



An Analysis of the Impact of Informal Digital Learning of Language on the Intercultural Communicative Competence of Chinese College Students

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Abstract. With the rapid advancement of information and communication technologies (ICT) and the pervasive digitization in all aspects of contemporary society, an escalating number of language learners are acquiring various languages, particularly English, the global lingua franca, not only within formal educational institutions but also in informal settings, driven by a multitude of motivations. Regarding the informal acquisition of languages through digital means, limited attention has been given to the development of cultural competence and the implicit influence of accessing diverse cultures on learners' intercultural communicative competence (ICC). This paper aims to elucidate the concept of Informal Digital Language Learning (IDLL) based on Informal Digital Learning of English (IDLE), and to present a quantitative study conducted through a survey administered among Chinese students studying English as a foreign language (EFL). The findings of this study seek to stimulate further in-depth exploration into the impact of IDLL on learners' ICC.

Keywords: Informal Learning of Language; Digital Learning; Intercultural Communicative Competence; Informal Digital Learning of English

1 Introduction

The advent of the fourth industrial revolution, commonly referred to as Industry 4.0, has led to significant transformations in various aspects of societies across the globe, including the field of education. In today's rapidly evolving world, characterized by the swift development of information and communication technologies (ICT) and the pervasive digitalization of numerous facets of human life, an increasing number of individuals are engaging in language learning for diverse purposes, both in formal educational settings and informal environments. Notably, English, as the most prevalent language worldwide, remains a focal point of language acquisition efforts. Although informal language learning facilitated by digital devices has garnered considerable attention from scholars worldwide, regrettably, only a limited number of studies have delved

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into the effects of informal language learning on individuals' cultural perceptions, cultural competencies, and intercultural or cross-cultural communicative competence. Consequently, the cultural and intercultural dimensions of Informal Digital Language Learning (IDLL) warrant closer examination and recognition within the research literature.

2 Conceptualization of IDLL with CALL and IDLE

In today's digital age, it is explicit that the future study of formal and informal learning has already been and will closely relate to technology. CALL studies computer applications in language teaching and learning [1], and its pedagogy has undergone specific changes, given the development of digital technologies.

<i>Stage</i>	<i>1970s-1980s</i> <i>Structural CALL</i>	<i>1980s-1990s</i> <i>Communicative CALL</i>	<i>2000s</i> <i>Integrative CALL</i>	<i>2010s</i> <i>Ecological CALL</i>
Technology	Mainframe	PCs	Multimedia and Internet	Mobile and wearable devices
Language teaching paradigm	Grammar translation and audio-lingual	Communicative language teaching	CLIL,ESP	Digital literacies, multi-literacies
View of language	Structural	Cognitive	Sociocognitive	Symbolic and intercultural competence
Principal use of computers	Drill and practice	Communicative exercises	Authentic discourse	Global communication
Principal objective	Accuracy	Fluency	Agency	Identity as global citizens

Fig. 1. Four stages of CALL [2]

As is shown in figure 1, technology, language teaching paradigm, view of language, the principal use of computers, and objective have all changed dramatically with the development of technology. It is explicit that contemporary society has put forward its unique need for CALL, and the development of CALL is gradually approaching the digital and intercultural trend. IDLL can be considered a part of CALL, especially the ecological CALL.

In order to avoid overlapping and misunderstanding, this paper will follow the connotation of Informal Digital Learning of English (IDLE) [3] to define Informal Digital Learning of Language (IDLL). Thus, according to the conceptualization of IDLE, IDLL could be defined as a self-directed, informal language learning employing various digital tools (such as smartphones and computers) and resources (such as social media and online applications). Figure 2 shows the characteristics of IDLE in extracurricular and extramural situations.

	<i>Formal digital learning of English</i>	<i>Non-formal digital learning of English</i>	<i>IDLE</i>	
			<i>Extracurricular</i>	<i>Extramural</i>
Formality	Structured	Structured	Semi-structured	Unstructured
Location	In-class	Out-of-class	Out-of-class	Out-of-class
Pedagogy	Instructed	Instructed	Self-instructed	Naturalistic
Locus of control	Other-directed	Other-directed	Self-directed	Self-directed

+

Fig. 2. Benson’s four dimensions of OCLL and IDLE [4]

While the distinction between extracurricular and extramural learning may be somewhat explicit in certain research, informal language learning facilitated by digital devices has garnered significant attention from scholars and educators. A search conducted on Web of Science utilizing keywords such as "informal learning" and "language" in the title, abstract, author, keywords, and keywords plus has yielded a substantial number of articles, with a total of 580 publications addressing the topic of informal language learning from diverse perspectives. This extensive body of literature underscores the significance of informal language learning in contemporary discourse. Although the specific term "IDLL" may not be widely employed, a majority of these studies delve into the realm of informal language learning utilizing digital resources. Figure 3 illustrates that scholarly interest in informal language learning emerged in 1995, with a consistent growth in annual publications leading up to its peak in 2021. While there is a slight decrease in the number of publications in 2022, the figure still demonstrates an impressive count of nearly 60 publications dedicated to the subject.

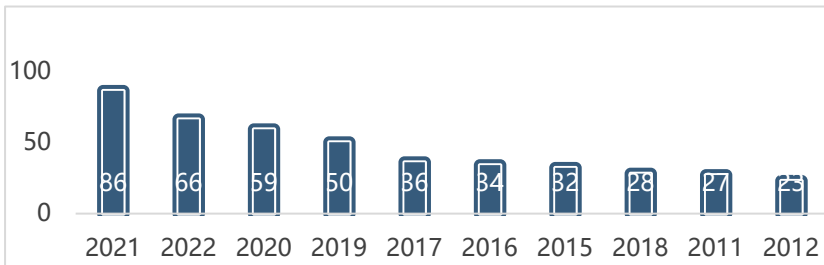


Fig. 3. Annual Publication from Web of Science (self-made)

Regrettably, despite the considerable amount of research conducted on informal language learning, only a limited number of papers have addressed the impact of this form of learning on individuals' cultural perceptions, cultural competencies, and intercultural/cross-cultural communicative competence. The cultural and intercultural dimensions of Informal Digital Language Learning (IDLL) are a significant area that warrants further attention. IDLL encompasses not only language learning but also the acquisition

of cultural knowledge, as culture and language are inherently intertwined [5]. It is evident that investigating the effects of IDLL on intercultural communicative competence holds promise for future research endeavors.

3 A Survey of the Relationship Between IDLL and ICC

Given that English holds the status of the most widely utilized foreign language and serves as the international lingua franca, this study focuses specifically on Chinese college students studying English as a foreign language (EFL). The primary objective of this research is to investigate whether Informal Digital Language Learning (IDLL), specifically Informal Digital Learning of English (IDLE), which encompasses both receptive IDLE (such as reading and listening activities) and productive IDLE (such as writing and speaking activities), contributes to the development of intercultural communicative competence (ICC) among Chinese EFL learners. The research question guiding this study is: "Does the frequency of engaging in IDLE activities (both receptive and productive) predict the level of ICC among Chinese EFL college students?"

A total of 68 Chinese EFL college students voluntarily participated in this study by responding to a bilingual questionnaire. The questionnaire included sections related to demographic information, formal English learning experience, non-formal English learning experience, productive IDLE, and receptive IDLE. The sample consisted of Chinese EFL college students from different grades, with grade one comprising 1.5% of the sample, grade two comprising 2.9%, grade three comprising 17.6%, and grade four comprising 77.9%. The gender distribution in the sample was predominantly male, with males accounting for 80.9% of the participants. The data collected from the questionnaire was analyzed using hierarchical regression analysis conducted on the SPSS software to examine the relationships between Informal Digital Learning of English (IDLE) and intercultural communicative competence (ICC). The regression equation are shown in regression equation 1 and 2. The regression results from SPSS are shown in figure 4, 5 and 6.

Regression equation 1: $Y = b_0 + b_1X_1 + b_2X_2 + e$

X1 is formal English learning and X2 is Non-formal English learning.

Regression equation 2: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$

X1 is formal English learning, X2 is non-formal English learning, X3 is receptive IDLE and X4 is productive IDLE.

The SPSS output is as follows:

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.407 ^a	.166	.140	2.64757	.166	6.455	2	65	.003
2	.564 ^b	.319	.275	2.43054	.153	7.063	2	63	.002

a. Predictors: (Constant), Non-formal learning experience, Formal learning experience

b. Predictors: (Constant), Non-formal learning experience, Formal learning experience, Receptive IDLE, Productive IDLE

Fig. 4. Model summary (from SPSS)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	90.492	2	45.246	6.455	.003 ^b
	Residual	455.625	65	7.010		
	Total	546.118	67			
2	Regression	173.943	4	43.486	7.361	<.001 ^c
	Residual	372.174	63	5.908		
	Total	546.118	67			

- a. Dependent Variable: sum of four dimensions
- b. Predictors: (Constant), Non-formal learning experience, Formal learning experience
- c. Predictors: (Constant), Non-formal learning experience, Formal learning experience, Receptive IDLE, Productive IDLE

Fig. 5. ANOVA (from SPSS)

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	12.266	.911		13.471	<.001					
	Formal learning experience	1.004	.330	.413	3.045	.003	.407	.353	.345	.696	1.437
	Non-formal learning experience	-.027	.306	-.012	-.087	.931	.216	-.011	-.010	.696	1.437
2	(Constant)	9.516	1.112		8.561	<.001					
	Formal learning experience	.526	.352	.217	1.494	.140	.407	.185	.155	.515	1.943
	Non-formal learning experience	-.180	.286	-.080	-.629	.532	.216	-.079	-.065	.670	1.491
	Receptive IDLE	1.135	.323	.439	3.519	<.001	.532	.405	.366	.695	1.439
	Productive IDLE	.098	.288	.043	.339	.735	.327	.043	.035	.681	1.469

a. Dependent Variable: sum of four dimensions

Fig. 6. Coefficients (from SPSS)

Results showed that receptive IDLE and productive IDLE could significantly explain an additional 15.3% of the total variance on the ICC after controlling for the effect of formal English learning and non-formal English learning ($F(2, 63) = 87.06, p = .002$). The model with all four predictors was significantly different from zero ($F(4, 63) = 7.36, p < .001$), indicating that the four predictors could explain 31.9% of the total variance of the ICC. In IDLE, receptive IDLE had significant effects on the ICC (receptive IDLE: $b = 1.14, t = 3.52, p < .001, \beta = .44$; productive IDLE didn't show a significant effect on the ICC: $b = 0.10, t = 0.34, p = 0.74, \beta = .04$). The results revealed that the higher frequency of students doing receptive IDLE activities, the better ICC performance they might have. Productive IDLE activities didn't give such an implication.

The primary objective is to determine whether Informal Digital Language Learning can enhance the ICC of Chinese EFL students. Based on the findings, it can be inferred that Chinese EFL students who engage frequently in IDLE activities tend to exhibit higher levels of ICC compared to those who engage less frequently. Furthermore, while receptive IDLE activities have a significant positive impact on ICC development, productive IDLE activities do not yield the same effect. Some further research about why productive IDLE cannot predict students ICC should be done. Some follow-up qualitative study with a purpose of exploring why and how IDLL impacts people's ICC should also be done in the future.

4 Conclusion

This study has undertaken the conceptualization of Informal Digital Language Learning (IDLL) based on Computer-Assisted Language Learning (CALL) and Informal Digital Learning of English (IDLE). It has presented a survey exploring the relationship between IDLL and intercultural communicative competence (ICC) and has called for further research in the field of informal digital learning to enhance individuals' ICC. In an increasingly interconnected world with growing international exchanges, individuals with intercultural competence play a crucial role as bridges between different countries. The demand for intercultural talents is rising in the era of globalization, making ICC an essential literacy for individuals in the globalized age. The research on ICC, both in China and globally, is flourishing due to its significance in the contemporary world. However, existing research on ICC predominantly focuses on formal settings, such as improving students' ICC in English classes, while often overlooking the importance of ICC development in informal settings that involve digital devices and access to abundant online resources and opportunities. These informal settings offer individuals diverse ways to interact with different cultures, thereby facilitating the enhancement of their ICC. Informal digital language learning has already emerged as a prevailing trend, particularly among young people. Therefore, it is crucial for relevant studies on ICC to recognize and emphasize the significance of informal language learning. Furthermore, research on informal language learning should also consider the impact of different cultures within this process and acknowledge its potential for enhancing individuals' ICC.

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