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Analysis of the Current Status of Edutech in Korean Language Education

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Abstract

Purpose – Recently, in the field of language education, interest in edutech has increased due to difficulties in classroom teaching due to COVID-19. Accordingly, we would like to analyze research topics related to e-learning before and after COVID-19 and examine the implications for the future Korean language education field.

Research design, data, and methodology – This study organized a list of papers to be analyzed by searching for e-learning terms applicable to Korean language education in RISS. The collected data was electronically documented, keywords were extracted using text mining techniques, and word frequencies were checked, and then viewed through cloud visualization.

Result – It was confirmed that research on e-learning in the field of Korean language education has increased rapidly in 2021 and 2022. In particular, extensive research on online learning methods has been actively conducted due to the difficulties of face-to-face learning in the COVID-19 era. There have been many studies on teaching and learning methods, such as flipped learning, hybrid learning, blended learning, mobile learning, and smart learning.

Conclusion – Since the research so far has mainly focused on online class management methods. Therefore, future research suggests that efforts should be made to develop educational contents and teaching methods using specific ICT technologies. These efforts will contribute to advancing smart education that future education aims for.

Keywords: Edutech, E-learning, Online Learning, Korean Language Education, Topic Modeling

JEL Classification Code: A20, I20.

1. Introduction

The social changes brought about by the Fourth Industrial Revolution and the innovation of IT technology have affected the overall society, including industry, politics, and economy. In addition, in the field of education, discussions on applying edutech, which served as an opportunity to seek many changes and attempts. Recently, in the field of language education, I have become more interested in e-learning and edutech, which I have not tried much in the meantime, as I feel difficulties in classroom classes due to COVID-19. As such, in the field of Korean education, it can be said that research on edutech has become active due to the trend of technology development and the demands of the learning field due to Corona.

According to Lee (2020), since the coronavirus pandemic was declared on March 11, 2020, it has changed life around the world and had a significant impact on education. Above all, it was said that there was a significant change in the teaching method by switching from face-to-face to non-face-to-face. According to Kim (2020), according to Hunet, an education company, requests to replace existing offline education with e-learning have increased rapidly since February 202. According to a YTN newspaper article, during the Corona period, the King Sejong Institute Foundation developed a non-face-to-face video class system, and 17,000 people from 144 King Sejong Institutes around the world continued classes suspended due to the Corona online. In response to these changes, (Kim, 2022) argued that research on various edutech is necessary, and in relation to this, research on teaching methods and educational technologies has been conducted.

At the point where the current corona has ended, comparing various research topics and contents conducted during the corona period to examine related issues can be said to lay the foundation for future education. Therefore, I would like to look at what topics were studied before and after the COVID-19 and what implications they have for the field of Korean language education in the future.

2. Literature Review

2.1. Research on Edutech-based Korean Language Education

First, Kang (2023) and Kim (2022) are representative studies that looked at research trends related to edutech in Korean language education. Kang (2023) analyzed the trend of online Korean language education research by dividing it into four types: research period, research subject, research subject, and research method. As a result, she classified by study period and looked at it, and found that there was a gradual increase. She also confirmed that studies on content and media and learners were the main subjects, and research on the development of online teaching and learning models was the most frequent. This study was based on biased data in examining research trends by targeting general papers published in eight journals that publish academic papers on the subject of Korean language education, and not looking at thesis or research published in academic journals related to convergence. There is a limit.

Kim (2022) also conducted yearly and topical analysis of 346 KCI-listed journals. In the 2010s, as the use of smart devices became more common and the Internet education environment was established, research related to online education increased, and related research began in earnest as online education was implemented due to Corona. As for the research topic, there were far more studies related to 'teaching-learning process' followed by 'teaching-learning effect'. On the other hand, it was confirmed that there are few studies related to ‘evaluation’. In the case of this study, it is regrettable that the dissertation was not reviewed. The scope of the thesis of the subject of analysis of Kang (2023) and Kim (2022) is slightly different, but the results of the two papers show that the overall tendency is similar.

Others include Park (2022), Bang (2021), Kim et al. (2020), and Park (2019). Bang (2021) analyzed the main themes and influential keywords of research on KCI journal papers. Through topic modeling analysis, 'tool development for online Korean learning', 'use of online blended classes', 'smart learning and learning using contents', 'teacher's operation of online Korean classes', 'development of multimedia education materials', 'media Seven themes of literacy and cultural education' and 'Korean language education using new digital technology' were identified.

Several studies have tried to look at the trends of web-based research and suggest future research directions, but it is regrettable that they are only general suggestions for online learning. After all, research trends for online education have been conducted since 2020, but it can be seen that there is a lack of research on which technologies were applied by focusing on the research flow by period and subject.

2.2. Text Mining Related Research

The definition and utilization of text mining is specifically presented in Baek (2020). Text mining is a mining process for unstructured data. Mining is a process of extracting statistically meaningful concepts or characteristics from data and extracting high-quality information such as patterns or trends among them. Studies related to the analysis of research trends using text mining in the field of Korean language education include Kim et al. (2021), Baek (2020), Yoon (2020), and Son and Kim (2020).

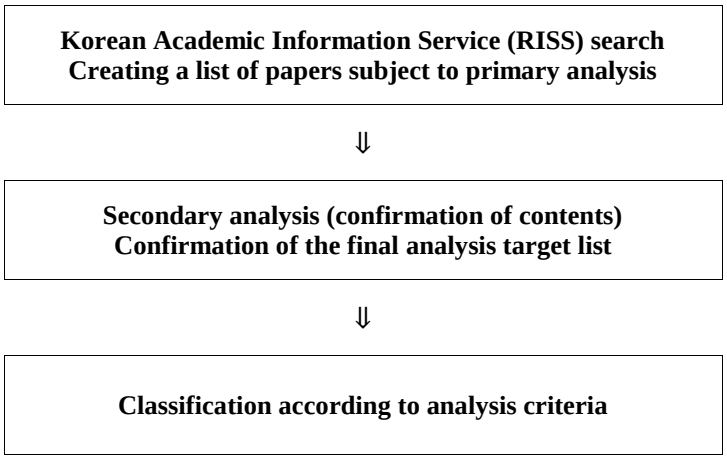
Son and Kim (2020) collected the titles of master's and doctoral dissertations and journal theses registered in the Academic Research Information Service (RISS), and analyzed them using text mining through text pre-processing. The research methods of term frequency (TF), cloud visualization, TF-IDF, N-gram, and degree centrality were explained in detail, and the meanings that could be derived from this study were described. Baek (2020) said that a high frequency does not mean that the word has an important meaning in a document or network, so it is necessary to identify key words using various indicators. Therefore, frequency, TF-IDF, and degree centrality were analyzed to determine which words had significant meaning. Woo et al. (2021) identified technical terms appearing in documents in order to reduce the ambiguity of interpretation of the topic model results based on LDA, and provided them together with subject-specific word clusters, which are the results of the topic model. This is significant in that it improved the ease of interpretation by referring to the terminology related to the word.

Existing studies show that text mining can be used to check various indicators such as importance and relevance related to data when analyzing large-scale data in examining research trends in a specific field. In addition, it was confirmed that it is an appropriate research method that can be used to obtain objective information by synthesizing them.

3. Methodology

This study collected the titles of this dissertation and major journals to analyze the current status of edutech in the Korean language education field. For data collection, 'Korean education' was set as the overall keyword in the Korean Research Information Service (RISS) provided by the Korea Education and Research Information Service, and searched for edutech terms applicable to Korean education through the re-search function within the results. The additional search words were centered on the keywords of learning content of AI and convergence education and edutech convergence education, which are adopted as subjects in the e-learning department. These major keywords are edutech, ICT, metaverse, gamification, AR, VR, realistic, artificial intelligence, chatbot, GPT, big data, Internet of Things, voice recognition, ubiquitous, 3D printing, OCR, flip learning, and blended. They were running, hybrid learning, social learning, SNS, and applications. As a result of the search, 129 articles were retrieved.

In the secondary analysis and cataloging process, the detailed items of the papers were checked and thesis papers that were not related to the core content to be covered in this paper were excluded. In the secondary analysis, research on trends, media with rather abstract contents, and studies suggesting online education plans were excluded. As a result, the final number was 107. The research selection of list of research subjects and research process is as <Fig. 1>.



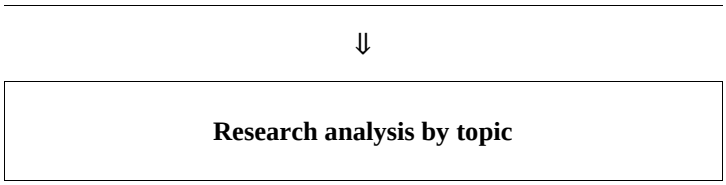


Figure 1: Selection of List of Research Subjects and Research Process

In this study, the following process was carried out to derive accurate analysis results. First, the collected data were electronically documented and the following text pre-processing was performed. Using a noun extractor (http://nlp.kookmin.ac.kr/cgi-bin/index.cgi), only nouns were extracted in the morphological analysis step. As a result of examining existing studies using text mining techniques, only nouns were extracted and analyzed in most studies. This is because the efficiency of data processing is good and accurate analysis is possible even when only nouns are extracted.

Second, high-frequency words were reviewed, and words that were difficult to be considered as research subjects were treated as stop words. For example, words such as 'Korean' and 'educate' appear frequently in Korean language education, but were treated as stop words and deleted because they were difficult to see as subject words.

Third, spacing and terminology were centered on concepts to enable accurate analysis. For example, in the case of 'Big data', when morphological analysis is performed, it is separated into 'big' and 'data' for analysis. In this case, it was preprocessed so that it could be extracted as a word with one concept by directly correcting the spacing with 'Big data'.

4. Result

As a result of confirming the trend of change by period, focusing on research in the field of Korean education, as shown in <Figure 2>, it was confirmed that research in 2021 and 2022 increased rapidly, which proves that various technology-based research was needed due to the influence of Corona.

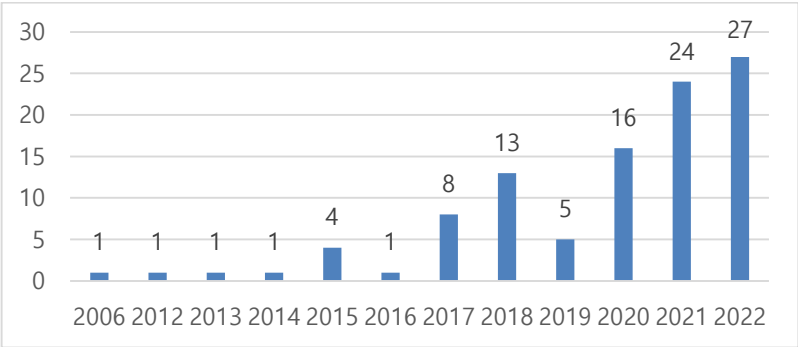


Figure 2: Trend in the Number of Studies by Year

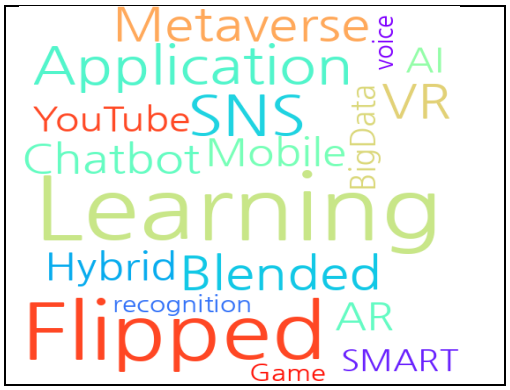


Figure 3: Result of Cloud Visualization of Keywords

Due to the difficulties of face-to-face learning during the COVID-19 era, extensive research on online learning methods has been conducted, and among them, many studies have been conducted on flip learning, hybrid learning, blended learning, mobile learning, and smart learning. The results of cloud visualization after extracting key keywords for research trend analysis are shown in < Figure 3>(Word Cloud, http://wordcloud.kr/).

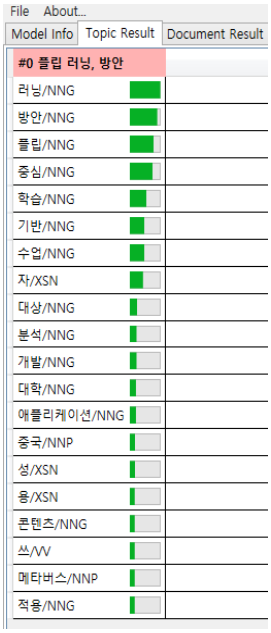


Figure 4: Keyword Analysis Results Using Topic Modeling

As shown in < Figure 5> the results of the analysis of research topics were also similar to the results of analyzing the titles of papers through topic modeling. Flipped Learning showed an overwhelmingly large distribution with 40 pieces. Next, there were 12 SNS-related studies, followed by 7 studies on Metaverse, AR/VR, and Blended Learning. In addition, there were 5 chatbot studies. Topics included in other parts included Smart learning, voice recognition, and Mobile Game.

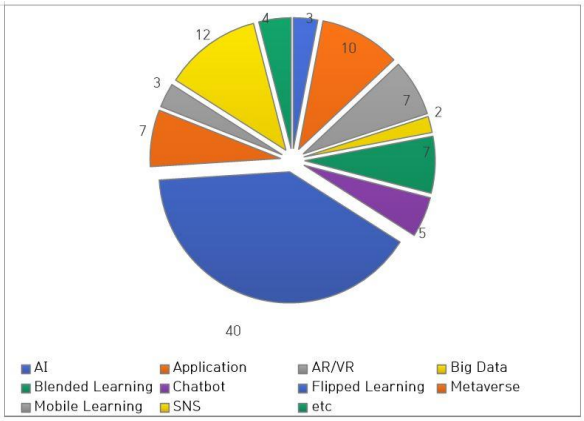


Figure 5: Distribution by Study Subject

As shown in the results, it can be seen that studies focusing on teaching and learning methods account for more than half. It can be seen that this is due to the demands of the professor field, who could not conduct face-to-face classes during the corona period. In addition, there were many studies using application analysis and development, metaverse, and AR/VR. In SNS-related studies, there were many studies using YouTube, and there were Facebook, Instagram, WeChat, and live broadcasting. In research related to AI and chatbots, there were two studies related to chatGPT.

5. Discussion

As a result of analyzing edutech studies conducted in the field of Korean language education so far, there are many studies related to real-time online teaching and learning cases. In particular, research on online class operation methods such as blended learning, flipped learning, and hybrid learning was the main focus. In addition, there have been studies on class methods using smartphone applications or smart devices. From these results, it can be seen that we started to find various ways to implement non-face-to-face Korean classes online during the corona period.

However, as can be seen from the analysis result that there is little discussion on the educational method applying edutech in online classes, recent studies have failed to devise class contents suitable for the advantages or characteristics of online classes due to the rapid educational environment during the corona period. It gives the impression that the class continued with similar contents or methods of past face-to-face classes. This point suggests that we should focus on developing educational contents and teaching methods using edutech now that Corona is over. Currently, Corona is over and classes are being conducted face-to-face in the classroom, but for future education, it is necessary to move forward to smart education that can accommodate various forms of learning.

In this paper, it is regrettable that only data titles and key words were targeted in the topic modeling analysis. However, in order to supplement this part, the content of the thesis was directly examined and classified by subject. Afterwards, if the entire content of the thesis is analyzed and network analysis and centrality analysis are performed, more meaningful results can be obtained.

In addition, through follow-up research, it will be possible to organize the overall categories of which edutech can be effectively applied to Korean language education and then design the direction of future education in more detail by comparing it with the case of foreign languages.

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