Intercultural learning supported by technology: a small-scale systematic review

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ABSTRACT

Intercultural interaction and communication are rapidly increasing throughout the world. In a fast-growing and globalized world, the ability to communicate with people across cultures is very important. This study discusses describing the Byram model of the environment used in learning, culture, language, and problems and solutions for the future and using qualitative methods by following the pattern of previous research with the main sources from Google Scholar, Baidu Scholar, Science Direct and Mendeley's search platform. The result from this research is (1) This ICC model can be used as a good reference and guideline for teacher planning in discussions and discussions to develop IC students. (2) Inter-cultural learning is more effective and more impressive such as Holograms, VR technology, Artificial Intelligence, cloud, etc. (3) The most widely used topics in the studio are culture (n = 4), daily life (n = 2), controversial issues, language, communication, physical space (time resolution), resolution, resolution, and stereotyping (problems, solutions, and suggestions for future studies and practice. Most of the problems that most of us find here are socialisation. The solution to this problem is to familiarise students with this communication to...

1. Introduction

Among the Millennials, also known as Generation Y, intercultural interaction and communication rapidly increase in whole the world. The world in the era of globalization requires the ability to communicate effectively and efficiently with people across cultures is very important. Ensuring that students in the school get intercultural communication skills that are effective and in accordance with what is needed today. this ability is an important ability that must be possessed by every student [1]. Intercultural communication both at global and international levels in a country, is now an important part of our lives. However, not everyone has the opportunity to engage in intercultural interactions with people from different cultures [2]. In intercultural competence, Byram (1997) emphasizes that inter-cultural communication competencies (ICC) include several processes, including: the development of cultural knowledge that continues to develop rapidly, the skills of discovery and interaction with others and between cultures, have a critical awareness and open attitude. This open language means being prepared to accept cultural differences. In general it was concluded that formal foreign language teaching (L2) was not enough to be able to develop ICC students in schools [3].

Technology and the internet make people getting more immersive interaction and getting closer. By using synchronous communication tools, people can communicate using voice and video instantly, such as Skype to enhance the skills of discovery and interaction and open attitudes. Asynchronous communication tools such as e-mail, instant messages, blogs, wikis and so on, these tools assist people in sending a text or sharing any content which easily communicates and gets any information to improve cultural knowledge and critical awareness. Lately the development of the world is very fast, non-native speakers can easily access the original text, learn about intercultures and hear languages like those used in real-life situations by native speakers today have almost no difficulty [4].

In this first semester, we reviewed studies from 2014-2018 technology-enhanced intercultural model. We aimed to summarise the following eleven dimensions: Byram's model, technology used, learning environment, culture, language, number of participants, level of participants, learning activities and the topics. The reason why this study is important is mainly that there are not so many review studies on intercultural learning with technology-enhanced. One study by Çiftçi (2016) "A Review of Research on Intercultural Learning through Computer-Based Digital Technologies", He summarised the studies on intercultural learning supported by technology from 2004 to 2014 the focus is more on the effect of recent computer-based digital technologies and their effectiveness on intercultural learning.

Our study goes beyond than previous studies because of the following reasons. First, we review the recent studies published on 2014-2018. Second, we report technology-used, which either was not mentioned in earlier review studies was mentioned before but never used after 2014. The rapid growth of technology runs so fast, in developing this technology, the vendors move for forwarding to make new technology and innovation, it makes some technology more powerful, and some other technologies are ruled out. Third, we provide experienced educators and researchers with up-to-date research information on the application of technology-enhanced intercultural learning. Fourth, we provide a larger elaboration of the area review description.

Here, we outlined some major questions for answer in this review study: What were Byram's models? What did the influences of technology used and learning environment on Byram's models? How did the influences of cultures, languages, different number and level of participants on Byram's models? What were the learning activities and topics terms of intercultural learning? What were the issues and the solutions? What were the recommendations for future study and practised?

2. Method

The method used to write this review followed previous patterns by work of [2] and Shadiev, Hwang, and Huang (2017). During collecting articles as main sources, we used Google scholar, Baidu scholars, Science Direct and Mendeley search platform; we also used such keywords as cross-cultural learning, technology, intercultural learning, promoting, facilitating understanding and competence to find articles. After getting the list of the articles according to keywords and then we applied some criterions for further screening: (1) the studies that were published on 2014-2018; (2) studies focused on intercultural learning supported by technology; (3) studies indexed by Social Science Citation Index (SSCI) in Education and Educational Research category; (4) studies that were published as full text in the top nineteen journal related to educational technology, e.g. *ReCALL* (rank 46), Language Learning & Technology (rank 47), and Computer Assisted Language Learning (rank 58).

3. Results and Discussion

The Social Sciences Citation Index is a multidisciplinary index and indexes over 3,000 social sciences journals – 1988 to present. It is an important journal retrieval and paper reference channel with high authority in the field of social sciences. Table 1 illustrates studies during our work-in-progress, which were studies related to cross-cultural learning (CCL) and intercultural learning (IL).

Table 1. Studies during work-in-progress.

No.	Authors	Title	CCL	IL
1	[6]	A study of the facilitation of cross-cultural understanding and intercultural sensitivity using speech-enabled language translation technology	√	
2	[1]	A study of learners' perceptions of online intercultural exchange through Web 2.0 technologies		√
3	[7]	Strategies for Smooth and Effective Cross-Cultural Online Collaborative Learning	√	
4	[3]	Using Facebook to Promote Korean EFL Learners' Intercultural Competence		√
5	[8]	Application of speech-to-text recognition and computer-aided translation for facilitating cross-cultural learning through a learning activity: issues and their solutions	√	
6	[9]	Facilitating cross-cultural understanding with learning activities supported by speech-to-text recognition and computer-aided translation	√	
7	[10]	A pilot study: Facilitating cross-cultural understanding with project-based collaborative learning in an online environment	√	
8	[4]	Using an online collaborative project between American and Chinese students to develop EFL teaching skills, cross-cultural awareness and language skills	√	
9	[11]	Fostering Foreign Language Learning Through Technology-Enhanced Intercultural Projects		√
10	[12]	Promoting EFL learners' intercultural communication effectiveness: a focus on Facebook		√

After screening the articles according to the above criterions, finally, four studies were selected to be a review related to intercultural learning. In this review, we firstly report and checked selected studies into tables and then reviewed the studies from the following six dimensions: (1) Byram's

models, (2) influences of Byram's models on technology used and learning environment, (3) the influences of Byram's models on cultures, languages, different number and level of participants, (4) learning activities and the topics in terms of intercultural learning (5) issues and the solutions, (6) recommendation for the future study and practise.
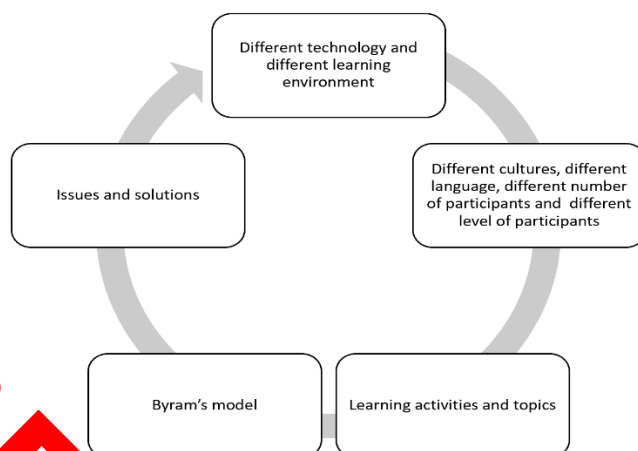

Figure 1. Technology-enhanced intercultural competence model.

3.1. Byram's Models

One way to describe individual competence in intercultural situations refers to ICC. Byram (1997) defines the ICC in his writing as the basic ability of each to be able to communicate and interact across cultural boundaries [ ] developing intercultural (IC) foreign language students (FL) to make them agents of 'intercultural speakers' as suggestions as a primary goal in FL education.

Byram (1997) explains that the model of intercultural communication, suggests that students must obtain several things including: (1) "knowledge A), which includes knowledge of the social sphere, practices, products, and interaction processes, (2) attitude (A) "That is about curiosity, openness and ready to learn other cultures, (3)" interpreting and relating skills (SIR) "namely skills to be able to explain and identify cultural perspective and mediate between them, (4)" Skills of discovery and interaction (SDI) "namely the skills to acquire new knowledge and practices about culture and apply this knowledge in direct and tangible communication, (5)" critical cultural awareness (CA) "which includes critical evaluation of practices, products, and their own cultural perspective with other cultures [12].

This model explains the main components of the IC and intercultural speakers abilities, such as: the knowledge, skills, attitudes, and perspectives they need in addition to linguistic competencies, which serve as successful intercultural communication. This ICC model can serve as a good and appropriate reference and guideline used by teachers to teach and evaluate students to develop IC learning.

3.2. Influences of technology used and learning environment on Byram's model

Most of the review studies did not use only one tool to support and facilitate intercultural interactions. To have a glimpse of what kind of technologies used and how the influences on Byram's model, in Table 1, below explain how the influences.

Table 2. Technology used

No	Technology	Frequency	Year	Byram's model				
				K	A	SIR	SDI	CA
1	Facebook	2	2015, 2017	√	√	√	√	√

2	Blogs	2	2014	-	√	√	-	√
3	Podcasts	1	2014	√	√	√	√	√
4	Twitter	1	2014	√	-	√	-	√
5	e-mail	2	2014, 2016	√	√	√	√	√
6	Blackboard	1	2014,2016	√	-	-	-	-
7	Moodle	1	2014	-	√	√	√	-
8	iMovie and Movie Maker	1	2014	√	-	-	-	-
9	online forum	1	2014	√	√	√	√	√
10	Skype	1	2014, 2016	√	√	√	√	√

As we can see from the table, there are eleven tools in the literature. Among these technologies, e-mail, Facebook, and Blogs were mostly used. The technologies used only once were Podcasts, Twitter, Skype, Moodle, iMovie and Movie Maker, and the online forum. These technical tools were used in this research divided into synchronous communication tools (Skype) and asynchronous communication tools (Facebook, Blogs, Podcasts, Twitter, e-mail, Blackboard, Moodle, iMovie and Movie Maker, and online forum) in intercultural learning.

The influences of technology in Byram's model can be shown that to reach (1) knowledge can be utilized Facebook, Podcasts, Twitter, e-mail, Blackboard, Moodle, iMovie and Movie Maker, online forum, and Skype. To reach (2) attitudes can be utilized, Facebook, Podcasts, Blogs, e-mail, Moodle, online forum, and Skype. To reach (3) skills of interpreting and relating can be utilized e-mail, Facebook, Blogs, Blackboard, Skype, Podcasts, Twitter, Moodle, and online forum. To reach (4) skills of discovery and interaction can be used utilized e-mail, Facebook, Skype, Podcasts, Moodle, and online forum. To reach (5) critical cultural awareness can be utilized e-mail, Facebook, Blogs, Skype, Podcasts, Twitter, and online forum.

In 2014 researchers begun the study and utilized asynchronous tools. In the subsequent of the study, authors began to utilize and combine asynchronous and synchronous tool to create a more immersive learning environment. By utilizing both the combination of asynchronous and synchronous communication tool, intercultural learning becomes more worthful. In addition, we found that studies during 2004-2014 [2], there are some new technologies used such as Facebook, Blackboard, Skype, Twitter, Moodle, iMovie and Movie Maker; on the other hand, some communication mentioned no longer used on the previous review to support intercultural learning such as online message board and text-based chat. By rapid growth of technology and the need of global society to interact with people around the world, some more powerful and efficient technology will be created in future to make the intercultural learning environment more effective and more impressed such Hologram, VR technology, Artificial Intelligent, Cloud, etc.

3.3. Influences of cultures, languages, number and level of participants on Byram's model

In the literature, studies were conducted with different participants from a different country, at least two different countries and culture involved. All of the studies took place on online platforms. [1] reports a Spanish-American tele collaborative project intercultural exchange online viewing and exchange of students as an extraordinary place for intercultural communication with native speakers, through social engagement, students not only gain cultural knowledge but also become more aware of their own attitudes towards their own culture [3]. The results can be concluded that Facebook offers EFL Korea students an effective and efficient platform for intercultural interaction with people from the intended local culture, and EFL Korean students demonstrate the overall component capabilities of the IC [11]. This project is designed to improve language skills to students and intercultural communication skills (ICC) [12]. Facebook provides opportunities for students to be able to learn about other cultures through several features such as walls, group discussions, video sharing, and chatting features.

Regarding the languages, different number and level of participants in these studies, Spanish (*n*=1) and English (*n*=4). [1] this study involved 28 participants, 10 participants were American participants, and 18 students were Spanish students, the participants level were postgraduate and undergraduate. [3] this study involved 52 participants, 32 participants were Korean, and 20 participants were American, the participants level were undergraduate students with age range 19 to 22 years old. [11] this study involved 15 Taiwanese participants and the level of the participants was junior high school. [12] this study involved 40 participants and the level of participants was undergraduate. Figure 2 below illustrates the cultures, languages, number and level of participants.

Table 3. Language, number and level

References	Language	Number	Level
[1]	Spanish	28	Graduate and undergraduate
[3]	English	52	Undergraduate
[11]	English	15	Junior high school
[12]	English	40	Undergraduate

As for the language in this study, it is suggested to use another language as language communication such as Chinese or another international foreign language. Most participants, according the studies, were 52 participants, and the lowest was 15 participants, it is always be suggested to utilize more participants to reach different learning result in intercultural learning. The level that we can see above mostly the undergraduate level of participants and only one study researched the junior high school level. It is always suggested of different research participants such as senior high school, elementary school, and so on.

3.4. The learning activities and the topics in terms of intercultural learning

According to the result, we can summarize the pattern of learning activities and topics on the studies on the table below.

Table 4. Learning activities and topics

References	Activities	Topics
[1]	Getting to know each other, exchanging cultural perspectives, discussing controversial issues.	Target culture, controversial issues and daily life.
[3]	Promote discussion, choose a topic for discussion and reflecting interview.	Culture differences.
[11]	Storytelling, video conference, email exchange.	Folk tales, traditional story, custom and daily life.
[12]	Assigning participants randomly in two groups, administration of the background questionnaire and IES, intercultural instruction and	Culture, identity, gender roles, speech communities, language, communication, physical space (the perception of time), definition,

discussions, Re-administration of   stages, and Stereotyping.

the IES, interviews and essays.

As we can see above, the activities on the studies generally created such patterns as follow, (1) introduction, (2) pairing students, (3) choose topic, (4) exchanging culture, (5), reading lesson and writing essay (6) video conference, (7) e-mail exchange, and (8) interviews. The topics mostly utilized on the studies were culture (*n*=4), daily life (n=2), controversial issues, language, communication, physical space (the perception of time), definition, stages, and Stereotyping.

3.5. The issues and the solutions

Here we showed the issues and solution to the studies during our work-in-progress.

Table 5. Issues and solutions.

No	Reference	Issues	Solutions
1	[1]	1. Making an interactive podcast is time-consuming. 2. Students did not find topics of target culture informative 3. Small sample size	1. Familiarizing learners with these tools and expanding the project beyond one semester. 2. Students should submit topics in advance. 3. Increase the sample
2	[3]	1. Korean learners had a misunderstanding 2. Significant weakness intercultural exchange with asynchronous written interaction 3. Student's reluctance to change his perspective of another culture	1. Teacher-guided learners to get accurate knowledge 2. Supporting by using a real-time oral-communication. 3. Pay more careful attention to promoting critical cultural awareness.
3	[11]	1. Students did not enjoy Fold tales project, especially creative writing. 2. Language barrier such as low vocabulary.	1. Revise the learning to become more familiar with synchronous communication 2. Asking instructors to help and using translator tools such as STR and CAT [8]
4	[12]	1. Two students said rarely using Facebook and preferred to use other tools. 2. Some of the students expressed their fears about using Facebook for educational purposes.	1. I am improving students' skills of discovery and interaction to make a discussion on Facebook more interesting for students. 2. I was examining as this appeared to be a problem in terms of using Facebook.

As we can see above, each study had two to three issues. The most issues that mostly we found here were familiarization (n=3) such as making an interactive podcast is a time consuming, students did not enjoy Fold tales project especially creative writing, and two students said rarely using Facebook and preferred to use other tools. Solutions given for these issues were familiarizing learners with these tools, revise the learning to become more familiar with synchronous communication, and improving students' skills of discovery and interaction to make a discussion on Facebook more interesting for students.

This explanation and discussion offers several important recommendations for anyone who intends to use technology in terms of intercultural learning. First of all, the overall picture of this literature (Figure 1) has pushed this review to the most important necessities. One of the is familiarization on technology tools both synchronous and asynchronous tool to bring the learning activities more active, avoid the fear of participants and avoid the misunderstanding between instructors to learners and learners to the learner.

Secondly, training participants is not sufficient for successful interaction and communication during intercultural learning. A stimulating learning environment must be created to simultaneously motivate and engage learning. The motivating and engaging learner can be utilized the most updated technology. Like we can see now, young people mostly engage with Instagram, Instagram is the most trending social network for teens aged 15-22 years old (www.lifewire.com, 2018).

Finally, in terms of reach all of IC's components, the author should utilize various projects to help students to reach the level of IC. A study by [3] reaches five keycomponents of IC (knowledge, attitudes, skills of interpreting and relating, skills of discovery and interaction and cultural awareness). Next to future study should focus on how to reach these five levels to give learners more depth learning activities. We realize that our review has several limitations. Firstly, articles reviewed in this study mostly were not high rank, e.g *ReCALL* (rank 46), Language Learning & Technology (rank 47), and Computer Assisted Language Learning (rank 58) on rank of SSCI, Journal Data Filtered By Selected JCR Year: 2017 Selected Editions: SSCI Selected Categories: 'EDUCATION & EDUCATIONAL RESEARCH' Selected Category Scheme. The number of reviewed articles in review only four articles. Finally, we aim to fix current guideline in the year of 2018-2019; this review follows the guideline by the previous guideline [5] and [2]. As this is a work-in-progress study, we aim to complete the review of more comprehension shortly.

This review on online intercultural learning is well positioned since it has revealed a sufficient number of issues to be considered [2]. Here, we can all say that our review consists of Byram's models, influences of technology used and learning environment in Byram's models, cultures, languages, different number, level of participants, learning activities, the topics in terms of intercultural learning, issues, solutions, recommendations for future study and practice.

We discovered some following finding during our reviews and provided some suggestion for future research and development. Firstly, people who want to conduct the same research interest as intercultural learning must pay serious attention to how to reach five components of Byram' model (1997) about intercultural competence (IC). IC components are the most vital indicator to say that intercultural learning, according to Byram's model, reaches successfulness.

Technology-used should fulfil the today need of the learner. Combination of asynchronous and synchronous communication is mostly suggested for the next future research. We also believe by the need of global society and the rapid growth of technology, people around the world need more advanced technology such as Hologram, VR technology, artificial intelligent features, cloud and so on. This does not close the chance for near future research to research more powerful technology to support intercultural learning. Most of the articles we reviewed correlated with two culture, we hope in the future that will be more culture involved. We are also planning to work in another review, such as a review on cross-cultural learning.

We also discovered mostly language used in this research was English and Spanish. IC can be developed by foreign language in special or in common language. In this context, we still can consider another foreign language such as Chinese, Russian, Germany and others. We also can broader our future research by enlarging the number of participants to make a more depth study in research and development and by utilizing the different level of participants such as college students, senior high school, elementary school, kindergarten and so on to get richer study comprehension.

In additional to elaborate the learning activities and the topics, we also discovered that learning activities in the intercultural learning activities showed various components of learning activities as follow: (1) introduction, (2) pairing students, (3) choose topic, (4) exchanging culture, (5), reading lesson and writing essay (6) video conference, (7) e-mail exchange, and (8) interviews. Most of the topics mentioned above were culture and daily life; we suggested the near future research to enrich the learning topics on intercultural learning such as how to get more authentic and more immersive intercultural learning by outdoor online intercultural learning.

Finally, we find some issues, solution and suggestions for future study and practise. The most issues that mostly we found here were familiarisation. Solutions given for these issues were familiarizing learners with these communication tools.

4. Conclusion

The result from this research is (1) This ICC model can be used as a good reference and guideline for teacher planning in discussions and discussions to develop IC students. (2) Intercultural learning more effective and more impressive such as Holograms, VR technology, Artificial Intelligence cloud, etc. (3) The most widely used topics in the studio are culture (n = 4), daily life (n =) controversial issues, language, communication, physical space (time resolution), resolution, resolution, and stereotyping. (4) Problems, solutions, and suggestions for future studies and practices. Most of the problems that most of us find here are socialisation. The solution to this problem is to familiarise students with this communication tool.

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