Selected Dimensions

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The Impact of Technology on Intercultural Education

A B S T R A C T : The rapid advancement of technology has had a profound impact on Intercultural education, presenting both advantages and challenges. While the promise of a global village initially fell short for many cultures and societies, information and communication technologies (ICT) have opened up new avenues for marginalized societies, spreading science and education to previously inaccessible rural areas. However, digital gaps persist, as underprivileged communities often lack the skills necessary to navigate the vast sea of information.

Online environments have emerged as powerful platforms for connecting cultures and facilitating hidden forms of communication. Artificial intelligence (AI) has the potential to bridge language barriers and promote cultural diversity. In this context, intercultural awareness and communication skills have become essential for success in life, leading to a growing interest in developing intercultural competencies worldwide.

Educators and teachers face the challenge of finding effective methodologies to foster intercultural competencies. One promising approach involves leveraging ICT capabilities and utilizing AI and online environments. This article aims to explore the technological advancements that impact Intercultural education, delve into the associated challenges, and propose principles for educators to navigate this evolving landscape.

By embracing technology, educators can leverage its potential to bridge cultural gaps, promote inclusivity, and enhance intercultural understanding. However, careful consideration must be given to the ethical implications, ensuring equitable access to technology, and addressing the digital divide. Through collaborative efforts and innovative pedagogical approaches, technology can become a transformative tool in nurturing intercultural competencies and fostering a more inclusive and globally connected learning environment.

K E Y W O R D S : Technology, ICT, Artificial Intelligence, Intercultural Education, Intercultural Education, Equity.

Introduction

As globalization has been relentlessly expanding in every area of life, in both personal and professional arenas, the world is becoming one "global village" where distances between places and cultures are ever shorter. In this context, the education sector in particular must mirror the constantly shifting dynamics of society and work in order to adapt, improve and prepare future professionals for tomorrow's world. Increased access to global information via the internet and mobility due to easier travel also brings a myriad of learning opportunities; however, not everybody knows how to navigate the sea of information, with its exposure to new and unfamiliar phenomena. One such problematic experience could be the encounter with unfamiliar cultures that are suddenly closer than ever. This has put even greater focus on intercultural dynamics, with a growing interest in and necessity of developing competencies across the global community. In order to create coherence, peace and advancement in today's dynamic societies, intercultural awareness and communication skills have become an imperative for the everyday citizen (Ribeiro, 2016).

Intercultural Competence

Intercultural competence encompasses capacities such as intercultural and transcultural communication, as well as cross-cultural adaptation and sensitivity (Sinicrope et al., 2007). Those skills manifest themselves in unique ways depending on one's context, social environment, national and family culture or cultures, and more. For example, intercultural sensitivity refers to one's ability to notice, understand and navigate cultural differences (Hammer, Bennett, & Wiseman, 2003), which calls for recognition of one's own cultural particularities first, in order to compare them with others during an encounter.

Other definitions of intercultural competence describe it as a "a complex of abilities needed to perform effectively and appropriately when interacting with others who are linguistically and culturally different from oneself" (Fantini & Tirmizi, 2007, p. 9); the ability to adjust to other cultures and willingly modifying one's behavior out of respect (Hammer, Bennett, & Wiseman, 2003); the ability for intercultural communication (Bennett, 1993); and the ability to step beyond one's own culture and function with other individuals from linguistically and culturally diverse backgrounds (Sinicrope, Norris, & Watanabe, 2007).

Some scholars distinguish between intercultural sensitivity and communication, with the former involving knowledge of cultural differences, while the latter is the acting on that knowledge, applying the sensitivity in their verbal and non-verbal communication in encounters with other cultures (Hammer, Bennett, & Wiseman, 2003). Other models of this concept include attitudes such as curiosity and openness about other cultures; knowledge about other cultural groups and their practices; skills of interpreting and relating, discovery and interaction; and critical cultural awareness (Risager, 2007). Evidently, there are numerous understandings, definitions and models of what intercultural competence is. It is certain, however, that an interculturally competent person integrates the knowledge and sensitivities of other cultures into their attitudes, which further reflect on their behaviors in relevant situations, culminating in a harmonious and fruitful interaction.

The question often is, how do people develop intercultural competence, gaining knowledge, experiencing exposure, shifting their attitudes and adapting their behaviors to other cultures' differences gradually and safely?

To answer these questions, we need to look at how we can educate groups and individuals, because education plays a huge role in shifting and shaping old perspectives into new attitudes in general, and intercultural competence in particular. Unfortunately, however, few teachers have the necessary knowledge and skills to teach intercultural competence (Céspedes Ventura & Ballesta Pagán, 2018; Davis et al., 2005, Shapira et al., 2023). For this reason, it is especially important to equip practicing and pre-service teachers with the tools to learn from and about their own and other cultures, so that they can immediately apply this knowledge in their classes.

ICT for Culturally Diverse Groups

One effective tool for intercultural mediation and adaptation, whether or not in the educational context, is the use of information and communication technologies (ICT) for communication and shared work. While in the initial stages of ICT-mediated intercultural communication, prejudice and stereotypes may be the first reaction, over time, online interaction should lead to individualized impressions and personal relations (Walther et al., 2015). Despite the scarce research available on this subject, the published data often point to the effectiveness of utilizing technology for building trust and effective interaction between culturally diverse groups and/or teams in various contexts – from education to work and corporate settings (Ganayem et al., 2020).

Early studies on the use of ICT among culturally-diverse groups note that the rich array of available digital means, such as video conferences, blogs, forums, shared documents, etc., encourage more sensitive and ethically aware cross-cultural communication (O'Brien et al., 2007). For example, in corporate settings, culturally diverse teams can often experience challenges in communication due to differences in working styles and other aspects. Those negative effects, however, were proven to be successfully mitigated by the use of ICT as teams were empowered to select their desired means of communication (e.g., email or chat), and this allowed for more comfortable, safe and neutral ground for navigating the differences among team members (Shachaf, 2008).

Across industries, however, the challenge persists. For example, when providing web services such as developing websites, software and apps, IT professionals, who are widely responsible for facilitating information sharing on a global scale, often lack the intercultural competence that would allow them to create a culturally-appropriate product (Pikhart, 2019). In many cases, the internet developers and medium might also lead to racism (Daniels, 2013).

On the other hand, in the context of higher education, Arenas-Gaitán et al. (2011) examined the similarities and differences in cultural characteristics and in technology acceptance levels of students of two nationally, continentally and culturally distinct universities – one in Spain, and the other in Chile. While the research confirmed that the students at one university were indeed culturally different from their counterparts, it also found that despite those distinctions, both groups exhibited similar e-learning technology acceptance. This shows that when a common culture cannot be the first bridging factor between diverse groups, ICT methods of learning, communication and working can be a great starting middle ground for both parties, allowing them to meet and collaborate efficiently (Arenas-Gaitán et al., 2011). In a later similar study, Walther et al., 2015 used a ICT to reduce intergroup prejudice across different cultures, where the staff confirmed that prejudice and stereotyping were reduced among diverse members (Walther et al., 2015). In addition, P.M. Ribeiro (2016) confirmed the benefits of ICT-mediated education on learning about and bridging cultural differences, improving and shaping attitudes towards interculturalism, as well as redefining personal and group meanings of culture in a diverse society (P. M. Ribeiro, 2016). Furthermore, advanced environments such as virtual worlds can serve as a stage for simulation on racism and intercultural attitudes, thereby promoting empathy and positive change in other cultures (Yazbak Abu Ahmad & Liber, 2023).

ICT Based Projects to Increase Cultural Competence

Multiple ongoing or long-term projects are serving as pioneering examples of fostering intercultural competence through digital means, some including virtual world interactions and collaborative projects. Author examine three such success cases: the TEC project, The Indigenous Education Institute (IEI) project, and The Micool (mobile intercultural collaborative learning) project. While each of them has its own target population, timeframe and dynamics, the common link among them is their success in bringing together varied cultures in proactive, creative and positive learning experiences through the use of ICT. The TEC project, for example, uses technology as a digital environment to stimulate interaction and bridge differences between cultures gradually and safely. The IEI, on the other hand, capitalizes on developing digital products as a means of empowerment and collaboration across culturally mixed groups. Lastly, the Micool supported in-service teachers in digital literacy, and consequently examined the benefits of the use of ICT on inclusion in mainstream settings, thus reducing the disparities in learning outcomes affecting disadvantaged learners. All those projects are examples of the power of ICT to improve social cohesion and justice.

The TEC model, for example, offers a safe space for gradual development and sustainable strengthening of the conversation between cultures in a collaborative learning context due to its progressive step-by-step exposure and multi-layered advancement of communication between participants. The virtual character of the activities allows for bias- and prejudice-free connections, unburdened by cultural stereotyping related to external appearance, and instead encouraging meaningful dialogue. The TEC model goes beyond the superficial online connection by using the Contact Hypothesis, developed by Pettigrew and Tropp (2008) and based on Allport's hypothesis (Allport, 1954), which encourages participants' equality, collaboration instead of competition, dialog, and partnerships between whole groups of individuals. The first exposure is via texting, followed by verbal communication and culminating in video conferencing where students see each other's faces. Such learning collaboration experiences are reported to lead to improved learning and the ability to integrate different teaching methods, while increasing students' interest and satisfaction (Abedin, 2012; Palloff & Patt, 2005).

The TEC experience incorporates various educational and academic dimensions: collaborative and individual teaching and learning; innovative, significant pedagogy; recognition and openness to other cultures while

presenting one's personal culture; deepening human values; mutual respect; and advanced information and communication skills. Learning activities take place in a unique digital environment with possibilities for network sharing, synchronous and asynchronous communication, online discussion, and use of Web 2.0 for the production of a collaborative product, podcasts and building digital games and videos. Participants benefit from this richness by developing thinking and higher-order collaboration skills (Author, et al., 2013). The rich variety of digital learning methods and tools is an added bonus for every participant as they become familiar, comfortable with and confident in working with advanced ICT-based educative tools.

Due to its online format, the model is free of some of the limitations of the physical classroom, such as the number of students that can participate, or the use of one dominant language. Some of the programs using the TEC model can easily involve up to 300 students and are supported in three languages-- Hebrew, Arabic and English--thus allowing for independence, proactivity, and safety for navigating the Intercultural collaborative learning environment.

The TEC model is constantly subject to analysis, research, and improvement. Studies so far have demonstrated a significant advancement for students and teachers in areas such as Intercultural attitudes and perceptions, social coherence, pedagogical development, and improved technological literacy. Such research informs TEC model practitioners in their future efforts to deepen Intercultural education; advocate for tolerance; collaboration; and better knowledge, understanding and acceptance of the different other.

Multiple studies over the years have observed the effectiveness of the TEC model on successfully bringing pupils from different cultures to a fruitful and positive collaboration whose benefits extend long after the course. Many alumni of the TEC Center, the primary educational institution that applies the model in its activities, are not only interested in further peer collaborations – they are also proactively implementing projects based on the TEC principles in their own teaching practices via their schools' program of TEC4Schools (Author et al., 2013).

The TEC4Schools program and its activities were also found to be a contributing factor in predicting pupils' willingness to interact with peers from cultures in conflict. Research has demonstrated that positive experiences related to intercultural encounters and intercultural attitudes were all pre- existing factors for students to interact with peers from a different culture and to engage with them in collaborative learning activities.

Overall, the TEC model has a great influence on shifting attitudes towards "the Other" (Yazbak-Abu Ahmad & Hoter, 2019). However, students
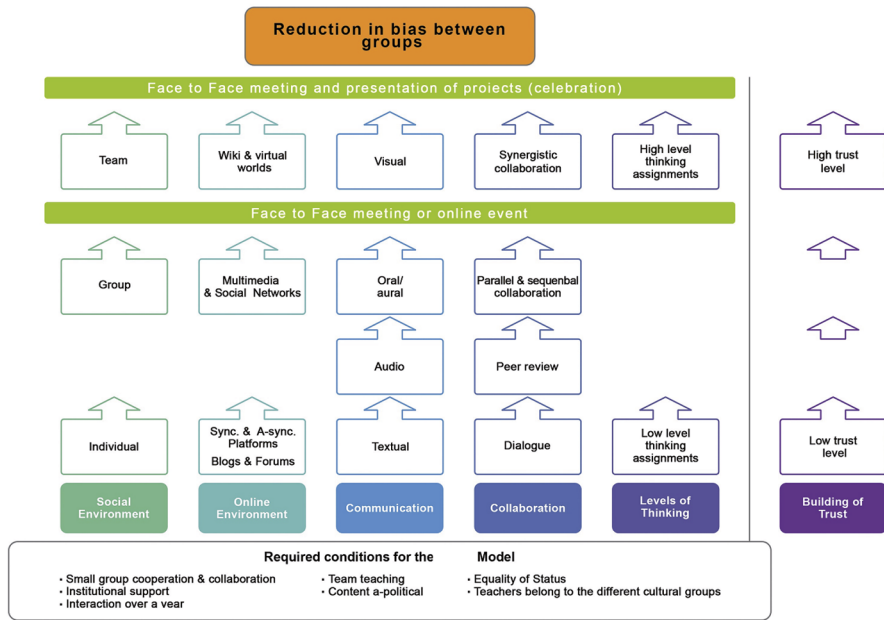
Figure 1. TEC Model

must participate actively in order to change their attitudes. In research on TEC students, it was found that between the first (pre-program survey) and second (post-program survey) assessments, there was a substantial positive change in attitudes among active participants. This change in attitude derived from the students' interactions with each other and exposure to the other students' cultures. It is noteworthy that these changes were independent of age, gender or profession. In a similar earlier study, Walther et al. (2015) used a computer-mediated communication (CMC) method based on the TEC model as a means to reduce intergroup prejudice across cultures. Their study also confirmed that prejudice and stereotyping of 'the Other" were reduced among the diverse study participants (Walther et al., 2015). The TEC model is just one example of the possible applications of ICT to encourage development and enrichment of intercultural understanding.

Cross-cultural Learning Experiences and Digital Equity

The cross-cultural alignment (CCA) model is a useful guideline that practitioners can use to understand and guide learning processes when learners are exposed to intercultural learning experiences in the virtual world

(Author et al., 2021). This shift is complex, involving multiple factors that need to be taken into consideration, including the actors -- learners and educators themselves, but also the context -- the educational system and the digital environments involved.

The CCA is framed by the idea of social justice in the 21st century. As the world and society are ever-changing, so is the need of communities for an enriched life. As such, digital participation has become a 21st-century social-justice issue.

Despite all the above-mentioned positive examples of intercultural bridging, it must be noted that they have taken place in a context where all parties have seamless access to the technology required to participate in communication and collaboration. This is far from universal across nations, cultures, social segments, professional and educational sectors. Digital equity is still not as universal as one might wish or assume. In this digital divide, various segments and/or individuals in society are not equal to others in terms of access to the technological infrastructure, including hardware equipment and electricity or internet connections; autonomy of use; digital and literacy skills for use; access to technical and social support; and access to educators skilled in the use of ICT to pass on that knowledge.
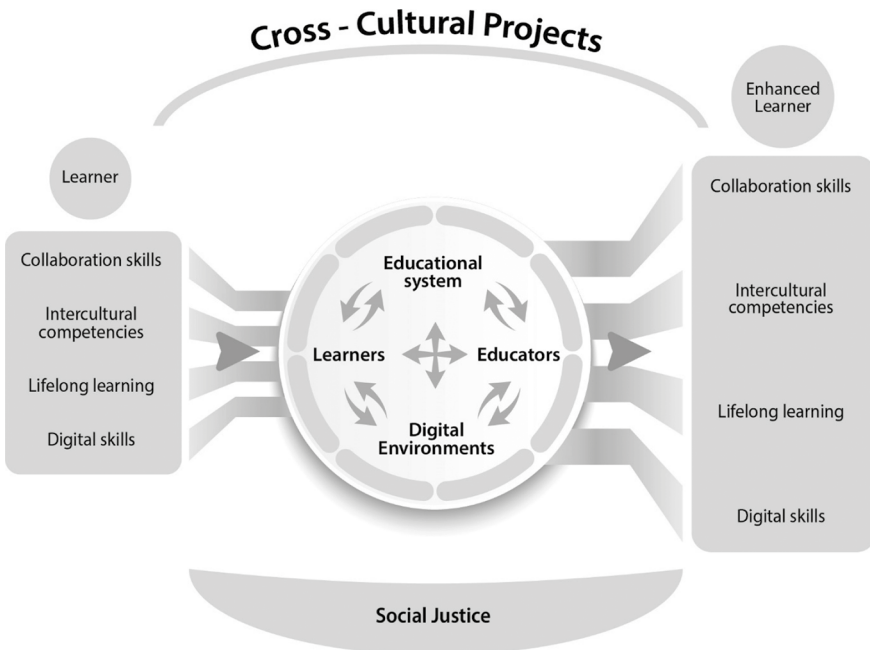

Figure 2. CCA Model for Digital Environments

Factors such as socioeconomic, cultural and political inequity are all serious barriers to equal participation in today's digital society, and it is imperative to tackle the limiting factors in each of these areas – from formal standards of legal quality to public policies that support wider and equal access to the necessary infrastructure to be a proud digital citizen. This is where the cross-cultural alignment model can intervene and bring about positive change, by providing interconnected and interrelated components in constant interaction and influence upon one another. It must be seen as a fluid ecosystem where each item has its place, role and importance rather than existing in isolation. Thus, changes in one factor will always affect the state of the others and vice versa. For example, a favorable educational system may support the thriving of digital learning environments, but without the right educators to know how to make the most out of it, learners may suffer. This way, enabling or constraining each element will produce a domino effect on the other aspects of the model. They need to be treated simultaneously, both separately and together, to provide an effective cross-cultural learning experience.

AI, ICT and the Digital Gap

As technology develops increasingly rapidly, societies struggle to keep pace. This is the case with the recent developments in artificial intelligence (AI) and their impact on many sectors of society – from industry changes to social and intercultural equity, justice and gender equality. As a result, the question of how law and policy can ensure that technology and AI in particular serve social welfare as well as access to and exercise of human rights becomes ever more relevant (Cath, 2018). Although the research is limited, scholars are increasingly recognizing the need for a conversation on introducing principles of equity and inclusivity regarding ICT and AI, while simultaneously recognizing the delicacy involved in developing clear frameworks that will not be misunderstood and produce even wider equity gaps (Greene et al., 2019). AI and technology developments risk producing ethical harm and a lack of social acceptance, when the ethical norms and values designed into these technologies collide with those of the communities into which they are delivered and deployed (Aggarwal, 2020).

There is a need to introduce ethical principles for developing and applying AI tools in accessing healthcare (Dankwa-Mullan et al. 2021). Equal access to healthcare also means racial health equity and social justice which may be sabotaged, and racial and social divides could be exacerbated if AI parameters fail to provide inclusivity. Dankwa-Mullan et al. (2021)propose a

framework that exemplifies how technology can either bridge or divide culture, race and social class. Along those same lines, Currie and Rohren (2022) also argue that effective AI tools may focus on already well served localities with sufficient access to basic healthcare, undermining social justice and widening the equity gap (Currie & Rohren, 2022).

A positive way to use ICT, and AI specifically, to close the equity gap among cultures is to use it to educate individuals on intercultural competence through simulation, games and virtual interactions (Johnson, 2010). Despite efforts made in digitalizing education, especially during the COVID-19 lockdowns, when education completely shifted to online instruction, access to those services is still quite unequal even among national educational systems (Coleman, 2021). Such digital exclusion deprives an individual from accessing many forms of education, including and especially intercultural ones, due to the geographical distances between cultures, which are often bridged via the internet and ICT. Not only does digital exclusion contribute to a knowledge divide but it also limits opportunities for intercultural connections, communication and understanding. Thus, wider access to digital resources can help bridge knowledge, digital and cultural divides, as well as unite and enrich otherwise distant social groups (Resta & Laferrière, 2015). These necessities have been pointed out the growing need for formal and informal educational strategies, including digital and computer literacy in the average classroom, and especially in pre-service teacher education. The authors connect this paradigm with the notion of social justice, where they posit that the acquisition of digital literacy and skills will ultimately support the development of authentic multiculturalism in schools (Carr & Porfilio, 2009; Gorski, 2009).

ICT has been also seen as a potential tool for reducing existing conflict where present. In a context like the Israeli reality, where technology and social conflict thrive equally, researchers have attempted to capitalize on the positives (wide technology access) to curb the negatives (the conflict). They suggest applying ICT in trust building digital collaboration and learning experiences to bridge conflicting cultures by reducing bias, stigmas and ethnic prejudice across culturally diverse groups, empowering them to be tomorrow's agents of technology-based social change.

International Communication to Increase Intercultural Competence

Based on the above-mentioned findings, it can be concluded that Intercultural environments across today's global society can be supported by closing the existing digital gaps within and across nations and social segments. The more easily communities can be connected to global society, the easier

it becomes for them to gain the knowledge, form attitudes and adapt their behaviors to a multicultural society.

Digital equity can also mean addressing other social inequalities, for example in the education sector. Future professionals could be trained in intercultural competency through organized, high-cost study trips abroad. But those experiences are often limited to those who can afford the financial commitment, while others would stay behind, missing both the travel experience and the educational advancement that Intercultural encounters can provide.

On the other hand, a good alternative to studying abroad is mediated cultural interchange. For example, the COGI project includes students from Germany and Israel who study together for an entire semester. Learning collaboratively via research topics online differs from traditional pedagogy. International and Intercultural small groups produce, not just consume, teaching and learning in a communal environment. However, success in such projects requires both knowledge and skills in technology, language and communication among students and instructors alike.

However, while all students would benefit from being exposed to and even submerged in other cultures for a complete learning experience, this opportunity is not available to many, or even most students. There are rapidly changing needs to teach students not "what" they can expect from a culture, but instead "how to" navigate it, and ICT tools have proven effective in providing this learning experience. Deriving from personal professional experience, the author suggests that various digital tools to support pupils' diverse intercultural communication skills, from writing to listening and speaking, have proven effective in enhancing the understanding of how to engage interculturally (Chiper, 2013).

The distance and travel issues were also addressed by De Castro et al. (2019), who introduced Collaborative Online International Learning (COIL) as a pedagogical approach using digital technology to provide experiential international learning without travel abroad. Students from different countries get to meet, interact and work with peers from across the world via digital platforms and tools. After a COIL experience, the participating students reported "gains in intercultural competence." This research proves that accessible virtual Intercultural collaborative learning can provide important, enriching and meaningful engagement across nations and continents, expanding students' worldview through interactions with other cultures (de Castro et al., 2019).

Another equally important aspect of the endeavor to connect cultures from across the world via the internet is the predominant use of English as the lingua franca in multiculturally diverse groups, whether in an educational

context or corporate and working teams and environments (Uzun, 2014). Those who speak English benefit more from the opportunity to access a wider range of cultures and communities, as well as information about them than those who do not speak it. For example, a synchronous educational context (the closest to face-to-face digital interaction, where communication happens "live" via audio and video connection aiming to bring together students from around the world to promote intercultural sensitivity), will be limited to those who are fluent enough in the lingua franca, often English, to participate in the interactions, access information, complete work tasks, and other related activities. However, technology has also provided us with a great variety of tools and opportunities to learn, including the lingua franca, which can further support one's intercultural sensitivity (Uzun, 2014).

Conclusion

The use of information and communication technologies (ICT) for intercultural communication and collaboration is an effective tool for mediation and adaptation in various contexts, including education and work. Although initial reactions to ICT-mediated communication may involve prejudice and stereotypes, prolonged online interaction can lead to individualized impressions and personal relationships. Research available on the subject suggests that technology can effectively foster trust and interaction between culturally diverse groups. Platforms such as virtual worlds, video conferences, blogs, forums, and shared documents encourage sensitive and ethically aware cross-cultural communication, resulting in positive interactions. In corporate settings, culturally diverse teams face communication challenges due to differences in working styles, but the use of ICT mitigates these issues by empowering teams to choose their preferred means of communication, creating a comfortable and neutral environment. However, challenges to intercultural competence persist in industries such as web development and IT services, where professionals need to create culturally appropriate products. In higher education, ICT methods of learning and communication serve as a middle ground for culturally distinct groups, allowing them to adapt and collaborate effectively. Studies have shown that ICT reduces intergroup prejudice and stereotypes, enhances learning about and embracing cultural differences, shapes intercultural attitudes, and redefines cultural meanings in diverse societies.

Overall, ICT offers valuable opportunities for intercultural understanding and collaboration. Educators need to develop lifelong learning, digital

competence, collaboration, and intercultural skills themselves, while creating opportunities for students to develop them. Culturally, sustaining classrooms should support diverse ways for students to develop and express their understanding of curriculum and knowledge. Multi-institutional collaborations are necessary to support coordinated efforts for long-term applicability, including promoting subject areas and cross-cultural training. Further research is needed to better understand methodologies and models to promote cross-cultural projects. Furthermore, encouraging collaborative research between researchers and practitioners from different socio-cultural contexts is recommended.

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