Digital Integration and the Korean Wave: A Study on ICT in Korean Language Education

Boeui Woo[1]

[1] PhD, Department of East Asian Languages and Literatures, University of Hawaiʻi, USA,
bwoo@hawaii.edu

Abstract: This study aimed to identify the relationships among technology, the Korean Wave, and Korean language education synchronically and diachronically. Through quantitative and qualitative data analyses, I quantified data from government statistics and stored, coded, and categorized documents and news articles according to the keywords information communication technology (ICT), Hallyu, and Korean language education. I then described the results of the analyses. The findings from government documents showed that ICT has been widely applied within the Hallyu period and has accelerated the expansion of Hallyu throughout the world. In addition, government statistics have indicated that the number of takers of the Test of Proficiency in Korean has greatly increased during the Hallyu periods. Moreover, with the development of ICT, the teaching methods and environment for Korean language education have changed. Overall, the study filled a research gap and provided the following suggestions in the area of Korean language education: collected and refined massive data need to be used for artificial intelligence for Korean language education; the development of teaching methods for Korean language education using metaverse platforms is needed; and efforts by the Korean government, educational institutions, and researchers on behalf of coexisting Korean language educators with technology are required.

Keywords: Information Communication Technology, The Korean Wave, Hallyu, Korean Language Education, Korean Government Statistics

1. Introduction

Although skeptical opinions about the continuity of the Korean wave or Hallyu have been raised, it has been around twenty years since Korean culture started to receive attention worldwide. To continue to accelerate this phenomenon, the Korean government released a new policy for Hallyu in 2020. Notable features of this policy are the use of high technology in Korean cultural content and the reinforcement of Korean language education via Hallyu[1].

Although this policy places importance on technology, the role of technology in generating and disseminating Hallyu content has not been discussed extensively in the existing literature. In particular, the literature is focused more on the economic effects of Hallyu, such as the increased profits for Korean products and the enhanced image of Korea[2-5]. Moreover, even though the importance of Hallyu and technology has risen in the area of Korean language education, previous research falls short of showing the degree of the melding of technology, the Korean wave, and Korean language education holistically. Therefore, this study aims to ascertain the relationships among technology, the Korean wave, and

Korean language education by synchronically and diachronically reviewing Korean government documents, statistics, and news articles. By investigating the involvement of technology in Hallyu and Korean language education, this study fills a research gap in the existing literature and provides implications for Korean language education using technology. The guiding research questions are as follows.

(1) How does technology play a role in the Hallyu phenomenon?
(2) How does Hallyu influence the area of Korean language education?
(3) In what way has technology been used in Korean language education?

The existing literature related to technology, Korean wave, and Korean language education is reviewed in the next section. The role of technology in the production and dissemination of Hallyu content is investigated within the different Hallyu periods. Next, how Hallyu affects Korean language education is probed. Additionally, the use of technology in Korean language education is explored. Finally, the study addresses implications and limitations.

2. Literature Review

During the development of Hallyu, previous researchers have been more focused on the influence of Hallyu phenomena. In particular, previous researchers showed that Hallyu affects the intention to purchase Korean goods[2]. For instance, because Chinese are interested in and exposed to Hallyu, they are more willing to purchase Korean smartphones[3]. In addition, the more Chinese and Vietnamese become interested in Hallyu, the more their intentions to buy Korean cosmetics increase[4]. Concurrently, Hallyu also enhances the image of Korea: As international students frequently experience Hallyu content, they evaluate Korea more positively[5]; Chinese develop a more positive image of Koreans as their interest in Hallyu grows[6].

Meanwhile, there is limited research on the success factors of Hallyu. One author points out that Hallyu gained popularity with the advent of multimedia, multichannel, and new media[7]. Another researcher also mentions that Hallyu has spread due to the competitiveness of Hallyu content, openness to the acceptance of Korean culture, cultural proximity to Korean culture, and development of media[8]. As such, previous researchers imply that technology is one of the success factors of Hallyu, although they do not show the relationship between information communication technology (ICT) and Hallyu in a comprehensive way. Moreover, the influence of Hallyu on Korean language education has been largely overlooked in that most researchers have concentrated on the economic effects of Hallyu. Nevertheless, given previous research indicates that interest in Hallyu motivates students in North America to learn the Korean language[9], more research is needed to explore how Hallyu is involved in Korean language learning.

In addition, with the development of technologies such as computers, the Internet, and smartphones, these technologies have been applied in Korean language education through blended learning and flipped learning[10][11], and the use of ICT such as augmented reality (AR)/virtual reality (VR) and artificial intelligence (AI) in language teaching methods is increasing[12][13]. Therefore, more research is required to investigate how ICT is related to Korean language education. Overall, this study elucidates how ICT, Hallyu, and Korean language education are associated holistically.

3. Research Methodology

3.1 Methodology

For quantitative analysis, figures in government statistics were collected, quantified, and reported, focusing on the number of Korean language learners, test takers of the Test of Proficiency in Korean (TOPIK), Korean language instructors, and institutions for Korean language education within four different Hallyu periods. Furthermore, for qualitative data analysis, research data, including government documents and news articles, were stored, coded, and categorized using NVivo (version 14) according to year, ICT development, Hallyu phenomenon, and Korean language education. Finally, the roles of technology in Hallyu phenomena and Korean language education were described qualitatively. The research process applied in this study is as follows [Fig. 1].
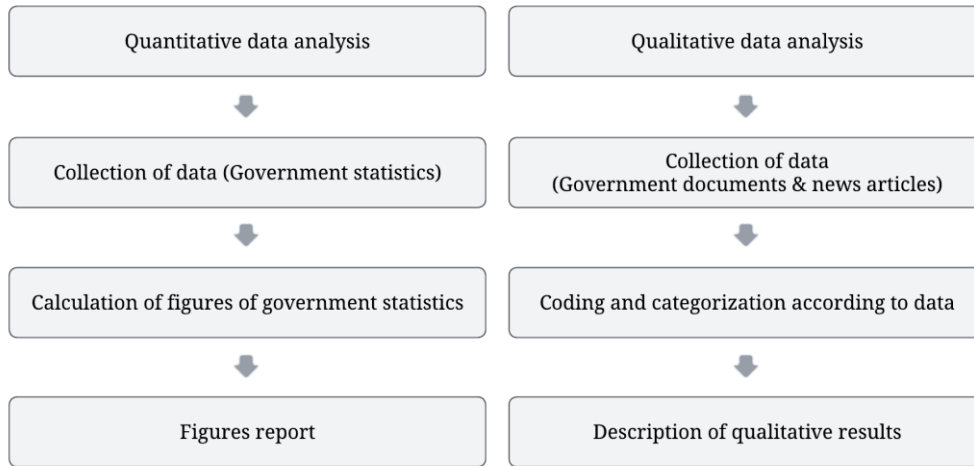
[Fig. 1] Analysis Process

3.2 Data

Data were initially selected by visiting the government websites and searching the keywords (i.e., Hallyu, ICT, and Korean language education). Next, irrelevant data for the research topic were eliminated. Then both quantitative and qualitative data from seven different sources were finally chosen. In particular, government statistics were collected from King Sejong Institute Foundation; Ministry of Culture, Sports, and Tourism; Ministry of Education; National Institute for International Education; and National Institute of Korean Language. Additional documents from the Korean Foundation for International Cultural Exchange; Ministry of Culture, Sports, and Tourism and so on were gathered for qualitative data. In addition, news articles on the website Big Kinds were included. Detailed information on the collected research data is summarized as follows [Table 1].

[Table 1] The Summary of Data

	Initial data sources	Final data sources
Government Statistics & documents	King Sejong Institute Foundation Korea Creative Content Agency Korea Foundation Korean Foundation for International Cultural Exchange Ministry of Culture, Sports and Tourism Ministry of Culture, Sports and Tourism et al. Ministry of Education	King Sejong Institute Foundation Korean Foundation for International Cultural Exchange Ministry of Culture, Sports and Tourism Ministry of Culture, Sports and Tourism et al. Ministry of Education National Institute for International Education

Ministry of Justice	National Institute of Korean Language
National Institute for International Education	
National Institute of Korean Language	
Overseas Koreans Foundation	
News articles	Big Kinds

4. Results and Discussion

4.1 Results

4.1.1 Roles of ICT in the Expansion of the Korean Wave

The results showed that ICT plays an important role in the dissemination of Hallyu within the four different Hallyu periods. Especially, the period between 1997 and the mid-2000s is referred to "Hallyu 1.0"[1], and particular factors that led to the Korean culture's developing popularity in this period were the growth of popular Korean culture and the development of ICT. For instance, Hallyu was initiated with the popularity of Korean dramas in some Asian countries and was delivered by means of TV, CDs, DVDs, and so on[14].

The period between the mid-2000s and the early 2010s is regarded as "Hallyu 2.0.[1]" During this period, popular Korean dramas in South Korea obtained major success in Asia and elsewhere[1]. Specifically, as ICT improved, 3Generation telecommunications were commercialized and the Internet speed accelerated[14]. At the same time, the number of people who watched Hallyu content using PCs and smartphones increased greatly[14].

Later, in 2012, "Gangnam Seutail" (Gangnam Style) by Psy became a sensation around the globe. Notably, as mentioned previously, ICT played a crucial role in the popularity of Psy's "Gangnam Style" given that the song was rapidly disseminated via YouTube and social network services (SNSs; e.g., Twitter)[15]. This period is called "Hallyu 3.0"[1]. In this period, Hallyu accelerated due to 4Generation telecommunications and high-speed internet, as well as SNSs such as Facebook, Twitter, Instagram, Kakao Talk, and the online video platform YouTube[14]. As a result, the Hallyu that was predominant in Asian countries began to be widely spread across the globe[1].

In 2020, the new Hallyu era began after Korean governmental departments (Ministry of Culture, Sports, and Tourism; Ministry of Education; Ministry of Science and ICT; Ministry of Foreign Affairs; Ministry of Agriculture, Food, and Rural Affairs; Ministry of Oceans and Fisheries; Ministry of Trade, Industry, and Energy; Ministry of Health and Welfare; Korea Communications Commission; Ministry of Food and Drug Safety; Cultural Heritage Administration) presented the government's policy for a new Hallyu. Particularly noteworthy was the policy of combining Hallyu content with new technology such as 5Generation telecommunications and VR[1]. Given that Korean boy and girl bands, such as BTS, Blackpink, and Twice, released new songs or held fan signing events using ICT in 2020, it is anticipated that ICT will be widely used in other Hallyu content and will continue to be a key factor in the development of such content.

### 4.1.2 The Increase of Korean Language Education in the Hallyu Periods

While users of Hallyu are content to watch K-dramas and sing along to K-pop, they are likely to increase their interest in the Korean language. In reality, previous research shows that Hallyu content is closely related to the intention to learn the Korean language and the satisfaction from learning the Korean language[16]. Such phenomena are supported by statistics from the Korean government. In particular, the figures of the number of Korean language learners, the number of test takers of the

TOPIK, the number of Korean language instructors, and the number of institutions for Korean language education have increased throughout the four Hallyu periods.

To be specific, at the beginning of the Hallyu period, only a few people learned the Korean language. Accordingly, the number of test takers for TOPIK was minimal between 1997 and 2003, or "Hallyu 1.0," showing 37,003 persons[1][17]. In addition, in this period, the qualification system for Korean language learners had not yet been executed. Accordingly, it is presumed that Korean language education for learners was not implemented systemically.

As time went on, the number of Korean language learners continually increased as shown in the number of TOPIK test takers. For example, the number of TOPIK test takers between 2004 and 2011, or "Hallyu 2.0," was 447,828 persons, twelve times more than in "Hallyu 1.0"[1][17]. Moreover, the qualification system for Korean language educators was established in 2005[18]. Additionally, by 2011, the number of the King Sejong Institutes for Korean language education had increased to sixty schools in thirty-one countries from thirteen schools in three countries in 2007[19]. These figures indicate that Korean language education has improved quantitatively.

Furthermore, from the early 2010s to late 2019, or "Hallyu 3.0," more people than ever from all over the world were learning the Korean language, given that the number of TOPIK test takers was recorded at 1,637,337 persons[1][17][20]. In addition, the King Sejong Institute expanded to 180 institutes in sixty countries, and the number of students increased to 72,713 persons in 2019[21]. On top of that, the number of people who obtained the qualification for Korean language educators grew to 7,854 persons in 2019, more than nine times the number in 2006[22]. As such, Korean language education has expanded worldwide, and its quality has improved. Furthermore, it is expected that the number of Korean language learners has further risen since 2020, although Korean language institutions and instructors are required to collaborate to offer high-quality lectures in the post-pandemic era. The relationships among technology, the Korean wave, and Korean language education, including the number of TOPIK test takers, are specified as follows[1][14][17][20].
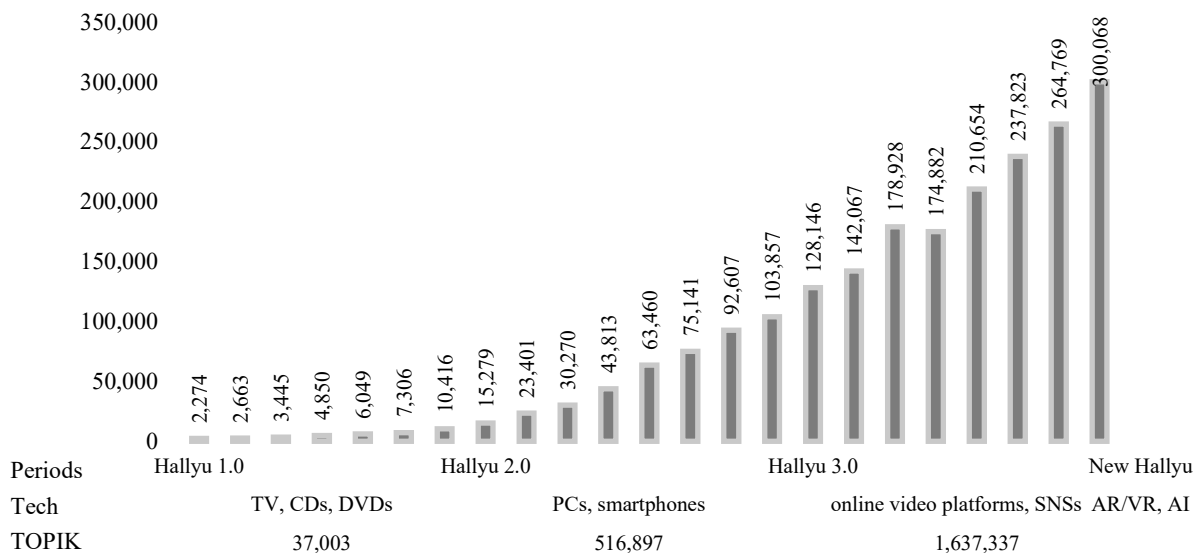
[Fig. 2] The Relationships among Technology, the Korean Wave, and Korean Language Education

4.1.3 Korean Language Education with ICT

Although paper books and audio files are mainstream in Korean institutions[23], the technologies used in education have developed and changed. First, TV and radio were utilized to overcome the limitations of time and place. For instance, Korean language lectures have been offered to Korean

language learners by broadcasting companies such as KBS and EBS since 2008[13]. After technologies were digitalized, various Korean teaching methods were proposed based on computer-assisted language learning and mobile-assisted language learning. Furthermore, flipped learning and blended learning, which maximize the benefits of online and offline classes, are suggested for Korean language education. In particular, a study reveals that blended learning is efficient in terms of administrating lectures, sharing materials, giving feedback, and so on[10]. Another study provides the teaching method for Korean reading according to pre-reading class, reading class, and after-reading class based on flipped learning, and students were satisfied with the class compared to offline classes[11].

In addition, specific ICT such as SNSs and applications (apps) has been proposed. A study offers a teaching and learning model using an online-to-offline app for teaching Korean vocabulary, and the students were able to increase their vocabulary after the class[24]. Furthermore, it is expected that Korean language education will evolve with more advanced ICT such as AR/VR and AI. As such, Korean language education will drastically change in the near future, and Korean language educators need to react to the change.

In the same line of thought, first, collected and refined massive data should be used for AI for Korean language education given that AI technology is also applicable to the development of a good Korean language tutoring program. In reality, Online King Sejong Institute offers services that allow Korean language learners to practice conversations utilizing AI technology. Additionally, the KOKOA: Learn Korean! App enables users to learn Korean listening, reading, writing, vocabulary, and grammar, and it also provides a function comparing users' pronunciation with that of native speakers. Given that English learning for Korean elementary school students based on AI has already been implemented[25], it is anticipated that Korean language education using AI technology will be improved and introduced in Korean classes in the future.
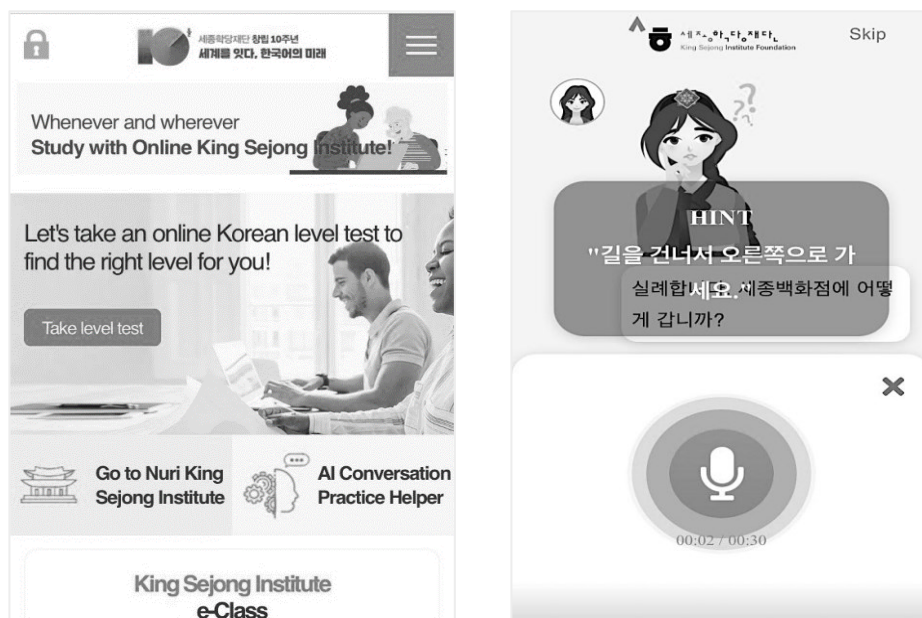
[Fig. 3] Online King Sejong Institute and AI Korean Conversation Practice Helper (Copyright by King Sejong Institute Foundation in 2021)[26]

Second, developing synchronous Korean teaching methods by using various metaverse platforms is needed. The metaverse helps users experience a new dimension transcending time and space and promises to deliver "immersion, interaction, imagination, intelligence"[27]. As a result, learning effects will be improved by enhancing interactions between teachers and students and the concentration of

Korean language learners with the utilization of the metaverse in synchronous Korean classes. Because of these metaverse properties, the metaverse has been applied in some universities[28][29], and more opportunities will exist for synchronous Korean classes.

[Fig. 4] Examples of Metaverse (Copyright by SK Telecom in 2021 and by NAVER Z Corp in 2018) [30][31].

Finally, the Korean government, educational institutions, and researchers should help Korean language educators adapt to the use of technology. As aforementioned, the possibilities of using various ICT such as AI and metaverse platforms have increased. Nevertheless, a survey of instructors at a university indicated that their abilities to apply the metaverse are limited[32]. Therefore, Korean language educators will benefit from teacher retraining related to the ICT used in classes. To realize this, efforts by the Korean government and educational institutions, and research that converges Korean language education with various ICT, are needed.

4.2 Discussion

The results are in line with a study that presents the features of the spread of K-dramas and K-pop through media. Specifically, K-dramas were first promoted by TV and widely disseminated on the Internet; recently, digital platforms such as Netflix have accelerated the spread of Hallyu[33]. Simultaneously, K-pop has gained immense popularity through SNSs such as YouTube, Facebook, and Twitter[33]. In this respect, online platforms will be continually used to deliver Hallyu content. In addition, findings from the government are supported by a study showing that Hallyu positively affects attraction of international students[34], while another study proves that the continuation of learning Korean is not greatly influenced by interest in Hallyu content[35].

Therefore, to keep Korean language learners studying Korean, this study proposes the use of ICT such as AI and the metaverse in Korean language education. Given that AI technology automatically designs curricula and develops teaching materials, it will help instructors focus more on student counseling[36]. Additionally, applying the metaverse in Korean language education will boost the interaction among Korean language learners[37], given the shortage of interaction among learners in the online environment was pointed out in a previous study[38]. Overall, more research is required to find ways

for Korean language instructors to coexist with ICT to increase learning effects and improve teaching quality.

5. Conclusion

This study aimed to identify the relationships among technology, the Korean wave, and Korean language education through a synchronic and diachronic review of Korean government documents, statistics, and news articles. The results reveal that ICT (e.g., TV, CDs, DVDs, PCs, smartphones, SNSs, AI) plays an essential role in delivering and disseminating Hallyu content such as K-dramas, K-pop, and K-movies. Moreover, Hallyu has affected Korean language education in a positive way; specifically, government statistics proved that the number of TOPIK test takers increased over four different Hallyu periods. Furthermore, the results also indicated that teaching methods and the environment for the Korean language have changed as ICT has become more advanced.

Overall, this study fills a research gap in the existing literature by elucidating the relationships among technology, Hallyu, and Korean language education. Moreover, it also provides implications for future directions for Korean language education using ICT to enhance the quality of this education. Despite its implications, this study has limitations; empirical research is needed to explore how ICT is deployed to generate Hallyu content and teach the Korean language. Accordingly, future surveys and interviews with experts will confirm the findings of this study.

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