

Culturally Bound Digital Technology for Online Learning

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Digital technologies based on Western culture are widely used worldwide, but these technologies may not be suitable for learning and teaching in other cultures and regions. For example, in terms of online learning systems, there are differences between Japan and the U.S. regarding the degree of evolution of technology, acceptance of online learning, curriculum, accreditation systems, and the relationship between students and teachers. Cultural misunderstandings and mismatches can occur, reducing learning effectiveness. For example, African cultures have oral cultures with "story-based learning," so texts and lectures based on Western cultures can be complex for learners to understand (Mwakisole et al., 2016, pp. 1-20).

Culturally bound digital technology

In online learning, culturally bound digital technology refers to digital technology that reflects the values, language, customs, technologies, and educational systems unique to a particular culture or region. In research on culturally bound digital technologies, Warschauer (2003) stated: "Online learning systems should clarify the relationship between learners, teachers, materials, and different cultural values in the educational process, including the development of materials and curricula that take into account learners' cultural backgrounds and values, the acquisition of cross-cultural communication skills, and the creation of online learning communities."

When providing adequate instructions, you need digital tools suitable for each culture and region. To apply culturally bound digital technologies, educators must understand students' cultural backgrounds and create curricula and materials tailored to that culture. In addition, it is necessary to reflect the opinion of specialists who are well-versed in the culture and language of the region. Educators and instructional designers need to deepen their understanding of local

cultures and work to develop educational content based on them. This thought allows for online learning suitable for a more diverse learner.

Challenges in using and developing technology

Culturally bound digital technology can also refer to issues or challenges related to the use or development of digital technology specific to a particular cultural or social context. In online learning, it is essential to address the following items when students and faculty from different cultural backgrounds participate.

Culture fit

Understanding cultural differences is essential to provide a learning experience based on cultural context. Recognizing differences in communication and learning styles, beliefs, and values between cultures can provide a more appropriate educational environment.

Understanding bias

Digital technology can reflect potential human biases and stereotypes. Examples include cultural misunderstandings caused by machine translation technology and racist decisions made by AI. It is necessary to understand these issues and consider appropriate countermeasures.

Digital literacy

Understanding culturally bound digital technologies requires digital literacy. Gain foundational knowledge and skills in using and developing digital technologies to work with people from different cultural backgrounds.

Global perspective

The field of online learning requires a global perspective. In order to collaborate and learn from people from different cultural backgrounds, it is crucial to have a global perspective.

By learning about cultures and social contexts around the world and understanding their cultures and backgrounds, you can provide a better learning experience.

Design thinking

Design thinking can help you develop digital technology that considers cultural context. Design thinking is creating new digital technologies while understanding users' needs and wants and considering their cultural and social contexts.

Localization

Providing the same digital content to people from different cultural backgrounds is inappropriate. Therefore, localization is necessary. Localization is changing content or applications to suit a specific culture or language.

Copyright and intellectual property rights

Copyright and intellectual property rights issues may arise when people from different cultural backgrounds collaboratively study online learning. In particular, if the cultural experience differs, the rules and laws regarding copyright laws and intellectual property rights may vary. It is necessary to understand these issues and respond appropriately.

Equity and accessibility

It is essential to provide equitable and accessible education for people from different cultural backgrounds. It is necessary to develop digital technologies that take equity and accessibility into account and to provide online learning that considers accessibility.

It is essential for instructional designers to carefully consider how to create online learning experiences sensitive to diverse learners and cultures and promote inclusivity and respect for differences (Liu et al., 2019).

From the standpoint of aspiring to be an instructional designer, I researched focusing on culture fit, design thinking, equity, and accessibility.

Culture fit

Cultural fit issues refer to the problems that arise when people from different cultures and regions use the same technology. Using the same technology can produce different results and reactions depending on the cultural background and values. For example, with the proliferation of social media, cultural issues on the internet have come to the fore. In China, Chinese users are less willing to express their opinions about how they tell Western culture online due to the government's strict internet regulations and their aversion to Western culture (Zhang, 2017). On the other hand, there is a growing movement for freedom of expression on the internet in the United States due to a culture that values free expression among users (Buchanan, 2016). Because different cultural backgrounds can react differently to the same technology, companies and developers must take a culturally tailored approach to their regions. In developing mobile games, characters and storytelling tend to be emphasized in the Japanese game market. Hence, games incorporating such elements will likely succeed (Lin, 2016).

Culturally bound digital technology in online learning requires careful consideration of cultural differences and similarities. These cultural differences can make it difficult for educators to properly design content and teaching methods. Cultural factors can also lead to different motivations and interests for students, requiring educators to fully understand students and respond to their needs (Makoe, 2020).

Research on cultural fit in online learning highlights the need for educators to customize materials based on their cultural backgrounds and learning. For example, it has been pointed out that online learning programs commonly used in the United States education system are

unsuitable for learners from diverse cultural backgrounds. Many online learning programs are trying to customize their educational content to match the cultural background of their learners. For example, in Asian countries, it has been suggested that education tailored to the cultural background is essential for learners who learn English as a second language. Therefore, some online learning programs offer learners a more appropriate educational environment by providing materials tailored to Asian cultural backgrounds (Kim, 2020). However, customization based on cultural context can affect the efficiency and consistency of educational programs. Another challenge is that educators need the proper training and resources to customize culturally based on their context (Naidoo, 2014).

In addition, research on the design of educational programs based on cultural backgrounds points out the importance of cultural identity. For example, Rigby (2007) argued that educational programs that respect cultural identity could motivate learners to participate in learning. Understanding the cultural background of learners and developing knowledge of different cultures are essential skills for educators. The introduction of cultural fairness is also practical. Cultural fairness is an educational method that respects and treats all cultures equally. By implementing cultural fairness, we can respect learners' cultural identities and make the learning environment more inclusive.

In designing educational programs, it is essential to provide educational materials according to the cultural context and to recognize cultural differences in communication. For example, communication in online classes may vary depending on your cultural background. Therefore, educators must design to facilitate communication for learners from different cultural backgrounds. Creating educational programs in a cultural context is an important challenge because it allows learners to learn more effectively and achieve learning outcomes. In addition,

an increasing number of programs are targeted at international students in online learning, and these programs need to be designed with cultural differences in mind.

Also, recognizing cultural differences is beneficial for both educators and learners. Educators can identify learners' cultural needs and provide educational programs accordingly. On the other hand, learners can be motivated to learn by having their knowledge and values based on their cultural background recognized or respected. For example, a study of online classes among Asian students reported that providing a curriculum that recognizes cultural differences increases learners' motivation and self-efficacy and improves learning outcomes (Kim & Bonk, 2006). Learners can achieve higher self-actualization by feeling recognized and respected for themselves.

There is a need to provide educational programs considering cultural differences in online education. In instructional design, it is important to recognize cultural differences and provide educational materials and digital tools to accommodate them. This concept allows learners to learn more effectively and achieve learning outcomes, promoting mutual understanding between educators and learners.

Design thinking

Culturally bound digital technology in online learning refers to the use of technology and digital tools designed to meet the needs of specific cultural groups. The technology and tools include adapting online learning content and tools to address cultural differences and similarities and providing access to culturally appropriate and appropriate technologies. Gillani and Eynon (2014) argued that respecting cultural diversity and approaching it from a multiculturalist perspective in online learning is essential. They pointed out that educators should be sensitive to

cultural diversity, and the technology and digital tools used in online learning should also reflect cultural contexts.

An example of culturally connected digital technology in online learning is the localization of educational content. Localization of educational content makes it culturally relevant and accessible to students from diverse cultural backgrounds. Localization includes adapting language, images, and examples to better resonate with students from different cultural backgrounds. For example, an online course designed for students from one country may need to be tailored for students from another country with a foreign language, cultural values, or educational system.

Another example of culturally bound digital technology is personalized learning technology that can be adapted to individual students' cultural backgrounds, learning styles, and preferences. The technology includes using machine learning algorithms on online platforms to track student progress and recommend personalized learning materials based on cultural context.

In addition, collaborative learning through online platforms helps students from different cultures learn from each other. Collaboration can be facilitated through online forums, social media, and other collaborative tools that allow students to connect.

Other examples include inclusive design and gamification. Inclusive design is another trend that makes online materials accessible to students with disabilities and students from different cultural backgrounds. This design uses text-to-speech technology, captions, and other assistive technologies to create online content more accessible. Gamification refers to using game-like elements to make learning more engaging and interactive. Gamification is especially effective when attracting students from different cultural backgrounds, learning styles, and preferences.

Culturally connected digital tools in online learning include video conferencing systems. Deng and Yuen (2011) pointed out that video conferencing systems allow learners from different geographic locations to interact directly and can also promote cultural expression and nonverbal communication. In addition, blogs and social media are helpful as culturally connected digital tools in online learning. These tools facilitate interaction and exchange of ideas among learners and enable learners from different cultural backgrounds to understand each other's cultures (Kim & Bonk, 2014).

Adapting technology and educational content to address cultural differences and similarities can make online learning more inclusive and effective for students from different cultural backgrounds.

Equity and accessibility

Culturally bound digital technology refers to how digital technology is designed and used within a specific cultural context. These technologies are influenced by and reflect the values, norms, and practices of the culture in which they are developed and used. In the context of online learning, culturally bound digital technologies can impact equity and accessibility by creating barriers for some learner groups. For example, the digital skills and tools required to participate in online classes may not be widely available in certain regions or cultures. Legal and ethical issues vary depending on the cultural background, such as privacy and copyright issues.

One of the main problems in online learning is the digital divide, which refers to the gap between those who have access to digital technology and those who cannot. This gap is particularly pronounced in low-income communities and marginalized groups such as people with disabilities and those whose native language of instruction is not their native language. Warschauer and Matuchniak (2010) argued that the digital divide involves technological access,

digital literacy, and cultural competence. They suggested that online education programs should be designed with these issues in mind and that educators should work to promote learners' digital literacy and cultural competence.

Accessibility is another issue closely related to equity in online learning. Dalton and Proctor (2008) looked at accessibility issues in online learning environments, especially for learners with disabilities. They argued that online learning programs should be designed with accessibility in mind and that educators should work to promote accessibility and inclusion for all learners. They also suggested that culture-bound digital technologies can help address accessibility issues by making online learning more accessible and inclusive for learners with disabilities.

Culturally bound digital technologies significantly impact equity and accessibility in online learning. Educators and designers of online learning programs should be aware of the cultural biases and injustices that can be perpetuated by digital technology and strive to design programs that are inclusive and accessible to all learners. Avoiding unfairness includes focusing on digital literacy, cultural competence, and cultural cohesion, with attention to accessibility and inclusion issues for learners with disabilities. However, it is essential to note that developing and using culturally bound digital technologies is challenging. Chen and Hwang (2018) stated that developing culturally bound digital technologies requires a deep understanding of the cultural context in which they are used. They suggested that designers and developers of digital technologies should work closely with educators and learners from diverse cultural backgrounds to develop culturally sensitive and responsive technologies.

In addition, it is essential to consider the possibility of unintended consequences when designing culturally bound digital technologies. Safi (2019) examined the potential of digital

technologies to reinforce cultural stereotypes and biases, especially in the context of language learning. She argued that designers and developers of digital technologies should be aware of the potential for unintended consequences and strive to mitigate these through careful design and testing.

Resources for culturally bound digital technology

Adopting culturally bound digital technology in online learning can improve learning quality and outcomes by making it easier for learners to access content relevant to their cultural context. Below are some examples of culturally bound digital technologies.

Language Translation

Google Translate

Google Translate is an online tool for translating between different languages. This tool facilitates cross-cultural communication and helps break down language barriers.

Waygo

Waygo is a translation app for Asian languages (mainly Chinese, Japanese, and Korean). Waygo facilitates communication between people of different cultural backgrounds by providing culturally sensitive translations and information about Asian cultures and customs.

Māori Dictionary

Māori Dictionary is an online dictionary app for New Zealand Māori. This app reflects the linguistic, historical, and cultural background of Māori culture and is very helpful for learners of the Māori language.

Applications for cultural fit**CultureGram**

CultureGrams is an online resource that provides information about different cultures worldwide. This tool provides information on other cultures' customs, beliefs, and customs to deepen cross-cultural understanding.

Muslim Pro

Muslim Pro is an app that provides information for Muslims, such as prayer and fasting times, how to read the Quran, and more. This app helps people from different cultural backgrounds learn about Islamic beliefs and practices.

QWERTY Nomad

QWERTY Nomad is a tool for assisting typing in languages with different keyboard layouts. This tool allows people who speak other languages to communicate more efficiently.

Mutual engagement**Kaizena**

Kaizena is an online assessment tool that allows you to provide culturally sensitive and individual and relevant feedback to students from different cultural backgrounds.

TalkingPoints

TalkingPoints is an app that facilitates communication between parents and teachers of different languages, providing a culturally appropriate communication method.

Social media**WeChat**

WeChat is a social media app based on Chinese cultural background. WeChat allows people from different cultural backgrounds to become familiar with the Chinese communication style.

WhatsApp

A messaging app that allows you to text, voice, and video call. Group chat is also possible and is widely used all over the world.

LINE

A messaging app that allows you to make text messages, voice calls, and video calls. In addition, plenty of content, such as stamps and games, is prevalent mainly in Japan.

In addition, the development of applications and software for learning foreign languages is also active.

Duolingo

Duolingo is a foreign language learning app that helps people of different cultural backgrounds learn languages by providing culturally appropriate materials. The free program is designed to help you intuitively learn vocabulary and grammar. Language courses offer a variety of learning methods, including native-speaker audio and videos, grammar rules, and word and phrase exercises. The program tracks user progress and provides appropriate lessons based on proficiency. Duolingo is available on your smartphone, tablet, or computer. Learners can also study offline. The program is designed to be fun and learning like a game, and users can learn while competing for scores.

Rosetta Stone

Rosetta Stone is software for learning the languages of the world. This program is designed to help learners intuitively learn vocabulary and grammar. Rosetta Stone supports the four skills of listening, reading, speaking, and writing. The program offers a variety of learning methods, including native speaker audio and video, diagrams, and word and phrase exercises. The program is available online, on CD-ROM, and as a download.

Mango Languages

Mango Languages is an online language learning program designed to facilitate intercultural communication. This program allows learners to study content relevant to their cultural background and have a multicultural perspective.

Tandem

Tandem is an online platform for people who speak different languages to help each other learn languages. People with different cultural backgrounds can communicate with each other and deepen mutual understanding.

These digital tools have been developed to support cross-cultural communication, enabling people from different cultural backgrounds to understand each other and build better relationships. These tools also help you maintain your cultural identity. However, it is crucial that these technologies provide content with not only a cultural perspective but also opportunities for learners to create content relevant to their cultural background.

Conclusion

Efforts to solve culturally bound digital technologies are becoming increasingly important in online learning. There is a need to work on developing educational content that

considers local cultures and languages and enables more diverse learners to learn more effectively.

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