Abstract

Purpose: As the times are changing rapidly, the change in the educational paradigm of universities is in an environment where it is impossible to retreat any more. Global leaders and future companies are demanding talents with collaboration, communication, and creativity. The most important educational system for nurturing talents with these competencies in universities requires a change in educational method from one-way education to interactive education. This paper is to propose the development of a communication education model to meet the creative convergence-type talent cultivation desired by the future society in the age of artificial intelligence.

Method: The true meaning of interactive education is to increase the participation rate of learners in class and to increase self-directed learning ability and creativity through self-learning. Moreover, creativity development comes from the process of self-learning with interest. As distance classes increase due to COVID-19, the realization of interactive communication education is emerging as a biggest problem. There is a way to support the implementation of sufficient learning in online and offline education by using smart tools instead of test papers. This paper is to focus on using the interactive communication tools such as QuizN, Symflow, and Padlet.

Results: In order to enhance the creativity of learners at universities, which are higher education institutions, efforts such as the development of various programs, the production of various contents, and the design and development of teaching and learning methods should be made. In addition, the following conditions are required for the educational method in universities for creativity enhancement. First, the learner's interest, motivation, and voluntary participation in class must be preceded. Second, it is necessary to enhance the humanities thinking ability, which has the characteristic of multiplicity. Third, the learner must lead the class proactively.

Conclusion: This study proposed the development of the interactive education model for creative convergence talents. Based on the results of this study, it is expected that it will greatly contribute to the development of education such as program development, content production, and teaching-learning method development for value creation of an academic education model. Moreover, given the reality of conducting online distance education due to COVID-19, it is expected that the interactive communication education model proposed in this study can be fully utilized.

[Keywords] COVID-19, Interactive Education, Education Model, Non-Face-To-Face Training, Self-Directed Learning

1. Introduction

As all industrial fields are continuously changing rapidly, the era of artificial intelligence has arrived, where technologies from different fields are fused together, and big data exerts its power beyond the digital era led by communication and automation systems centering on computers and the Internet. Moreover, it is now the era of the metaverse centered on augmented reality and the virtual world. As Klaus Schwab, president of the World Economic Forum, who heralded innovative changes across all industries, said at the 2017 World Global Talent Forum,
“Global leaders in the world have problem-solving skills with the foundation of imaginative creativity as talented people who will lead the future. He emphasized the importance of creative convergence talents with solving skills”[1]. Moreover, future-leading companies that need to constantly develop new technologies have selected personality as the most important virtue, and they are looking for a talent with collaboration, communication, and creativity skills. In other words, it can be said that creative and convergence talents who can interpret and utilize existing ones anew on the basis of personality, and who have comprehensive convergent thinking ability, are suitable for the future era.

Therefore, in the future society, it is clear that the requirements for the future talents claimed by the global talent forum and future companies will be accelerated. What global leaders and future companies have in common is that they are all demanding talented people with creativity[2]. Creativity is the ability to devise and create useful things while clearly differentiating them from existing ones. However, the university, which is a higher education institution that researches and develops science and nurtures high-quality talent, emphasizes the importance of in-depth study, but on the other hand, research and development or efforts on a learner-centered education system are not adequately suited to the trend of the times. Although some universities are trying to overcome the problems of the existing traditional education system and change a new education model, it is clear that there is a limit to derive the effect of education immediately because it is placed in a very difficult environment for creative development.

As the flow of time is rapidly changing, the change in the educational paradigm of universities is also in an environment in which it is impossible to retreat any longer. Global leaders and future companies are demanding talented people with collaboration skills, communication skills, and creativity. The most important educational paradigm for nurturing talents with these competencies in universities is to change the educational method from one-way communication education to two-way communication education. In other words, the need to develop an interactive education system so that learners who will be at the center of the future can become the subject of the class rather than the object of the class is emerging. However, in reality, the establishment of a system for interactive communication education is remarkably insufficient. Many experts and scholars in university emphasize that research and efforts should be made continuously so that the forum for interactive communication can be actively formed to enhance competencies such as creativity and collaboration skills[3][4][5]. Various methods can be devised to solve this problem, but the most important thing to consider is that learners need to develop communication tools that can spark interest in the class[6][7][8].

No matter how high-quality teaching methods are adopted, if the learner’s participation rate is low, the effectiveness will not be met. The problem of education has been studied steadily for a long time, but the learner cannot follow all the changes if only the system is changed. In the age of artificial intelligence[9][10][11] and metaverse, learners must become the subject of the class and lead the class. The reason is that the future society demands collaborative and creative convergence talents[12][13][14]. Moreover, it is necessary to understand that the collaboration capabilities, communication capabilities, and creative capabilities demanded by global leaders or future companies are not independent of each other, but are organically linked to each other. In other words, in university education, rather than reinforcing these competencies individually, the educational system should be integrated.

This study proposes to develop an interactive communication education model to meet the creative convergence-type talent cultivation desired by the future society in the age of artificial intelligence and metaverse[15][16]. It is the interactive communication education that satisfies the educational goals of both the instructor and the learner, so that the smart tools can be actively used and applied to the class. Smart communication tools can be devised in various ways, but the interactive communication tools used in this study are QuizN, Symflow, and Padlet. These communication tools can increase the immersion in class, which is the most important in interactive classes between learners and teachers, and can play a big role in enhancing self-directed learning required by the future society[17]. Moreover, the great advantage of the use
of smart tools is that it enables classes that transcend time and space, real-time feedback, and storage and sharing of information. Based on the basic concept of creativity and the theoretical background of smart tools, this research method derives educational elements for smart tools that can enhance creative convergence, and develops a class model that can strengthen collaboration, communication, and creativity skills. And the scope of this study is proposed as a liberal arts subject in universities.

2. Interaction Communication Tools for Smart Education

The real meaning of interactive communication education is to increase the participation rate of learners in class and to increase self-directed learning and creativity. Furthermore, the growth of creativity comes from the process of self-learning with interest. An important point in this process is that one-way communication education centered on professors only hinders creativity, but does not help to increase creativity at all. However, it has already been verified by domestic and foreign experts that interactive communication education not only increases the class participation rate of learners, but also triggers interest in class and enables learners to learn with their own motivation[18]. Learning tool for interactive communication education are needed as a way to increase creativity in universities, which are higher education institutions.

Moreover, as non-face-to-face classes increase due to COVID-19, research on the expansion and plan of online remote education is extremely insufficient. The most prominent advantage of remote education would be fast and accurate feedback. In offline classrooms, many learners cannot receive immediate feedback on presentations or assessments at once, but online remote education is possible. In other words, there are smart tools instead of a test paper to solve a quiz and compare real-time rankings between participants. And in online and offline education, they can support in-class use, after-school assignments, collect learner opinions, and provide learning statistics. The interactive communication education tools proposed in this study are QuizN, Symflow, Padlet, and a brief introduction to the features and utilization of these tools is as follows.

2.1. QuizN

QuizN is a program for real-time interactive communication and it is one of the smart communication tools that instructors can produce various types of quizzes and learners can enjoy participating in classes to directly experience pleasant competition[19]. As shown in <Figure 1>, this program can be easily accessed and used by anyone because it can be registered as a free member. Anyone with a PC or a smart tool can easily produce a quiz show and participate in a quiz game, so it can infuse a sense of immersion and accomplishment into a hard and boring class. Anyone can easily participate and enjoy a real-time quiz show with only a shared URL or PIN number without having to sign up or login.

There is also a Kahoot application that allows teachers to take classes, such as taking quizzes, conducting presentations, and giving feedback using smart phones in real classrooms. However, QuizN is a great real-time interactive class feedback tool that goes beyond Kahoot's function and has the function of Padlet, which are representative of white-board, post-it collaborative learning.
QuizN features that learners participating in the quiz show can feel enjoy the fun of mutual competition and immersion in the moment by checking the real-time ranking and results, and enjoy a fun quiz game with lively sound effects and characters applied, and enrich the quiz show, and set various options such as explanation screens, images, and videos etc. This program can be used in various fields that require gamification, such as classes, micro-learning, remote education, marketing like an event & promotion, hobby gatherings, and various invitations. Moreover, quiz or survey can be conducted not only offline classes but also non-face-to-face classes. And the instructor presents assignments and the results can be used as individualized feedback data for students.

2.2. Symflow

Students can share real-time questions and answers, lecture materials, surveys, etc. while watching the live streaming screen without going to the offline classroom. A webinar to increase participation rate can be reconfigured live streaming screen with a screen that include question and answer, quiz, lecture materials, and surveys. Webinar is a compound word of web and seminar, and refers to a video discussion conducted on the web of the Internet. In other words, it is a real-time, interactive seminar between the instructor and the participants using a computer connected to the Internet and a microphone or a smart phone. Symflow has a feature that induce learners’ participation by creating quizzes and Q&A during lectures. As shown in <Figure 2>, there are three important functions of Symflow. Presentation can utilize PowerPoint data or screen synchronization with learners. Downflow can make multiple-choice and subjective questions, and Upflow can send questions and recommend other people’s questions during learning.

The Symflow program can be used for school classes such as students' note test, achievement check, feedback, communication, and notice. In addition, it can be used in various places such as workshops, lectures, meetings, exhibitions, and conferences depending on how it is used.
2.3. Padlet

Padlet is a web application that allows many people to participate in a single workspace at the same time and attach sticky notes. That is, the padlet is a form of asking and answering facts, content-checking questions, assumption questions, and experience questions using the self-function[20]. For example, if a memo pad attached to a blackboard is shared on the web in a classroom, students can do almost everything that can be done in class with the memo are possible. Furthermore, it is possible to attach files, which can be usefully utilized when collecting photos or data.

Figure 3. Interactive communication education padlet.

<table>
<thead>
<tr>
<th>A fun place for communication!</th>
<th>‘padlet’</th>
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<tbody>
<tr>
<td>☑ No complicated registration, just a link, ok!</td>
<td></td>
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<tr>
<td>☑ It’s great for gathering and bunching various ideas together</td>
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<td>☑ Good for collecting data and giving feedback</td>
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Padlet features that it can make any kind of Padlet the instructor wants, learners can share Padlet address without registering as a separate member, instructor can move memo posted on the Padlet to a desired location, and turn the result of the activity into pdf files. For example, if it can be used in a class, the first thing to do is to upload questions to the Padlet by type. Second, press the empathy button on questions you think are creative. Third, select a few questions that may ask a variety of questions from among the questions and discuss them together. What QuizN, Symflow, and Padlet have in common is that they focus on interactive communication education rather than one-way education. In other words, it is not the education that the professor teaches, but the learner shares with other learners in the process of learning the content of the subject by themselves and finding an answer. The ultimate goal of interactive communication education is to enhance learners’ collaboration ability, communication ability, and creative ability to become them into the talent required by future society. In other words, interactive communication education can increase creativity in the process of asking questions and finding a given problem through mutual cooperation between learners or learners, going beyond the existing teaching method in which the instructor explains difficult parts in detail.

3. Model Design for Interactive Communication

Among the conditions that the future society desires, there is a clear reason why talented people with creativity are required in common. Deep Learning(DL), which is emerging greatly in the era of the 4th Industrial Revolution, clusters and classifies data using artificial neural networks, which are statistical learning algorithms. The key to Deep Learning is to classify and predict various types of information. Artificial intelligence is a technology that can realize human learning ability, reasoning ability, perceptual ability, and natural language comprehension through computer programs using this principle. Artificial intelligence is producing many changes in a convenient direction for human life, but on the other hand, artificial intelligence is gradually taking over place in areas that only humans can do. As a result, an increasing number of future experts predict that many jobs that only humans have maintained and developed will
However, creativity is a unique area to humans that AI can never occupy or possess. The reason why future companies are demanding talented people with creativity is that they need creative convergence talents who can create and manage artificial intelligence. The demand for creativity will become more and more important in the future, and then it is clear that creativity will become a powerful essential competency even if the times change.

Figure 4. Model design for interactive communication.

Therefore, universities, which are higher education institutions, should make efforts to develop teaching and learning methods, contents design and development, and program development in the direction that learners can increase their creativity. First of all, in order to develop creativity, learners’ interest and motivation for the class, and voluntary participation must be preceded. Second, it should be necessary to enhance the humanities thinking ability, which has the characteristic of multiplicity. Third, the learners should lead the class so that it becomes an awake classroom rather than a silent classroom. The way to realize them properly should be to develop a class model for interactive communication education.

As shown in <Figure 4>, the interactive communication education model for creative convergence education proposed in this study includes unexpected quiz, evaluation test questions, registration of materials for learners, assignment of tasks, etc., and the learners solve the given problem. learn the registered learning materials, and perform the task. At this time, interactive communication education is conducted using programs such as QuizN, Symflow, Padlet. Through this interactive communication model, collaboration, creativity, and communication skills can be possible to nurture talents desired by the future society.

No matter how good a teaching-learning method is adopted and applied to a class, it is difficult to derive its effectiveness immediately if the learner’s participation rate is low. For example, Flipped Learning, a reverse learning method, is being used in many universities in Korea[22][23][24][25]. However, the Flipped Learning-based classes are not very helpful in enhancing the creativity of learners[26]. Most importantly, not all learners in the class have similar abilities. This point simply does not accurately recognize the current trend of the class, either in the offline literacy method or in the Flipped Learning method, but also does not fit the education of the times.

This means that although learners have been constantly working on and researching education problems for a long time, it is the same as not being able to keep up with all learners if only the system is changed. Various programs were introduced in the interactive communication education for the improvement of creativity proposed in this study. The only way to increase creativity is to have the effort and willingness to solve problems on your own. Simply teaching education does nothing to promote creativity. Learners’ own unique ideas emerge through research, data collection, editing, and production on their own.
4. Conclusion

This study proposed the development of an interactive communication education model for creative convergence talents. The interactive communication education model should go beyond the scope of the traditional educational and learning method in which the instructor is the subject. And in the proposed interactive education model, the learner should be the subject of the class, and the instructor should help to set the direction of the class and let the learner radiate their talents and limitless creativity. The essence of interactive communication education is to increase interest and immersion in class, to increase participation in class, and to seek development through self-directed learning along with increasing understanding of class. In other words, the questions that learners are curious about are delivered to the instructor in real time, and the instructor can check the understanding of learning from time to time by asking the learners to take a quiz in real time.

As an extension of the learning contents, the instructor presents the task, and the learners organized in small groups conduct research, data collection, editing, and production of the task contents. In this process, mutual communication and finding solutions to problems can enhance the understanding of the class through mutual collaboration, as well as improve the degree of completeness in solving a given problem. Moreover, because it uses interactive communication tools, even if presentation skills are somewhat insufficient, students can fully express their intentions with confidence without feeling embarrassed or ashamed.

Although the scope of this study is limited to liberal arts subjects in universities, it is possible to expand the scope and develop contents linked with adjacent subjects or similar departments. In particular, by further expanding the scope of this study, it is possible to predict common convergence potential by collaborating with neighboring universities. Based on the results of this study, it is expected that it will greatly contribute to the development of education such as program development, content production, and teaching-learning method development for value creation of an academic education model. In particular, given the reality that online distance education is inevitable due to COVID-19, it is expected that the interactive communication education model proposed in this study can be fully utilized.

5. References

5.1. Journal articles


### 5.2. Books


### 5.3. Conference proceedings


### 5.4. Additional references


### 6. Appendix

#### 6.1. Authors contribution

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<thead>
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<td>- Significant contributions to concepts, designs, practices, analysis and interpretation of data ✓</td>
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<td>- Participants in Drafting and Revising Papers ✓</td>
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<td>- Someone who can explain all aspects of the paper ✓</td>
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6.2. Funding agency

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