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Cultivating EFL Learners' Intercultural Communicative Competence through AI-powered Chatbots

Souhaila FARES*
Anthropological Studies and Social Issues Lab, Abbas Laghrour University- khenchela (Algeria)
Souhila.fares@univ-khenchela.dz

Nassira BOUDERSA
ENS Assia Djebar, Constantine (Algeria)
boudersa.nassira@ensc.dz

Abstract

As globalization has reshaped the technological landscape of societies and how cultures interact, the development of Intercultural Communicative Competence (ICC) through online environment has attained paramount prominence in the teaching and learning of English as a Foreign Language (EFL). This study investigates the transformative power of Artificial Intelligence (AI) on the development of ICC. Particularly, it aims at investigating the effectiveness of AI-powered chatbots, often referred to as "conversational AI", in cultivating EFL learners' ICC. To get satisfactory data, a true experimental design was conducted on a sample of 50 EFL second-year students at Tebessa University (Algeria). The results revealed that AI chatbots are efficacious tools in enhancing Algerian EFL learners' ICC.

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* Souhaila FARES

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1. *Introduction*

As the 21st century heralds the advent of globalization and increases interconnectivity, the need to effectively communicate with people from diverse cultures is intensifying. As such, English has cemented its role as the leading global Lingua Franca that facilitates intercultural communication. Within this line of thought, Intercultural Communicative Competence (ICC) has significantly become essential in foreign language education. Byram and Wagner (2018) noted that developing an ICC is highly required for English as a Foreign Language (EFL) learners to effectively and appropriately interact in an intercultural context.

Given the increasing demands of ICC proficiency, educators and researchers in the field of foreign language education have devoted much time and effort in exploring effective approaches to ICC development. Remarkably, advancements in Artificial Intelligence (AI) create new prospects for EFL learners to cultivate their ICC. The emergence of AI as a catalyst force in EFL education drives researchers to investigate the junction of AI and ICC education to output an intercultural learning (Baker & Inventado, 2014). More particularly, Petrović and Jovanović (2021) maintained that AI chatbots with their linguistic processing abilities provide EFL learners with a unique opportunity to be engaged in a real intercultural conversation.

Despite the fact that the teaching of English has shifted paradigms towards intercultural learning, English syllabi in the Algerian context, including those used in the English Department at Tebessa University, don't meet the ultimate goal of successfully communicating in different cultural settings. Upon subjecting English syllabi to an intercultural-based checklist evaluation, we confirmed that the intercultural dimension is not present in any of them. In this vein, the teaching of the intercultural dimension in the English Department of Tebessa is limited to factual information about British and American civilization and literature.

Based on the stated research problem, this present study aims to explore the effectiveness of AI chatbots in enhancing EFL learners' ICC. In light of the research problem and the aim of the study, two research questions are raised:

a. How do AI-powered chatbots influence EFL learners' ICC?
b. Which specific aspects of ICC can be enhanced through the implementation of AI chatbots?

Henceforth, it is hypothesized that the integration of AI chatbots in EFL education will cultivate EFL learners' ICC.

2. *Literature Review*

2.1. ICC in Foreign Language Education

2.1.1. Conceptualizing ICC

The interdisciplinary nature of Intercultural Communicative Competence (ICC) that is grounded in various fields including anthropology, cultural studies, linguistics, psychology and education has made it

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daunting to define the term. On that account, the term in this study is confined to the context of foreign language education.

Upon exploring the evolution of the concept, one can note that ICC is an enlargement of communicative competence. In response to Dell Hymes' concept of communicative competence, Byram (1994) criticized Hymes' views for its insufficient focus on interculturality and, thus, enlarged Hymes' framework to further include the intercultural skill. For Byram (2000), ICC refers to "the ability to interact effectively and appropriately with speakers from different linguistic and cultural backgrounds" (Cited in Huang, 2021, p. 56). Within the same scope, Chen and An (2009) defined ICC as "the key to cultivating the ability to tolerate and mutually respect cultural differences" (p. 394).

Bennett has dedicated his researches to conceptualise ICC. He (2009) believed that the concept of ICC refers to the aptitude to effectively and appropriately interact with people from different cultures with respect to the cultural variations between the source culture and the target culture. In other words, he (2009) noted that intercultural competence doesn't only integrate the language skills and knowledge of culture, but it rather covers a deep understanding of the norms and values that govern the practices of individuals in the target culture.

From the abovementioned conceptualizations, it is concluded that ICC is the ability to comprehend the norms and values of others, respect cultural variations and more importantly hold attitudes of openness and curiosity toward otherness. This would enable individuals to effectively and appropriately engage in an intercultural contact.

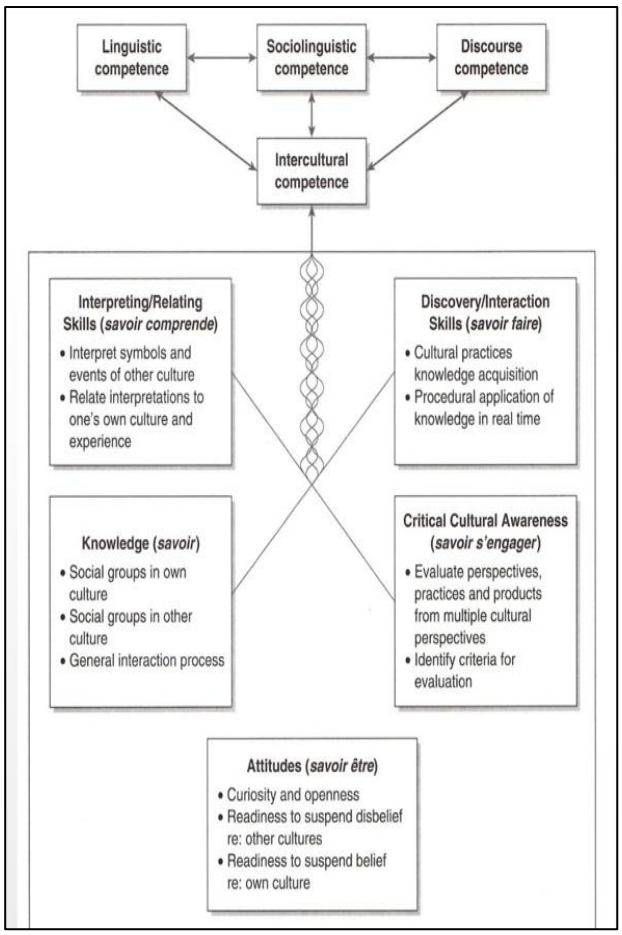
2.1.2. Byram's Model of Intercultural Communicative Competence

Researchers and scholars in the field of language education have developed various intercultural models in an attempt to introduce a practical guide and a structured outline to the concept. The most influential models include those suggested by Chen and Starosta (1996), Byram (1997), Bennett (1998), and Deardorff (2004); each highlighted different aspects and components that are vital for an effective intercultural communication.

In this current study more emphasis is to be put on the literature of Byram's model. Michael Byram's Intercultural Communicative Competence (ICC) Model is particularly impactful due to its comprehensive framework. It is highly approved in the field of foreign language teaching and learning for its focus on integrating the intercultural dimension into language curricula besides its practical guidelines for ICC assessment and development.

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Fig .1. Byram's Model of ICC



Source: Byram, 1997, p.73

As illustrated in the figure above, Byram (1997) developed a model that includes five core units, commonly referred to as *savoirs*. These five *savoirs* are namely: Attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness (Byram, 1997, p.33) (Figure 1). Both of attitudes and knowledge are prerequisites for the intercultural interaction while the two skills are follow-up abilities (Byram et al., 2002). These intercultural aspects can be acquired through experience or within the context of formal education (Byram, 1997, p33). In a nutshell, Byram's practical model supplies teachers and educators with a comprehensive framework that works towards developing EFL learners' ICC in various EFL contexts.

2.2. AI-powered Chatbots in Intercultural Learning

2.2.1. Chatbots in Language Education

Chatbots are dialogue-based virtual systems that interact with users through an automatic agent for language learning processes (Bibauw et al., 2022). For the purpose of facilitating interaction with people from different language speaking countries, chatbots' software manoeuvres innumerable natural language processing programs (Garcia Brustenga et al. 2018).

Seen from this perspective, chatbots exert a vital influence on language teaching and learning because they enable students to practise foreign languages either through texts or through audios (Bibauw et al., 2019). Within the literature, Kim (2019) carried out research on the use of chatbots in EFL context throughout which the researcher examined the advantages of chatbots on learners' achievements. The findings of her study showed that the implementation of chatbots in ELT effectively developed students' proficiency. Another similar study was conducted by Yang (2022), aiming at exploring the effectiveness of AI chatbots in EFL classes. Based on teachers' perceptions, the study revealed the efficacy of chatbots in stimulating interactive communication and assisting language education.

In another similar line of arguments, Bhise et al. (2023) noted that the embodiment of chatbots offers EFL learners the opportunity to interact with no limits of time or space. According to Jiang (2022),

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there are several merits that chatbots offer to EFL learners as they provide them with a safe setting to talk, improve their skills and provide them with immediate commentary on their inaccuracies.

Within the context of EFL education, further studies approved the abovementioned views. These studies are best represented through systematic reviews that were undertaken by Huang et al. (2022) and Zhai and Wibowo (2022). Based on reviewing plethora of empirical studies and articles, Huang et al. (2022) stated that chatbots have technological conveniences beside their pedagogical usefulness. In a similar line of thought, Zhai and Wibowo (2022) reviewed about 50 articles to investigate how the cultural dimensions of chatbots influence EFL learners' learning. Their findings indicated that the use of chatbots has a direct impact on learners' ICC development.

2.2.2. AI Chatbots for Developing ICC in EFL Learners

The convergence of AI and ICC has raised interests in the field of foreign language education. As such, studies are emerging to target the effectiveness of AI tools in developing EFL learners' ICC. In this vein, Sundararajan et al. (2018) noted that language learning platforms that are initiated by AI are effective instructional materials that focus on the development of intercultural communication.

Seen from this perspective, Baker and Inventado (2014) argued that promising outcomes regarding the ICC development begin to unravel with the integration of AI in foreign language education. They (2014) added that adopting conversational AI in EFL education fosters intercultural awareness and provides learners with an intercultural setting wherein they can be engaged in intercultural communications.

Lu, et al. (2019) evoked another related feature in conversational AI. They (2019) pointed that gamification encourages EFL learners to effectively merge across different cultural backgrounds. It is worth noting that conversational AI is intended to address the development of EFL learners' ICC, language proficiency and cultural awareness altogether (Huang et al., 2020).

Pertaining to AI-powered chatbots, Sundararajan et al. (2018) posited that chatbots promote intercultural conversations that give EFL learners an opportunity to practise both language skills and culture. To put it differently, chatbots enable learners to effectively interact with virtual interlocutors, which respond to them realistically and are alert to the cultural norms of the target language.

3. Methods and Materials

Since our study aims at determining whether AI chatbots cause positive outcomes regarding the development of EFL learners' ICC, a true experimental design has been used.

3.1. Participants

Subjects of this present study are second-year LMD students in the department of English at Tebessa University. The study's population consists of 128 students, aging between 18 and 22 years old. In a true experimental design, the sampling technique requires random distribution of participants to two subgroups; the

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experimental group and the control/comparison group. Accordingly, 50 students were randomly assigned to be part of either the experimental group (N=25) or the control group (N=25). Assigning students to the subgroups was undertaken through simple randomization. This, in fact, was processed through *Blonckrand* (a computer-based program).

3.2. Research instruments

In this current study, a true experimental design was conducted to investigate the role of AI chatbots in developing EFL learners' ICC. Adopting a true experimental design for this research is mainly due to the fact that it offers randomization, control over variables, and causal inference. Our experimental design that spanned over a period of 12 weeks (from February, 2024 to May, 2024) unfolded in three phases that will be discussed in the coming parts. Therefore, a pretest, instructional units and a post-test were designed accordingly.

3.3. Research Procedures

As mentioned above, the experimental study unfolded in three phases. Prior to the treatment/non-treatment phase, all participants of both groups were pretested. The pretest aimed at assessing participants' proficiency regarding ICC components (knowledge, skills, and attitudes). The test took the form of roleplays and global café activities. In the second part and unlike the comparison group, the experimental group received the treatment that was distributed over a period of twelve weeks. Each instructional chunk lasted for four weeks with one 45-minute session per week (see table 1).

Table 1. The Treatment Procedure

Instructional Units	Targeted ICC Components	Rationale	Activities
1	Intercultural Knowledge	-To introduce students to chatbots and ICC -Quizzes students on cultural knowledge	-Chatbot-guided tour -Cultural quiz -AI Conversational workshops -Training session
2	Intercultural Skills	-Encourage students to comprehend and ask for clarification regarding cultural references and meanings -To relate and compare one's own culture to others	-Roleplay scenarios/ Story circles: AI chatbots present students with intercultural scenarios. -Resolving misunderstanding through feedback -chatbot-led roleplays
3	Intercultural Attitudes	-Develop learners' attitudes of openness and curiosity -Empathy development	-Challenging stereotypes: -Engage students in common cultural stereotypes (ed: the concept of time, receiving gifts, ...) -Engage students in discussions to debunk the stereotype -AI and instructor-led feedback

After undertaking the teaching intervention, students from both groups went through a post-test. It is worth mentioning that in designing the pretest and the posttest, we ensured that the tests are consistent.

Results

Participants of the Experimental Group (EG) and the Control Group (CG) sat for the pretest on the 5th of February, 2024.

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Students' ICC was graded on 20 points holistic-based scale. Results of the pretest are presented in the table below (table 2).

Table 2. The Pretest Scores of the EG and the CG

Participants of the EG ID	Scores	Participants of the CG ID	Scores
1001	7,00	1026	**8,00**
1002	7,00	1027	**6,00**
1003	8,00	1028	**10,00**
1004	9,00	1029	**7,00**
1005	9,00	1030	**10,00**
1006	10,00	1031	**10,00**
1007	10,00	1032	**7,00**
1008	10,00	1033	**9,00**
1009	11,00	1034	**6,00**
1010	7,00	1035	**11,00**
1011	11,00	1036	**10,00**
1012	8,00	1037	**9,00**
1013	9,00	1038	**15,00**
1014	9,00	1039	**12,00**
1015	14,00	1040	**8,00**
1016	10,00	1041	**7,00**
1017	9,00	1042	**7,00**
1018	9,00	1043	**15,00**
1019	8,00	1044	**12,00**
1020	8,00	1045	**8,00**
1021	14,00	1046	**7,00**
1022	6,00	1047	**7,00**
1023	3,00	1048	**6,00**
1024	8,00	1049	**2,00**
1025	7,00	1050	**4,00**

The main rationale behind administering a pretest to participants of both groups is to assure similarity. For that reason, the results of the pretest were processed through SPSS Ver 25 that generated the following table (table 3).

Table 3. Mean and Standard Deviation Scores of Both Groups' Pretest

Participants' grouping	N	Mean	St. Deviation
EG	25	8.84	**2.30362**
CG	25	8.52	**3.02930**

The results of the pretest that is illustrated in table 3 show that there is no statistically significant difference between the mean scores of the experimental group and the control group. The mean of the experimental group is 8.84 with a standard deviation of 2.30362. On a similar range, the control group's mean is 8.52 with a standard deviation of 3.02930. To ensure the relevance of the results, an independent samples t-test was used (table 4).

Table 4. The Pretest's Independent Samples t-test

	Levene's Test for Equality of Variances		T-test for Equality of Mean				
	F	Sig	T	df	Sig (2 tailed)	Mean Dif	**Std. Error Dif**
Equal Variances Assumed	2.166	.148	.420	48	.676	.32000	**.76114**
Equal Variances not Assumed			.420	44.801	.676	.32000	**.76114**

The computed value (p) is **0.67** which surpasses **(a= 0.05).** This confirmed that, prior to the treatment, both groups were at the same level of ICC and, therefore, the difference between them lacked statistical significance. These results strongly affirm the pre-test's effectiveness in setting suitable conditions for the implementation of the teaching intervention.

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For the purpose of measuring the outcomes and determining the effect of the experimental treatment, a post-test was carried out on May the 5th, 2024. Results of the post-test are presented in the table below (table 5).

Table 5. The Post-test Scores of the EG and the CG

Participants of the EG ID	Scores	Participants of the CG ID	Scores
1001	14,00	1026	**6,00**
1002	15,00	1027	**8,00**
1003	16,00	1028	**10,00**
1004	17,00	1029	**10,00**
1005	12,00	1030	**7,00**
1006	10,00	1031	**10,00**
1007	16,00	1032	**10,00**
1008	14,00	1033	**9,00**
1009	12,50	1034	**7,00**
1010	10,00	1035	**5,00**
1011	7,00	1036	**5,00**
1012	12,00	1037	**3,00**
1013	13,00	1038	**14,00**
1014	14,00	1039	**10,00**
1015	15,00	1040	**12,00**
1016	16,50	1041	**9,00**
1017	10,00	1042	**8,00**
1018	11,00	1043	**6,00**
1019	13,00	1044	**9,00**
1020	10,00	1045	**12,00**
1021	9,00	1046	**10,00**
1022	13,00	1047	**7,00**
1023	13,50	1048	**6,00**
1024	13,00	1049	**2,00**
1025	17,00	1050	**9,00**

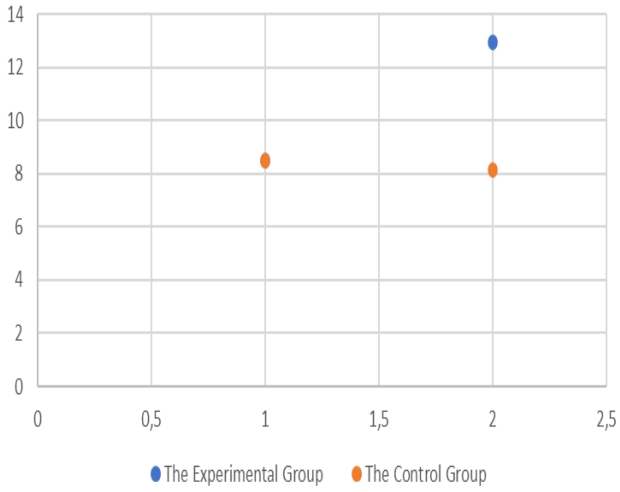
By conducting a straightforward statistical process of the post-test scores, the following table was generated.

Table 6. Mean and Standard Deviation Scores of the Two Groups' Post-test

Participants' grouping	N	Mean	St. Deviation
EG	25	12,94	**2.64307**
CG	25	8,16	**2.80891**

As shown in table 6, the experimental group scored a mean of 12.94 whereas the control group registered 8.16. By comparing the means of the two groups, it is apparent that there is a significant difference between the performances of the two groups in the post-test. For better illustration of the mean scores of both the experimental group and the control group before and after the intervention, a scatter chart was used to display the results (Figure 2).

Fig. 2. Scatter Chart Comparing the Mean Scores for the Two Groups on Each Test



The mean pretest scores of the two subgroups are nearly at the same level as the experimental group had a mean pretest score of 8.84 and the control group's mean registered 8.53. After the teaching intervention, the experimental group's mean score increased notably to reach 12.94, indicating a substantial progress in the experimental group's achievements. Unlikely, the control group's mean indicated no progress. Thus, the experimental group demonstrated a substantial gain in the mean score. To assume that the difference doesn't occur by

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chance, an independent samples t-test was performed.

Table 7. The Independent Samples t-test of the Post-test Scores

	Levene's Test for Equality of Variances		T-test for Equality of Mean				
	F	Sig	T	df	Sig (2 tailed)	Mean Dif	Std. Error Dif
Equal Variances Assumed	.125	.725	6.197	48	.000	4.78000	.76114
Equal Variances not Assumed				47.823	.000	4.78000	.76114

As the above results highlight, the probability value is **.000** at level of significance (**P = .05**). The low p-value .000 that is under 0.05 suggested that the results are statistically significant; that is to say, there is a statistical difference between the experimental group and the comparison group's ICC level. This means that the teaching intervention with the experimental group provides positive outcomes.

4. Discussion

The present study aims at investigating the effectiveness of AI-powered chatbots in enhancing Intercultural Communicative Competence (ICC) among English as a Foreign Language (EFL) learners. Upon analysing the experimental results of the tests' scores of the experimental group and control group, valuable insights were obtained. By analysing the post-test score, we found that the obtained p-value was well below p=0.05. As such, we had enough confidence to confirm the H1 hypothesis, postulating that AI chatbots will develop EFL learners' ICC, and to attribute the progress of the experimental group to our treatment.

Through implementing AI chatbots in EFL education, learners who received the experimental treatment demonstrated higher intercultural engagement due to the interactive nature of conversational AI. Therefore, we can confidently answer the first research question by saying that AI chatbots positively influence the development of EFL learners' ICC.

The findings also revealed that three main aspects of ICC were enhanced through the implementation of AI-powered chatbots, namely: Intercultural knowledge, intercultural skills, and intercultural attitudes. As mentioned in the previous section, these specific aspects were the assessment metrics of both the pretest and the post-test so as to track learners' progress. The treatment was also structured around these core ICC components (table 1). Through consistent interactions with culturally varied chatbot prompts, learners in the experimental group showed notable improvements in intercultural knowledge, gaining a deeper understanding of both their own cultural background and that of culturally distinct others. Participants in the experimental group also practised interpreting, negotiating, and adapting to diverse cultural norms and values. Furthermore, the safe and controlled environment facilitated significant progress in students' attitudes; it fostered attitudes of openness, empathy, and respect toward others. Consequently, these findings directly address the second research question by identifying the

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specific ICC aspects (knowledge, skills, attitudes) that AI chatbots can cultivate in EFL learners, with clear post-test evidence of progress across all three areas. The findings demonstrate the potential of AI chatbots as a valuable asset in language education for promoting intercultural understanding.

5. Conclusion

In a nutshell, directing EFL education toward an intercultural learning is of great importance as ICC integration in English education would enable students to interact in diverse cultural setting. In the Algerian context, cultivating EFL learners' ICC is disregarded as the curriculum, syllabi and courses are defective in term of the intercultural dimension, and even the little efforts that are made by some teachers adhere to conventional practices. Therefore, this study aimed at investigating the efficacy of chatbots on the development of ICC in EFL contexts.

In the present study, a true experimental design was conducted to test our hypothesis. Its results, statistical analyses and interpretations answered the research questions and confirm our H1 hypothesis. In this respect, the findings provided empirical evidence supporting the effectiveness of AI chatbots in enhancing ICC among EFL learners. By integrating AI chatbots into language education, educators can offer students valuable opportunities to engage in intercultural experience.

Following the findings, some recommendations are formulated. Particularly, designers at macro level have to work in coordination with teachers at the micro level to integrate the intercultural dimension into English syllabi with regard to AI dynamic force. Moreover, teachers and learners should be encouraged to develop intercultural attitudes that would minimize intercultural barriers.

6. Bibliography List

Baker, R. S., & Inventado, P. S. (2014). Educational data mining and learning analytics: Applications to constructionist research. *Technology, Knowledge, and Learning, 19(1-2)*, 205-220.

Bennett, M. J. (1998). Current perspectives of intercultural communication. In M. J. Bennett (Ed.), *Basic concepts in intercultural communication: selected readings* (pp. 191–214). Yarmouth, ME: Intercultural Press.

Bennett, J. M. (2009). *Cultivating intercultural communicative competence: A process perspective*. In D. K. Deardorff (Ed), *The Sage handbook of intercultural competence.* Thousand Oaks, CA: Sage.

Bhise, A., Munshi, A., Rodrigues, A., & Sawant, V. (2023). Overview of AI in education. In P.P. Churi, S. Joshi, M. Elhoseny, & A, Omrane (Eds.), *Artificial intelligence in higher education: A practical approach* (1st ed.) (pp. 31-62). CRC Press.

Bibauw, S., François, T., & Desmet, P. (2019). Discussing with a computer to practice a foreign language: Research synthesis and conceptual framework of dialogue-based CALL. *Computer Assisted Language Learning, 32(8)*, 827–877. https://doi.org/10.1080/09588221.2018.1535508

Bibauw, S., Van den Noortgate, W., François, T., & Desmet, P. (2022). Dialogue systems for language learning: A meta-analysis. *Language Learning & Technology, 26*(1), 1–24. https://hdl.handle.net/10125/73488

Byam, M. (1994). *Teaching and Learning Language and Culture.* Great Britain: WBC.

Byram, M. (1997). *Teaching and assessing intercultural communicative competence*. Clevedon, UK: Multilingual Matters.

Attribution - Pas d'Utilisation Commerciale - Pas de Modification 4.0 International (CC BY-NC-ND 4.0)

Byram, M. (2000). *Routledge encyclopedia of language teaching and learning*. London: Routledge.

Byram, M., Gribkova, B., & Starkey, H. (2002). *Developing the intercultural dimension in language teaching: A practical introduction for teachers.* The Council of Europe.

Byram, M., & Wagner, M. (2018). *Making a Difference: Language Teaching for Intercultural and International Dialogue*. Foreign Language Annals, 51, 140-151https://doi.org/10.1111/flan.12319

Chen, G. M., and An, R. (2009). A Chinese model of Intercultural Leadership Competence. In D.K. Deardorff,(ed.). *The SAGE Handbook of Intercultural Competence*. Thousand Oaks, CA: Sage.

Chen, G. M., & Starosta, W. J. (1996). Intercultural communication competence: A synthesis. *Communication Yearbook, 19*, 353-383.

Deardorff, D. K. (2004). The identification and assessment of intercultural competence as a student outcome of international education at institutions of higher education in the United States. (Unpublished Dissertation, North Carolina State University, Raleigh).

Garcia Brustenga, G., Fuertes-Alpiste, M., & Molas-Castells, N. (2018). *Briefing paper: Los chatbots en educación. eLearn Center*. Universitat Oberta de Catalunya.

Huang, F., Mislevy, J., Wang, S., Wei, X., & Zhang, X. (2022). Rigorous and high-quality efficacy studies of educational technology interventions. *Frontiers in Education, 7*, Article 968708. https://doi.org/10.3389/feduc.2022.968708

Huang, L. J. D. (2021). Developing intercultural communicative competence in foreign language classrooms—A study of EFL learners in Taiwan. *International Journal of Intercultural Relations,* https://doi.org/10.1016/j.ijintre

Huang, L., Jia, R., Zhao, L., Ma, F., & Huang, Z. (2020). Ethical considerations in artificial intelligence and COVID-19: The road to hell is paved with good intentions. *Journal of Medical Ethics, 46(7)*, 429-430.

Jiang, R. (2022). How does artificial intelligence empower EFL teaching and learning nowadays? A review on artificial intelligence in the EFL context. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.1049401

Kim, N.-Y. (2019). A study on the use of artificial intelligence chatbots for improving English grammar skills. *Journal of Digital Convergence, 17(8),* 37–46. https://doi.org/10.14400/JDC.2019.17.8.037

Lu, J., Huang, D., Sun, H., & Feng, L. (2019). *Gamification in education: A systematic mapping study*. Computers in Human Behavior, 93, 380-393.

Petrović, J., Jovanović, M. (2021) The Role of Chatbots in Foreign Language Learning: The Present Situation and the Future Outlook. In: Pap E. (eds) Artificial Intelligence: Theory and Applications. *Studies in Computational Intelligence, vol 973*. Springer, Cham. https://doi.org/10.1007/978-3-030-72711-6_17

Sundararajan, V., Mihailidis, P., Jelveh, Z., & Aparici, I. (2018). Real-time cultural informatics for personalized intercultural training. *International Journal of HumanComputer Interaction, 34(6)*, 498-509.

Yang, J. (2022). Perceptions of preservice teachers on AI chatbots in English education. *International Journal of Internet, Broadcasting and Communication, 14(1)*,44–52.https://doi.org/10.7236/IJIBC.2022.14.1.44

Zhai, C., & Wibowo, S. (2022). *A systematic review on cross-culture, humor and empathy dimensions in conversational chatbots: The case of second language acquisition.* Heliyon. https://doi.org/10.1016/j.heliyon.2022.e1205

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