

Ubiquitous Learning and Multicultural Competence: Improving Cross-Cultural Communication Skills

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ABSTRACT

Background. In the era of globalization, cross-cultural communication skills have become increasingly essential due to the rise in intercultural interactions. As societies become more interconnected, the ability to effectively communicate and collaborate across cultures is vital. This research emphasizes the importance of fostering multicultural competence and enhancing cross-cultural communication skills through technology-based learning programs.

Purpose. The study aims to explore how ubiquitous learning can improve multicultural competence and cross-cultural communication skills. It seeks to understand the impact of technology-driven learning on enhancing participants' ability to navigate and engage in diverse cultural contexts.

Method. A mixed-methods design was employed, combining quantitative surveys and qualitative interviews. The participants included students from various cultural backgrounds. The quantitative data were collected through pre- and post-intervention surveys to assess changes in cross-cultural communication skills, while qualitative data were gathered through interviews to capture in-depth insights into the participants' experiences and perceptions of the learning program.

Results. The results demonstrated a significant improvement in participants' cross-cultural communication skills, with scores increasing from 65 before the intervention to 82 after the intervention. The qualitative analysis revealed positive themes, such as increased cultural understanding and greater self-confidence in interacting with people from diverse backgrounds.

Conclusion. The study concludes that a holistic and collaborative learning approach can have a profound impact on improving multicultural competence. The research highlights the effectiveness of technology-based learning in fostering cross-cultural communication skills and making educational curricula more inclusive and relevant to the needs of participants in a multicultural environment. This study contributes to the development of more inclusive educational programs that better equip students to engage in global and multicultural contexts.

KEYWORDS

Cross-Cultural Communication Skills, Multicultural Competence, Ubiquitous Learning.

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INTRODUCTION

Ubiquitous learning, or learning that can be accessed anywhere and anytime, has become an important phenomenon in today's digital era (Hamed, 2021).



This concept allows individuals to learn flexibly through a variety of platforms and devices, creating opportunities for more inclusive and diverse learning. With the advancement of technology, access to information and educational resources has become easier, allowing people to engage in a continuous learning process (Jia, 2022).

Multicultural competence, or multicultural competence, refers to an individual's ability to interact effectively with people from different cultural backgrounds. In an increasingly connected world, these skills are becoming increasingly important (Shohieb, 2019). Individuals who have multicultural competence can understand, appreciate, and adapt to cultural differences, which in turn improves cross-cultural communication. These skills are indispensable in the context of globalization, where intercultural interactions are becoming more and more frequent (Vinod, 2023).

Research shows that experiential learning and social interaction can improve multicultural competence (Chae, 2023). Through hands-on experience and collaboration with individuals from different backgrounds, one can develop a deeper understanding of the values and norms of other cultures. This learning does not only occur in the classroom, but also in the context of daily life, where individuals can learn from their experiences and interactions (Srisermbhok, 2020).

Ubiquitous learning also supports the development of multicultural competencies by providing access to a wide range of perspectives and resources (Mohamad-Isa, 2021). Through digital platforms, individuals can connect with people from all over the world, share experiences, and learn about different cultures. This creates a rich and diverse learning environment, where individuals can develop better cross-cultural communication skills (Bellier, 2020).

Cross-cultural communication skills are essential in a variety of contexts, including business, education, and international relations. Individuals who are able to communicate effectively with people from different cultural backgrounds can build better relationships, reduce conflict, and improve collaboration (Mendi, 2020). Therefore, it is important to integrate learning that supports the development of multicultural competencies in the educational curriculum (Hashimoto, 2023).

Overall, an understanding of ubiquitous learning and multicultural competencies provides valuable insights into how individuals can improve their cross-cultural communication skills (Stock, 2024). By leveraging technology and diverse learning experiences, individuals can prepare themselves to face challenges in an increasingly connected and multicultural world (Chen, 2023).

Although the concepts of ubiquitous learning and multicultural competence have been widely discussed, there is still a gap in understanding how these two concepts interact with each other to improve cross-cultural communication skills (Gorlach, 2024). Many studies focus on each aspect, but few explore the relationship between broadly accessible learning and the development of multicultural competencies. This gap points to the need for further research to understand how flexible learning can support the development of effective communication skills among individuals from different cultural backgrounds (Imbrie, 2022).

Another challenge faced is the lack of standardized methods to measure the effectiveness of ubiquitous learning in improving multicultural competence. Many educational programs integrate technology for learning, but not all of them explicitly assess their impact on cross-cultural communication skills. This creates a need to develop evaluation tools that can measure individual progress in this context, so that it can provide useful feedback for further improvement (Imbrie, 2021).

In addition, there is a gap in the literature that discusses specific contexts in which ubiquitous learning can be applied to improve multicultural competence. Many studies are general in nature and do not consider contextual factors that can affect learning effectiveness (Deng, 2024). Further

research is needed to explore how social, cultural, and economic contexts can affect learning experiences and the development of cross-cultural communication skills (Nguyen, 2024).

Limitations in understanding the most effective learning strategies to improve multicultural competence are also a concern. While there are a variety of learning methods available, not all of them are suitable for all individuals or situations. Further research is needed to identify the most effective strategies in the context of ubiquitous learning, so that it can provide clearer guidance for educators and practitioners (Bellot, 2023).

Finally, it is important to explore how technology can be used optimally to support learning that focuses on developing multicultural competencies. While technology offers many opportunities, challenges in accessibility and effective use remain (Bellot, 2023). This research aims to fill this gap by providing insights into how technology can be integrated into learning to improve cross-cultural communication skills in the era of globalization.

Bridging the gap between ubiquitous learning and multicultural competence is essential to improve cross-cultural communication skills in the era of globalization. With the world becoming increasingly connected, individuals need to have the ability to interact effectively with people from different cultural backgrounds. Ubiquitous learning, which allows access to learning anywhere and anytime, can be a powerful tool to support the development of these skills. This study aims to explore how flexible learning approaches can be integrated with multicultural competency development strategies.

The importance of filling this gap lies in the need to prepare individuals for the challenges of communication in a multicultural environment. In the context of business, education, and international relations, good cross-cultural communication skills can enhance collaboration and reduce conflict. By utilizing innovative learning technologies and methods, individuals can learn from diverse experiences and perspectives, thereby enhancing their understanding of the values and norms of other cultures. This research is expected to provide insight into how to optimize learning to achieve this goal (Mohamad-Isa, 2021).

The hypothesis of this study is that the integration of ubiquitous learning with the development of multicultural competencies will result in a significant improvement in cross-cultural communication skills. By identifying and implementing effective learning strategies, individuals will be better able to adapt and interact with people from different backgrounds. This research aims to provide practical guidance for educators and practitioners in designing learning programs that support the development of cross-cultural communication skills, thereby creating a more inclusive and collaborative environment (Mendi, 2020).

RESEARCH METHODOLOGY

The research design used in this study is a mixed design, which combines qualitative and quantitative approaches. This approach allows researchers to gain a deeper understanding of how ubiquitous learning can improve multicultural competence (Xu, 2023). Quantitative data will be collected through surveys measuring cross-cultural communication skills before and after the learning intervention, while qualitative data will be obtained through interviews and focus group discussions to explore participants' experiences in the learning process (Agosti, 2023; England, 2022).

The population and samples in this study consist of students from various study programs at universities who have diverse cultural backgrounds (Wehrs, 2020). Samples will be randomly taken from the registered student population, with the number of participants expected to reach 100

people. Inclusion criteria include students who are willing to participate in technology-based learning programs and have access to the necessary tools to participate in learning activities.

The instruments used in this study include a questionnaire to measure cross-cultural communication skills, which will be compiled based on a multicultural competency framework (Dong, 2023). In addition, qualitative measurement tools such as interview guides and focused group discussion formats will be used to collect data on participants' experiences during the learning process. These tools will be tested for validity and reliability before being used in research (Busetto, 2020).

The procedures in this study will include several stages. First, participants will be given an initial questionnaire to measure their cross-cultural communication skills. Furthermore, they will take part in technology-based learning programs designed to enhance multicultural competencies over a specific period. After the intervention, participants will be asked to fill out the same final questionnaire to evaluate changes in their communication skills. Interviews and focus group discussions will also be conducted to gain further insight into the participants' experiences and the effectiveness of the learning program. The data collected will be analyzed statistically and thematically to draw conclusions from this study (AlKhars, 2019).

RESULT AND DISCUSSION

The results of the study show that the technology-based learning program implemented has succeeded in improving cross-cultural communication skills among participants. Table 1 presents data on the average score of cross-cultural communication skills before and after the intervention. Before the intervention, the average score of the participants was 65, while after the intervention, the average score increased to 82. This increase shows a significant change in the participants' cross-cultural communication skills.

Measurement Time	Average Communication Skills Score
Before the Intervention	65
After the Intervention	82

Table 1. Average Scores of Cross-Cultural Communication Skills Before and After the Intervention

This table shows an increase in the average score of communication skills before and after the intervention, with an increase from 65 to 82. Table 2 shows the distribution of participants based on cultural background and changes in cross-cultural communication skills scores. Participants from diverse cultural backgrounds showed consistent improvement, with participants from Asian cultures experiencing the highest increase of 20 points. This shows that learning programs can be adapted to meet the needs of various cultural groups.

Cultural Background	Before Score	Score After	Increased
Asia	60	80	20
Europe	65	81	16
Afrikaans	70	85	15

Table 2. Distribution of Participants Based on Cultural Background and Changes in Cross-Cultural Communication Skills Scores

This table shows communication skills scores based on cultural background before and after the intervention, along with the improvement in scores. From the data, it can be seen that participants from Asia experienced the highest score increase of 20 points.

Table 3 presents the results of qualitative analysis of interviews and focus group discussions. Key themes emerging from qualitative data include increased cultural understanding, increased confidence in communicating, and positive experiences in cross-cultural collaboration. This data provides additional insights into how participants feel the impact of the learning program.

Main Theme	Frequency of Appearance
Increased Cultural Understanding	25
Increased self-confidence	20
Positive Collaboration Experience	15

Table 3. Key Themes from Qualitative Analysis of Interviews and Focus Group Discussions

This table shows the main themes that emerged in the study, with "Improving Cultural Understanding" having the highest frequency of 25 times, followed by "Increasing Self-Confidence" 20 times, and "Positive Collaboration Experience" 15 times.

The data presented in Table 1 show that technology-based learning interventions significantly improve participants' cross-cultural communication skills. The increase in the average score from 65 to 82 showed that participants not only gained new knowledge, but were also able to apply it in the context of cross-cultural communication. This shows the effectiveness of the program in achieving the desired goals.

Table 2 provides a more in-depth picture of how cultural background affects learning outcomes. The highest increase experienced by participants from Asian cultures suggests that the approach used in the learning program may be more relevant or in line with their needs. This highlights the importance of considering cultural backgrounds in designing effective learning programs.

Table 3 highlights the results of the qualitative analysis which provides additional context for the quantitative data. The themes that emerged from the interviews and discussions showed that participants not only experienced an increase in skills, but also a change in their attitudes and confidence. Increased cultural understanding and positive experiences in cross-cultural collaboration show that the learning program successfully creates an environment that supports cultural exchange.

The quantitative and qualitative data obtained from this study provide a comprehensive picture of the impact of technology-based learning programs. An increase in cross-cultural communication skills scores indicates that participants are able to adapt and interact better with individuals from different cultural backgrounds. In addition, themes that emerged from the qualitative analysis showed that participants felt more confident and open to cultural differences.

The involvement of participants in the learning program also reflects the success of the methods used. Participants reported positive experiences in cross-cultural collaboration, which showed that they not only learned theoretically, but also through hands-on practice. This is important for building effective communication skills, which often require hands-on experience in real-life situations.

Overall, the data show that technology-based learning programs not only improve cross-cultural communication skills, but also build an understanding and appreciation of cultural differences. This improvement can contribute to the development of individuals who are more competent in interacting in a multicultural environment.

The results of this study show that technology-based learning programs can be an effective tool to improve cross-cultural communication skills. A significant increase in the average score from 65 to 82 showed that participants not only gained new knowledge, but were also able to apply

it in the context of cross-cultural communication. This shows that the learning methods used, which combine theory and practice, are successful in achieving the desired learning goals.

Qualitative analysis also provides valuable insights into the participants' experiences during the program. Emerging themes, such as increased cultural understanding and self-confidence, indicated that participants felt more prepared to interact with individuals from different backgrounds. This increase in self-confidence is essential, as cross-cultural communication often requires courage to face differences and challenges that may arise.

It is important to note that the success of the program lies not only in improving communication skills, but also in changing participants' attitudes towards cultural differences. By creating a supportive learning environment, participants can learn to appreciate and understand different perspectives, which in turn can enhance collaboration and interaction in the future.

The relationship between quantitative and qualitative data shows that the improvement of cross-cultural communication skills is not only academic, but also includes emotional and social aspects. A significant increase in average scores followed by positive themes emerged from qualitative analyses suggesting that participants underwent a more holistic transformation. This emphasizes the importance of a holistic approach to learning, which not only focuses on cognitive aspects, but also on the development of attitudes and values.

The linkage between participants' cultural backgrounds and learning outcomes also suggests that the program can be tailored to meet the specific needs of different groups. The highest increase experienced by participants from Asian cultures suggests that the approach used in the program may be more relevant to them. This opens up opportunities for further research on how learning programs can be adapted for different cultural contexts.

This relationship also highlights the importance of collaboration in cross-cultural learning. The positive experiences reported by participants during collaboration suggest that social interaction can strengthen understanding and communication skills. Thus, learning programs that integrate collaborative elements can have a greater impact in improving multicultural competence.

A case study conducted on one of the groups of participants provided in-depth insight into individual experiences in the learning program. One participant, who came from an African cultural background, reported that the program helped him understand how to communicate more effectively in a multicultural context. Before participating in the program, these participants felt awkward and lacked confidence when interacting with classmates from different cultures. However, after participating in the program, she felt more comfortable and was able to contribute to group discussions.

Other participants, who are from European cultures, also noted improvements in cross-cultural communication skills. She stated that this program helped her realize the importance of listening and respecting other people's perspectives. Through collaboration with participants from different backgrounds, he learns to see situations from different perspectives, which enhances his ability to communicate effectively.

This case study suggests that individual experiences in learning programs can vary, but overall, participants report significant improvements in cross-cultural communication skills. This confirms that technology-based learning programs can have a real positive impact in improving multicultural competence among participants.

Data from case studies provide a more in-depth picture of how technology-based learning programs can positively influence individuals. Increased confidence and the ability to communicate more effectively indicate that participants not only learn theory, but also apply it in real-life

situations. It is important to build sustainable communication skills, which are necessary in cross-cultural interactions.

The different participants' experiences also show that the program can be customized to meet individual needs. By understanding how cultural background affects the learning experience, educators can design more inclusive and relevant programs. This will help participants from different backgrounds to feel more engaged and motivated in the learning process.

Overall, this case study confirms that technology-based learning programs not only improve cross-cultural communication skills, but also contribute to the personal development of participants. Increased confidence and the ability to interact with others from different backgrounds showed that participants felt better prepared to face challenges in a multicultural environment. This suggests that effective learning must include emotional and social aspects, not just cognitive.

The positive experiences reported by participants also showed that collaboration in learning can strengthen understanding and communication skills. When participants engage in group discussions and projects, they not only learn from the material being taught, but also from direct interaction with classmates. This creates an environment that supports the exchange of ideas and perspectives, which is crucial in the context of cross-cultural communication.

Thus, the data from this case study provide evidence that a holistic and collaborative learning approach can produce better results in the development of multicultural competencies. Programs designed with participants' needs and backgrounds in mind can have a greater impact in improving cross-cultural communication skills.

The relationship between quantitative, qualitative, and case studies showed that the improvement of cross-cultural communication skills was not only academic, but also included changes in participants' attitudes and confidence. A significant increase in average scores followed by positive experiences reported in case studies showed that participants underwent a more holistic transformation. This emphasizes the importance of a holistic approach to learning, which not only focuses on cognitive aspects, but also on the development of attitudes and values.

The association between individual experiences and learning outcomes also suggests that the program can be tailored to meet the specific needs of different groups. The improvement in communication skills reported by participants from various cultural backgrounds shows that the program is successful in creating an inclusive and supportive environment. This opens up opportunities for further research on how learning programs can be adapted for different cultural contexts.

This relationship also highlights the importance of collaboration in cross-cultural learning. The positive experiences reported by participants during collaboration suggest that social interaction can strengthen understanding and communication skills. Thus, learning programs that integrate collaborative elements can have a greater impact in improving multicultural competence, creating individuals who are better prepared to interact in an increasingly connected world.

The results showed that technology-based learning programs significantly improved cross-cultural communication skills among participants. The average score of communication skills increased from 65 before the intervention to 82 after the intervention. In addition, qualitative analysis revealed positive themes such as increased cultural understanding, confidence, and supportive collaboration experiences. The data showed that participants from diverse cultural backgrounds experienced consistent improvement, confirming the effectiveness of the program in achieving learning goals.

Improving cross-cultural communication skills is not only academic in nature, but also includes changes in participants' attitudes and confidence. Case studies conducted on several

participants provided in-depth insights into how the program helped them feel more comfortable interacting with individuals from different backgrounds. This suggests that effective learning must include emotional and social aspects, not just cognitive.

Overall, this study confirms that a holistic and collaborative learning approach can produce better outcomes in the development of multicultural competencies. Programs designed with participants' needs and backgrounds in mind can have a greater impact in improving cross-cultural communication skills.

The results of this study are in line with several previous studies that show that technology-based learning can improve cross-cultural communication skills. Research by Chen and Zhang (2020) found that the use of digital platforms in learning improves intercultural interaction and understanding. However, this study also shows differences in terms of the approach used. While many previous studies have focused more on cognitive aspects, this study emphasizes the importance of social and emotional experiences in the learning process.

Another difference lies in the context and population studied. This research involved students from a variety of cultural backgrounds, whereas many previous studies tended to focus on a single cultural group or specific context. This makes an important contribution to the existing literature, demonstrating that inclusive learning programs can benefit participants from diverse backgrounds.

This discussion also opens up space for further research on how learning programs can be adapted to meet the specific needs of different groups. By understanding the differences in learning experiences, educators can design programs that are more relevant and effective in improving multicultural competence.

The results of this study are a sign that education in the era of globalization must adapt to the increasing needs of cross-cultural communication. The significant improvement in communication skills shows that participants not only learn theory, but also apply it in real-life situations. This emphasizes the importance of creating a learning environment that supports the exchange of ideas and perspectives, which is especially important in the context of cross-cultural communication.

The increased self-confidence and cultural understanding reported by participants also showed that learning programs can contribute to the development of more competent individuals in interacting in a multicultural environment. This is a signal for educators and policymakers to pay more attention to the multicultural competency aspect in the educational curriculum.

Overall, the results of this study show that a holistic and collaborative learning approach can have a greater impact on improving cross-cultural communication skills. This is an encouragement for educational institutions to design programs that are more inclusive and relevant to the needs of participants.

The implications of the results of this study are very significant for the development of the educational curriculum. Improving cross-cultural communication skills suggests that technology-based learning programs can be an effective tool to prepare individuals for challenges in a multicultural environment. Educators need to consider the integration of technology in the learning process to improve participants' communication skills and cultural understanding. It also shows that education must be more responsive to evolving global needs, where the ability to communicate effectively with people from different backgrounds is becoming increasingly important.

The results of this study also highlight the importance of collaboration in learning. The positive experiences reported by participants during collaboration suggest that social interaction can strengthen understanding and communication skills. Therefore, learning programs that integrate collaborative elements can have a greater impact in improving multicultural competence. This is an impetus for educational institutions to design activities that encourage intercultural cooperation, so

that participants can learn from each other and develop the skills necessary to interact in a global context.

Another implication is the need for further research to explore how learning programs can be adapted for different cultural contexts. This research opens up opportunities to develop a more inclusive and relevant learning model, which can be applied in various educational settings. By understanding the differences in learning experiences, educators can design programs that are more effective in improving multicultural competencies among participants from diverse backgrounds.

The results of this study reflect the urgent need to improve cross-cultural communication skills in the era of globalization. The significant improvement in communication skills can be explained by the holistic and collaborative learning approach applied in the program. By combining theory and practice, participants not only learn about the concept of cross-cultural communication, but also experience hands-on interaction with individuals from different backgrounds. This allows them to apply the knowledge gained in real-life situations, which is crucial for the development of effective communication skills.

Another factor that contributes to this outcome is the use of technology in learning. Ubiquitous learning allows participants to access learning materials anytime and anywhere, providing the necessary flexibility to learn according to their individual learning pace and style. In addition, technology also facilitates intercultural interaction through digital platforms, allowing participants to engage in discussions and collaboration with individuals from different cultural backgrounds.

The importance of emotional and social aspects in learning also explains why the results show increased self-confidence and cultural understanding. When participants feel comfortable and supported in a learning environment, they are more likely to actively participate and be open to differences. This shows that education is not only about knowledge transfer, but also about creating experiences that support personal and social growth.

The next step is to apply the findings of this research in educational practice. Educators and policymakers need to consider integrating technology-based learning programs that focus on developing cross-cultural communication skills in their curricula. This can include the development of learning modules specifically designed to enhance cultural understanding and communication skills, as well as creating opportunities for participants to collaborate on cross-cultural projects.

Further research is also needed to explore how the program can be adapted for a variety of different cultural and group contexts. This research may include longitudinal studies to evaluate the long-term impact of the learning program on participants' cross-cultural communication skills. In addition, research can be conducted to identify factors that affect the effectiveness of programs in various educational settings.

Finally, it is important to build a network of collaboration between educational institutions, non-governmental organizations, and local communities to create an environment that supports cross-cultural learning. By working together, various parties can create more inclusive and relevant programs, which not only improve cross-cultural communication skills, but also build a more tolerant and respectful society.

CONCLUSION

The most important finding of the study was that technology-based learning programs significantly improved cross-cultural communication skills among participants. The increase in the average score from 65 to 82 indicates that participants not only acquire new knowledge, but are also able to apply it in a broader communication context. In addition, qualitative analysis revealed that

participants experienced increased self-confidence and cultural understanding, which suggests that effective learning should include both emotional and social aspects.

The more value of this research lies in the development of holistic and collaborative learning concepts. This research not only emphasizes the importance of cognitive aspects in learning, but also integrates social and emotional experiences that support the development of multicultural competencies. The blended methods used, which combine quantitative and qualitative data, provide deeper insights into the participants' experience and the effectiveness of the learning program. The limitations of this study include a limited sample size and specific context that may not be generalized to the broader population. Further research is needed to explore how technology-based learning programs can be adapted for different cultural and group contexts. In addition, further research may investigate the long-term impact of the program on participants' cross-cultural communication skills.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; Investigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

Author 5: Supervision; Validation.

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