the theoretical insights offered by the literature.

6.1 Case Study 1: *Sit with Me, Newcastle upon Tyne*

6.1.1 Context

In the context of global climate change, migration to high-altitude areas in response to rising sea levels has had a profound impact on the cultural identity and community structure of many human communities. In an article titled 'The Cultural Context of Biological Adaptation to High Elevation' (2016), Loukas Barton presented a highly heuristic case. He discussed how humans adapted to the extreme high-altitude and low-oxygen environment of the Tibetan Plateau through dual adaptation strategies of biology and culture. Barton found that the inhabitants of the Tibetan Plateau not only coped with hypoxic conditions through physiological adjustments but also by means of socio-cultural adaptations. In this extreme environment, they survived by forming a unique cultural identity and tight community structure through improving farming techniques and innovating social organisation types (Barton, L., 2016). My analysis of the specific cases follows next.

6.1.2 Sit with Me: A Digital Interactive Experience

The Sit with Me project (2016) was presented in a gallery on the banks of the Tyne River in Newcastle. The project, described in detail by Galani et al. (2020), explored the theme of migration in a digitally interactive exhibition. The focus was on promoting cultural understanding and community integration through story sharing and interactive experiences. This installation not only provided a platform for the public to gain insight into the migrant experience but also enhanced dialogue and empathy among people of different backgrounds.

Individual migration stories were showcased with the intention to enhance people's understanding of the challenges, hopes and dreams of migrants. Featuring such elements as a touch screen, audio equipment and a comfortable seat, Sit with Me offered an immersive space that encouraged visitors to spend time listening to and reflecting on the stories of migrants. These stories covered the entire process of migration, from the reasons why people left their homes to the challenges encountered in their new areas of residence and how they adapted to and integrated into the new society.



Figure 2. Sit with Me

Source: https://www.youtube.com/watch?v=iHsvw0v_hFU

The core goal of the design team was to promote mutual subjectivity and dialogism, thereby breaking down stereotypes about migration and revealing the complexity that drives the process and the individuality of the people who migrate. The “Sit with Me” exhibition features an interactive aspect that enhances the experience of visitors through innovative technical means. The exhibit uses two-way mirrors and depth camera technology, like Microsoft Kinect, to detect the presence of visitors and display vivid historical immigration images. These images are dynamically aligned with the visitor’s reflection in the mirror, creating a visual fusion of identity between the visitor and the immigrant. Facial recognition algorithms control the display of images, and related words, such as “son” or “ice maker,” are also displayed, increasing the educational and interactive nature of the exhibition.

Next, I discuss how interaction design can facilitate cultural understanding and community integration, as demonstrated in the Sit with Me project. This is followed by an exploration of the ways in which interactive systems can support migration groups and help them face the challenges presented by a new environment. In this context, Märtin et al. (2017) demonstrated advanced thinking in the design of adaptive interactive systems. Their research, which focused on model-based user-interface adaptation by exploring situations, emotions and software patterns, resulted in the SitAdapt architecture. SitAdapt is an advanced user interface system that dynamically adjusts to a user’s mood and context by analyzing biometric data such as eye movements and facial expressions. This feature is particularly beneficial for immigrants adjusting to a new environment, as the system can detect stress or confusion and respond by simplifying the user interface. This adaptive response provides immediate support by making key information easier to access and understand, thereby helping immigrants overcome common barriers to integration, such as language difficulties and unfamiliarity with local systems. By enhancing communication and interaction, SitAdapt supports the delicate balance between protecting immigrants’ cultural identities and facilitating their adaptation to their new communities.

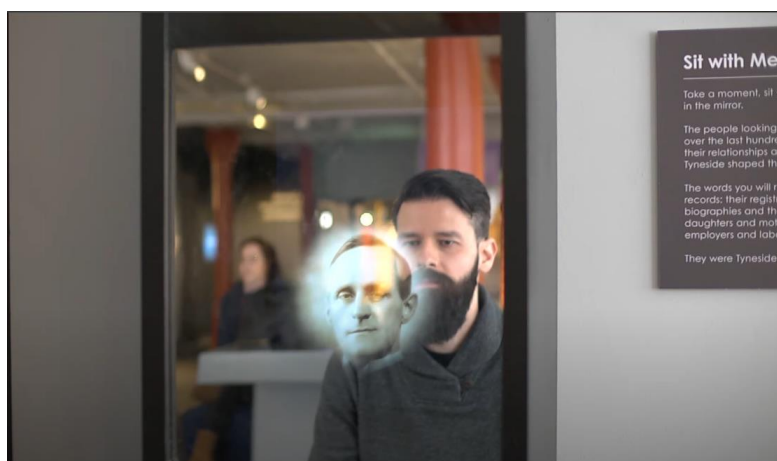


Figure 3. Interaction of Sit with Me

Source: https://www.youtube.com/watch?v=iHsvw0v_hFU

6.1.3 Impact

In the two cases presented above, the interaction design of the Sit with Me exhibition and SitAdapt system demonstrated the important role that interaction design can play in promoting cultural understanding and community integration. These designs demonstrated in the “Sit with Me” exhibition, the design reinforces participants’ sense of cultural identity by showcasing immigrants’ personal stories. This project avoids simplistic messaging and stereotypes, providing visitors with a profound artistic experience that enhances their understanding of different perspectives on the migration phenomenon. This design approach allows immigrants’ voices to be heard and stimulates dialogue among visitors, promoting understanding and empathy between people from different cultural backgrounds.

The “SitAdapt” system responds to user mood and environment changes by adjusting the user interface in real-time. Especially for new immigrants, the system can detect user stress or confusion and simplify the interface, accordingly, making key information easier to read. Access and understand. For example, if the system detects that a user is experiencing increased stress when searching for medical services, it can automatically adjust the interface to highlight necessary medical information and provide step-by-step guidance in the user’s native language. This adaptive response not only supports immigrants in adapting to their new environment but also helps them better integrate into their communities without sacrificing their cultural identity.

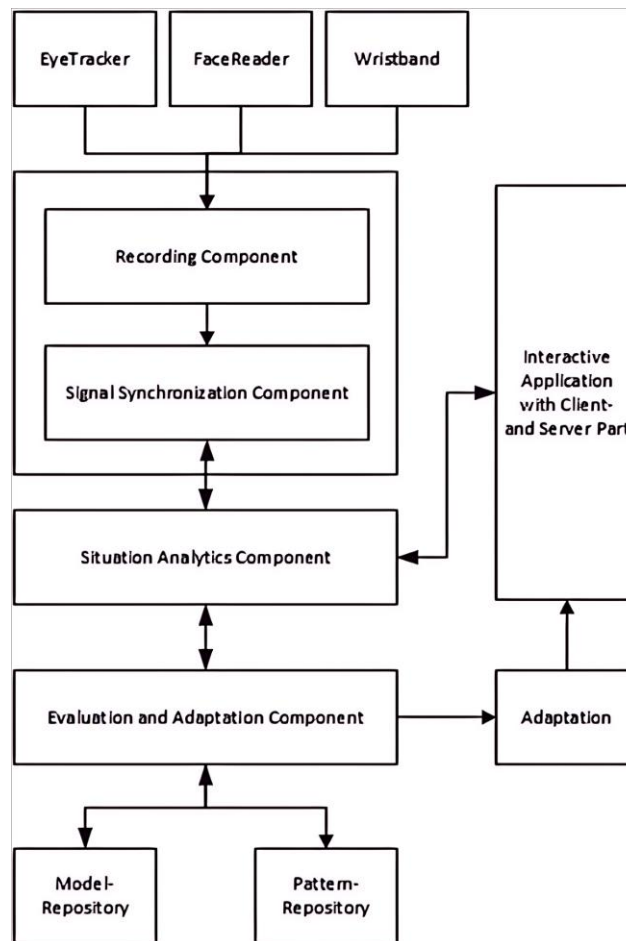


Figure 4. SitAdapt architecture

Source: https://link.springer.com/chapter/10.1007/978-3-319-58071-5_33

6.1.4 Conclusion

By analysing the two cases of Sit with Me and SitAdapt, this study reveals the meaningful role that interaction design can play in promoting cultural integration and community structure adaptability. My discussion emphasises the importance of interaction design in global climate change. These cases show that effective interaction design can help migrant groups establish new social and cultural identities in their new environment while promoting cultural exchange and understanding between original residents and new immigrants.

Specifically, the Sit with Me project made cultural experiences, helping the public understand the complex emotions and challenges behind migration. This understanding is the cornerstone of building inclusive communities because it promotes empathy among people from different backgrounds. Simultaneously, the SitAdapt adaptive interaction system makes it possible for technological adjustments to support migrants' rapid adaptation to a new society. SitAdapt does this by optimising the user experience in response to the user's emotional and psychological state, thus easing the cultural adaptation process.

The findings of this study emphasize the crucial role of interaction design in promoting cultural integration and enhancing the resilience of community structures. The study illustrates how interaction design can assist immigrant groups in establishing new social and cultural identities in unfamiliar surroundings and enable cultural exchange and understanding between Aboriginal people and new immigrants. The "Sit with Me" project, in particular, helps to facilitate cultural exchange by providing a platform for sharing immigrant experiences, while the "SitAdapt" system simplifies the cultural adaptation process by adapting the user interface to respond to the user's emotional and psychological state. Therefore, it is recommended that future research should focus on improving conversion efficiency and experience in cross-cultural environments through interaction design.

6.2 Case Study 2: EasyRights, Europe

6.2.1 Context and Impact

The easyRights project facilitates the integration of migrants into society by means of a collaborative design learning framework that uses interaction design to overcome bureaucratic barriers and the use of unfamiliar, idiomatic language. The goal is to make it easier for migrants to exercise their rights, which may help them adapt more quickly to a new culture and social structure. The author's thematic focus is: in the future, people will have to migrate to high altitudes to survive in response to climate change, so the adaptation of the new cultural identity and social structure faced by them becomes an issue that requires special attention. Traditional migration policies and their enforcement often fail to consider migrants' psychological and cultural difference. The focus of this research study is on the forced migration of coastal communities to areas of higher altitude due to rising sea levels. The adoption of new cultural identities and social structures by such displaced communities therefore becomes an issue that requires attention.



Figure 5. The official website of EasyRights

Source: <https://www.easyrights.eu/>

1) Access to services — a human right

As described by Concilio et al. (2022), the easyRights project aims to improve migrants' access to public services by means of technology that facilitates the exercise of their rights. The developers of the project realised that migrants often lacked the skills and understanding that was necessary to access services. By means of collaborative design (hackathons), solutions were developed to help migrants overcome bureaucratic and linguistic barriers. Underlying the easyRights project is the idea of service as an interface between rights and individuals. The project also emphasises the importance of easy access to services as a proxy for the value and

practicality of rights. According to O’Neill (2005), service as an interface to rights means that there must be clear mechanisms and subjects to guarantee these rights. The easyRights project emphasises the importance of improving service accessibility by viewing service as an interface between rights and people, echoing discussions in the literature on service design and digital transformation (Warner, 2008; Abramovitz & Zelnick, 2015).

2) Collaborative design

Concilio et al. (2022) examine how cross-sector collaboration can improve the impact of immigrants on public services in a service design ecosystem formed in four European pilot cities — Birmingham, Larissa, Palermo and Malaga Access. These cities were selected as pilots due to their unique experiences with immigrant admissions and integration to explore and validate the effectiveness of co-designed services. The concept of collaborative design includes bringing stakeholders together when designing services and using ICT tools to overcome the bureaucratic and linguistic barriers that migrants encounter when interacting with formal procedures. Collaborative design activates the Quadruple Helix, in other words, the involvement of citizens, academia, industry, and government (Carayannis & Campbell, 2009). Such community activation demonstrates the importance of diverse stakeholders partaking in the design and delivery of public services. Through hackathon activity, the easyRights project not only innovates the design of public services but also responds directly to the needs of migrants through technological solutions. This method demonstrates how service ecosystem activation can be achieved through inclusive and diverse participation. These ideas are consistent with the findings of Reichel et al. (2015) on the role of ICT in migrant employment and integration.

3) Hackathons as cooperative effort

By organising hackathons, the easyRights project has successfully brought together technicians, designers, migrants, social workers and legal experts to explore and tackle challenges that affect migrants’ access to public services. These activities aim not only to generate new solutions but also to promote solidarity within the community in the first place and reevaluate the design of public services through interdisciplinary cooperation in the second place. In their research, Briscoe and Mulligan (2014) pointed out that hackathon activities facilitated the process of rapid prototyping and digital innovation. These benefits align with the the goals of the easyRights project. By focusing on the specific needs of migrants, these activities exemplify how collective wisdom can be effectively harnessed to tackle societal challenges.

Furthermore, Irani’s (2015) analysis highlighted the role of hackathons in shaping entrepreneurial citizenship. This study found that such activities can help participants build a sense of ownership of technological innovations. In the easyRights project, migrants’ direct participation in the service design process not only reinforced the practicality of solutions but also helped them see that they can bring positive change to their new community.

Nolte et al. (2018) also explored the results of hackathon activities, which included innovative implementation and team formation. These findings indicated that besides immediate technical solutions, hackathons have a far more profound influence on individual participants and the entire community. In the case of the easyRights project, such activities not only solve immediate design challenges but also build a culture of ongoing partnership and innovation for migrants and other community members.



Figure 6. easyRights hosts its Final Conference in Krems, Austria

Source: <https://www.easyrights.eu/post/easyrights-hosts-its-final-conference-in-krems-austria>

6.2.2 Conclusion

Through its collaborative design method and interaction design practice, the easyRights project powerfully demonstrated how technology and design can be used to help migrants, including those who are forced by climate change to migrate to high altitudes, to adapt to a new environment and exercise their rights. This project emphasised the importance of interdisciplinary cooperation in activating and strengthening the service ecosystem in this context. In this way, the easyRights project acts as a practical example of how to promote the adaptation of a migrant community to new cultural and social structures through interaction design.

Related research has shown that migrant integration is a multi-dimensional process that involves not only economic and social adaptation but also understanding and adapting to a new cultural environment (Harder et al., 2018). Social capital and public institutions play a vital role in promoting the integration of new migrants with local society (Thomas et al., 2016). In addition, the integration of migrants not only manifests their personal capabilities but also reflects the openness and inclusion of the receiving society (Lutz, 2017; Egmont et al., 2021). By applying these concepts to the easyRights project, the ability of interaction design to simplify the process of accessing services for migrants is demonstrated. Interaction design achieves these goals by promoting cultural understanding and communication, which is particularly important as immigrants adapt to the demands of high altitude in response to climate change. At high altitudes, migrants may face additional living and environmental challenges, such as extreme climatic conditions, limited resources, and inadequate infrastructure. These factors may exacerbate social and cultural isolation, making effective communication and cultural understanding particularly critical. By providing a more intuitive and accessible service interface, interaction design not only helps immigrants better understand and utilize local resources, but also promotes mutual understanding between different cultural backgrounds, thereby helping them better integrate into the new environment and effectively cope with it. Additional survival challenges posed by high altitude.

7. Discussion

In the context of migration of coastal communities to high-altitude areas triggered by global climate change, interaction design can play an important role in promoting the reshaping of cultural identity and strengthening the adaptation of community structure. Based on the case study of the easyRights project and the Sit with Me exhibition, this study finds that interaction design can not only help solve the psycho-cultural challenges faced by migrants but also promote in-depth understanding and communication between different cultural identities and beliefs. In the literature review above, the author referred to the argument put forward by Fielding and Hornsey (2016) that social identity theory emphasises how individual residents define their social identity through their sense of belonging to the community. Interaction design makes the expression and sharing of cultural identity possible by providing shared spaces and platforms. For example, the digital storytelling in Sit with Me helped migrants maintain their original cultural identity but also promoted the establishment of a new sense of community belonging. This engagement in shared platforms and storytelling is further supported by theories that highlight the social constructs and spaces that allow for cultural expression and integration, enriching the community's capacity to accommodate diverse identities (Pless, Eckburg, & Henn, 2022).

By combining the findings of the case studies and theories referenced above, one can argue that interaction design can also encourage those who have migrated to high-altitude areas to adapt more quickly to the differences in culture and community structure. If interaction designers strive to improve openness and inclusion in the same way that the designers of easyRights did — in other words, through innovative interaction technologies and methods — established high-altitude communities receiving climate change migrants will be helped to maintain their cultural identity while simultaneously adapting to the new arrivals.

Design Recommendations

Based on my case study analysis, I have identified three key design recommendations that will help the next generation of interaction designers design for climate-change migration:

- 1) **Design for Cultural Inclusivity:** Design interactive systems that not only bridge linguistic barriers but also foster cultural inclusivity. This involves embedding features that can adapt to the diverse cultural backgrounds of users, such as multilingual interfaces and culturally relevant content. Based on Hofstede's (2011) cultural dimensions and Marcus and Gould's (2000) view on web-design, we can conclude that the results would be more acceptable by the community if the features considering cultural differences.
- 2) **Promote Participatory Design Processes:** Engage migrants and local communities directly in the design process to ensure that the solutions are tailored to their specific needs and challenges. According to Sanders and Stappers (2008), co-creation should be grounded, and according to Bødker (1996), more stakeholders should co-design the tools for adaptation in new social and environmental conditions to be accepted and used.
- 3) **Implement Adaptive and Context-Aware Interfaces:** Develop interfaces that are sensitive to the context and emotions of the users, adapting dynamically to changes in their environment and emotional state. Dey and

Abowd's (1999) work on context-aware computing and Schilit et al.'s (1994) insights into context-aware applications demonstrate that the interface should dynamically adapt to the user context and emotion, which would enhance the usability of the people in transition and make their psychological adaptation to the new cultural and social norms easier.

Based on the three design suggestions I mentioned above, I believe that design should take into account the cultural background and needs of immigrants and promote inclusivity and representation by providing multilingual interfaces and culturally relevant content. An active participatory design process helps to work directly with immigrants and local communities to ensure that design solutions truly meet their needs. At the same time, adaptive and context-aware interfaces can dynamically adjust according to the user's emotional and environmental status, helping immigrants better adapt to the new cultural and social environment. These design strategies can provide important cultural and community support for immigrants and promote global cultural exchange and social harmony.

Limitations

This dissertation analyses the concepts of reshaping cultural identity, adaptive change in community structure, and the role of interaction design, providing new insights in this field of study. However, the research has its limitations. The themes discussed are not universal and extensive, so a limited number of relevant cases and literature resources could be identified and analysed. Most studies focused on specific projects and geographical locations. Although the two cases stood up to analysis, their conclusions may not be generalisable to all high-altitude migration contexts because the characteristics of high-altitude areas and their societies vary widely.

Furthermore, this dissertation employed qualitative research methods and consulted literature that was also qualitative in approach. The interpretive nature of the findings may therefore lack quantifiable verification, especially when evaluating specific effects. Therefore, although this study contributes both theoretically and practically, its conclusions need to be verified in a broader cultural and social context.

8. Conclusion

This study examined the impact of migration to higher-altitude regions on migrants' cultural identity and community structure in the context of global climate change. The potential for interaction design to play a key role in this process was a particular focus. By performing case studies of the Sit with Me and easyRights projects, this study concludes that interaction design can make a significant contribution to the reshaping of cultural identity and adaptive changes in community structure. In addition, interaction design can effectively support the integration of migrants into the new environment and community. Interaction design can be used to improve interaction and understanding between migrants and members of the local community by creating opportunities for meaningful communication and participation.

Based on the case studies and research I mentioned above, I make three key design recommendations in the Discussion section that highlight the importance of enhancing cultural sensitivity, promoting interdisciplinary collaboration, and implementing ongoing user feedback mechanisms. Give designers a key role in helping immigrants adapt to culture and integrate into communities. By implementing these suggestions, I believe that future interaction design practitioners will better promote global cultural exchange and social harmony.

In addition, it is recommended that future practitioners and policymakers pay more attention to the application of interaction design in cultural integration and community development strategies. Furthermore, it is recommended that future research should explore the application of interaction design in different cultural and geographical contexts and identify ways to address the specific challenges faced by migrants through technological innovation.

This study clarifies the important role that interaction design can play in the promotion of cultural identity and in support of the adaptive changes that migrants need to make. This research therefore offers fresh perspectives and suggests a new area for academic research to investigate. These contributions not only enrich the theoretical knowledge of global migration and acculturation but also provide guidance for policy formulation and practical operation in related fields. Through in-depth analysis and discussion, this study not only answers the main research questions but also demonstrates the importance of research in understanding and addressing the challenges of global migration, highlighting the necessity for further research and practical exploration.

Finally, by integrating theory and practice, this study provides profound insights into the changes in cultural identity and community structure in the context of high-altitude migration and clarifies the key role of interaction design in this process, emphasising its application value in response strategies to global climate change.

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References

- Abramovitz, M., & Zelnick, J. R., (2015). Privatization in the Human Services: Implications for Direct Practice. *Clinical Social Work Journal*, 43, 283-293.
- Amiot, C. E., de la Sablonnière, R., Terry, D., & Smith, J. R., (2007). Integration of social identities in the self: Toward a cognitive-developmental model. *Personality and Social Psychology Review*, 11(4), 364-388.
- Avram, G., & Maye, L. A., (2016). Co-designing encounters with digital cultural heritage. In Proceedings of the 2016 ACM Conference Companion Publication on Designing Interactive Systems, 285-288. <https://doi.org/10.1145/2908805.2913013>
- Barton, L., (2016). The cultural context of biological adaptation to high-altitude Tibet. *High Altitude Medicine & Biology*, 17(2), 98-108.
- Bødker, S., (1996). Creating Conditions for Participation: Conflicts and Resources in Systems Development. *Human-Computer Interaction*, 11(3), 215-236.
- Briscoe, G., & Mulligan, C., (2014). Digital Innovation: The Hackathon Phenomenon. Creativeworks London.
- Carayannis, E. G., & Campbell, D. F. J., (2009). 'Mode 3' and 'Quadruple Helix': Toward a 21st Century Fractal Innovation Ecosystem. *International Journal of Technology Management*, 46(3/4), 201-234.
- Chiang, C.-W., Betanzos, E., & Savage, S., (2018). Exploring blockchain for trustworthy collaborations between immigrants and governments. Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems.
- Concilio, G., Costa, G., Karimi, M., Vitaller del Olmo, M., & Kehagia, O., (2022). Co-Designing with Migrants' Easier Access to Public Services: A Technological Perspective. *Social Sciences*, 11(54). <https://doi.org/10.3390/socsci11020054>
- Cooke, A. M., & Kemeny, T., (2017). Cities, immigrant diversity, and complex problem solving. *Research Policy*, 46, 1175-1185.
- Dey, A. K., & Abowd, G. D., (1999). Towards a Better Understanding of Context and Context-Awareness. Georgia Institute of Technology.
- Diehl, C., Lubbers, M., Mühlau, P., & Platt, L., (2016). Starting out: new migrants' socio-cultural integration trajectories in four European destinations. *Ethnicities*, 16(2), 157-179. DOI: 10.1177/1468796815616158
- Egmont, W., Takeuchi, D., McBrady, E. E., & Enelamah, N., (2021). Immigrant integration in the United States. *Social Work*. <https://doi.org/10.1093/obo/9780195389678-0296>
- Fielding, K. S., & Hornsey, M. J., (2016). A social identity analysis of climate change and environmental attitudes and behaviors: insights and opportunities. *Frontiers in Psychology*, 7, 121.
- Galani, A., Durrant, A. C., Chatting, D., & Farley, R. M., (2020). Designing for intersubjectivity and dialogicality in museum interactive installations about migration. *Digital Creativity*, 31(4), 302-319. <https://doi.org/10.1080/14626268.2020.1848873>
- George, T., (2023). How to Write a Thesis or Dissertation Conclusion. <https://www.scribbr.com/dissertation/write-conclusion/>.
- Harder, N., Figueroa, L., Gillum, R., Hangartner, D., Laitin, D., & Hainmueller, J., (2018). Multidimensional measure of immigrant integration. *Proceedings of the National Academy of Sciences of the United States of America*, 115(45), 11483-11488. <https://doi.org/10.1073/pnas.1808793115>
- Hofstede, G., (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, 2(1), 8.
- Interaction Design Foundation — IxDF, (2016, June 2). What is Interaction Design (IXD)?. Interaction Design

- Foundation — IxDF. <https://www.interaction-design.org/literature/topics/interaction-design>
- Irani, L., (2015). Hackathons and the Making of Entrepreneurial Citizenship. *Science, Technology, & Human Values*, 40(5), 799-824.
- Ji, H., (2019). Research on the Coordinative Development of Interactive Design and Local Traditional Culture Communication. Proceedings of the 5th International Conference on Arts, Design and Contemporary Education (ICADCE 2019).
- Kahan, D., (2015). Climate-science communication and the measurement problem. *Political Psychology*, 36, 1-43.
- Kelly, P., & Lusic, T. (2006). Migration and the Transnational Habitus: Evidence from Canada and the Philippines. *Environment and Planning A*, 38, 831-847. Retrieved from https://consensus.app/papers/migration-transnational-habitus-evidence-canada-kelly/ce977fddb83953d3999840089654a052/?utm_source=chatgpt
- Lanz, F., (2017). Staging Migration (in) Museums: A Reflection on Exhibition Design Practices for the Representation of Migration in European Contemporary Museums. *Museum and Society*, 15(1), 123-141. Retrieved from <https://www.jstor.org/stable/10.29311/mas.v15i1.2760>
- Liaqat, A., Axtell, B., & Munteanu, C., (2021). Participatory Design for Intergenerational Culture Exchange in Immigrant Families. *Proceedings of the ACM on Human-Computer Interaction*, 5, 1-40.
- Lutz, P., (2017). Two logics of policy intervention in immigrant integration: an institutionalist framework based on capabilities and aspirations. *Comparative Migration Studies*, 5. <https://doi.org/10.1186/s40878-017-0064-0>
- Marcus, A., & Gould, E. W., (2000). Crosscurrents: Cultural Dimensions and Global Web User-Interface Design. *Interactions*, 7(4), 32-46.
- Märting, C., Herdin, C., & Engel, J., (2017). Model-based User-Interface Adaptation by Exploiting Situations, Emotions, and Software Patterns. 2017 International Conference on Computational Science and Computational Intelligence (CSCI), 590-595.
- Maye, L. A., Bouchard, D., Avram, G., & Ciolfi, L., (2017). Supporting Cultural Heritage Professionals in Adopting and Shaping Interactive Technologies in Museums. In Proceedings of the 2017 Conference on Designing Interactive Systems, 221-232. <https://doi.org/10.1145/3064663.3064734>
- Nolte, A., Pe-Than, E.P.P., Filippova, A., Bird, C., Scallen, S., & Herbsleb, J.D., (2018). You hacked, and now what? - the Outcomes of a Corporate Hackathon. Proceedings of the ACM on Human-Computer Interaction, 2(CSCW), Article 129.
- O'Neill, O., (2005). The Dark Side of Human Rights. *International Affairs*, 81(2), 427-439.
- Parrilli, M., Montesor, S., & Tripl, M., (2018). A new approach to migrations: communities-on-the-move as assets. *Regional Studies*, 53, 1-5.
- Pless, E., Eckburg, A. M., & Henn, B., (2022). Predicting Environmental and Ecological Drivers of Human Population Structure. *Molecular Biology and Evolution*, 40. Retrieved from https://consensus.app/papers/predicting-ecological-drivers-human-population-pless/c491975c13dd5d06800bb99439dad1d7/?utm_source=chatgpt
- Pundziuvienė, D., Cvilikaite-Mačiulskienė, J., Matulionienė, J., & Matulionytė, S., (2020). The Role of Languages and Cultures in the Integration Process of Migrant and Local Communities. *Sustainable Multilingualism*, 16, 112-130.
- Qiu, Z., (2023). High-Altitude Avian Migration across the Himalayas: Challenges, Fly Strategy, and Physiological Adaptation. *Theoretical and Natural Science*.
- Reichel, D., Morales, L., & Amuedo-Dorantes, C., (2015). Surveying immigrants without sampling frames – evaluating the success of alternative field methods. *Comparative Migration Studies*, 3(1), 1-22.
- Sanders, E. B. N., & Stappers, P. J., (2008). Co-creation and the New Landscapes of Design. *CoDesign*, 4(1), 5-18.
- Schilit, B. N., Adams, N., & Want, R., (1994). Context-Aware Computing Applications. In Proceedings of the Workshop on Mobile Computing Systems and Applications (pp. 85-90).
- Schotte, K., Stanat, P., & Edele, A., (2018). Is integration always the most adaptive? The Role of Cultural Identity in Academic Achievement and in the Psychological Adaptation of Immigrant Students in Germany. *Journal of Youth and Adolescence*, 47, 16-37. DOI: 10.1007/s10964-017-0716-0

- Singh, M., & Siddique, G., (2020). Cultural Integration of Inter-State Migrants in Asansol, West Bengal. Retrieved from https://consensus.app/papers/integration-interstate-migrants-asansol-west-bengal-singh/a3a04e4a1f54508381d48f8e6e9da993/?utm_source=chatgpt
- Singh, S., & Siddique, M.A., (2020). Cultural Integration of Inter-State Migrants in Asansol, West Bengal. *International Journal of Scientific & Technology Research*, 9(2), 3819-3823. Available at: <http://www.ijstr.org/final-print/feb2020/Cultural-Integration-Of-Inter-state-Migrants-In-Asansol-West-Bengal.pdf>
- Thomas, R. L., Chiarelli-Helminiak, C., Ferraj, B., & Barrette, K., (2016). Building relationships and facilitating immigrant community integration: An evaluation of a Cultural Navigator Program. *Evaluation and Program Planning*, 55, 77-84. <https://doi.org/10.1016/j.evalprogplan.2015.11.003>
- Vinke, K., et al., (2020). Migration as adaptation. *Migration studies*.
- Warner, M., (2008). Reversing Privatization, Rebalancing Government Reform: Markets, Deliberation, and Planning. *Policy and Society*, 27(2), 163-174.
- Yang, J., et al., (2016). Whole-genome sequencing of native sheep provides insights into rapid adaptations to extreme environments. *Molecular Biology and Evolution*, 33(10), 2576-2592.
- Zambon, T., & Prandi, C., (2023). Culturally-Informed Co-Design of Interactive Digital Tools with Citizen Science Communities. Proceedings of the 2023 ACM Conference on Information Technology for Social Good.

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