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Corresponding author
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A Study on the Revitalization of Forest Management by Improving the Implementation Rate of FOREST Projects

Jangwoo Lee[1]
Daegu Hanny University, Gyeongsan, Republic of Korea
Giseok Kwon[2]
Daegu Hanny University, Gyeongsan, Republic of Korea
Wookwang Cheon[3]
Keimyung University, Daegu, Republic of Korea
Wonhyeon Lim[4*]
Daegu Haany University, Gyeongsan, Republic of Korea

Abstract

Purpose: *Driven by the society's demand arising from global climate change, privately owned forests in South Korea, which make up two thirds of the total forested area of the country, have been playing a pivotal role as sites of forest resource development and major carbon sink. Forest management plans serve as the basic plans for managing privately owned forests. Therefore, it is necessary to compare and check whether the forest management plans are well-prepared and whether the forestry projects based on the approved plans have been efficiently implemented and managed.*

This study was conducted to analyze forest owners' views and demands through surveys, albeit at a regional level, with a view to providing basic data for establishing measures for improving future forestry policy. Such a policy framework for efficient private forest management should be based on efficient preparation of forest management plans and their evaluation through correct methods.

Method: *Therefore, this study proposes measures for promoting private forest management by conducting survey-based analysis of private forest management plan preparation and the ratio of forestry project implementation with respect to the approval status.*

Results: *To enable a proper prediction of future forest changes and ensure sustainable forest management through the proposed measures, a reliable evaluation of the general issues related to forest project implementation was performed from the perspective of forest owners.*

Conclusion: *The significance of this study lies in proposing measures to promote private forest management, and it is expected to offer opportunities to private forest owners to manage their private forests more efficiently.*

[Keywords] ***Forest Owner, Forestry Policy, Private Forest, Survey-Based, Management***

1. Introduction

Looking at the forest management plan prepared on a 10-year basis, the decrease in the area and the rate of development over the past two decades suggests that private forest management has not been activated[1]. Therefore, in order to promote private forest management, it is necessary to strengthen the preparation of forest management plans, which are the most basic, and to strengthen guidance activities. Forest management has a large target area that is incomparably larger than that of general agriculture, and different location conditions vary depending on location. Therefore, a forest management plan should be established in accordance with the purpose in consideration of various realistic conditions in the long term[2]. Most forest owners are unable to draw up their own management plans due to technical problems necessary for forest management, poor preparation of forest management

*This Paper Summarizes Jangwoo Lee's Daegu Haany University Master's Thesis.

plans, and complexity in the preparation process, and entrust forest management plans to forest cooperatives. The purpose of the project is to promote forest value through planned and systematic forest management of private forests such as afforestation, logging, forestry facilities, and income projects[3]. In order to boost forest management, the government needs to develop a system to gradually change the current forest management support method from the individual forest management support method to the one that can be managed by local systemization. The scope of the support should be gradually expanded in various ways to promote forest management by selecting areas so that forest management can be done by each forest management complex, not just by individual mountain owners. This makes the property rights of the owners and their interests coexist, which is the final purpose of private forest management[4].

Accordingly, it is desirable to change the system for forest experts to suggest ways to obtain information and manage the operation with a given technology and for mountain owners to only participate in decision-making. To this end, it is necessary to improve the forest management plan to be developed and operated professionally by management district units so that the forest management plan can be integrated into the individual opinions of the mountain owners and the government's forest policies[5].

One of the ways to properly realize the nation's forest policies is to utilize forest management guides from each local forest cooperative. Forest management guides have the most knowledge and experience of mountains in the area in the reality that they have been deployed and operated by forest cooperatives for more than 50 years. In the case of forest officials, it is difficult to actually go to the site to resolve civil complaints as employees of administrative agencies[6]. In order to link the infinite potential of forest resources to economic and social values, it is necessary to induce voluntary participation of mountain owners and to specialize in forest management, and policy changes should be sought to revitalize private forest management in accordance with social trends such as low growth, aging, and returning to forest areas[7][8].

Although the forest management plan is prepared as specified in the law[9], it has not been established in the long term. Most forest owners are unable to draw up their own management plans due to technical problems necessary for forest management, poor preparation of forest management plans, and complexity of the preparation process, and forest management plans are being commissioned by forest cooperatives or forest corporations[10]. In order to properly promote private forest management for forest owned by individuals, the government should present various forest management support measures that will actually help private forest owners. The purpose of this research was to analyze the rate of forest business execution compared to the approval of forest management plan preparation based on prior research and investigation reports, to identify the ranking of projects requested by private forest owners, and to find out their consciousness.

2. Research Method

2.1. Research subject

Among the 147 mountain owners in Cheongdo-gun, Gyeongsangbuk-do, 133 responded to mailing and visiting surveys from September 25, 2017 to October 14, 2017. The main survey included the age, purpose of ownership, motivation for purchase, retention period, forest management conditions, whether to prepare forest management plans, whether to execute the forest management plan, difficulties in implementing forest projects, demands to forest authorities, future use of forests, etc.

2.2. Research method

Based on the analysis of the existing prior research and survey of the forest owners, the research team examined the measures to improve forest management through the analysis of forest project execution rate vs. authorization of the forest management plans and the survey of the owners' consciousness.

2.3. Data processing

The data processing of this study was done using the SPSS 20.0 statistical program to calculate the average and standard deviation of each item and to analyze the frequency of each item in order to identify the consciousness of the owners by each factor.

3. Forest Status

3.1. Status and change trends by area

3.1.1. Annual changes

As shown in <Table 1>, the domestic forest area and private forest area are on the decline after a five-year survey, and their share is also on the decline.

Table 1. Change trends in forest area and private forest area by year. (Unit: ha)

Year	1995	2000	2005	2010	2015	Remarks
Forest area	6,451,885	6,422,128	6,393,949	6,368,843	6,334,615	
Change	-	-0.46%	-0.43%	-0.39%	-0.53%	
Private forest	4,566,943	4,496,470	4,420,340	4,337,880	4,249,885	
Change	-	-1.54%	-1.69%	-1.86%	-2.02%	
Rate	70.8%	70.0%	69.1%	68.1%	67.1%	

3.1.2. Comparison of the area of national, public, and private forests

As shown in <Table 2>, national forests account for 25.5% and public forests account for 7.4% of the total forest area, while private forests account for 67.1% of the total forest area.

Table 2. Comparison of the areas of national, public, and private forests. (Unit: ha)

Description	Total	National	Public	Private	Remarks
The whole country	6,334,615	1,617,658	467,072	4,249,885	
	100.0%	25.5%	7.4%	67.1%	
Gyeongbuk	1,337,741	263,572	107,467	966,702	
	100.0%	19.7%	8.0%	72.3%	
Cheongdo	50,558	4,858	1,525	44,175	
	100.0%	9.6%	3.0%	87.4%	

3.2. Current status and change trend by ownership

As shown in <Table 3>, the total private forest area is decreasing due to development and conversion of uses, but the number of the owners and lots is on the rise.

Table 3. Change trend of the number of the owners and lots by year. (Unit: person(s))

Description	1995	2000	2005	2010	2015	Remarks
Owners	1,748,292	2,061,839	1,962,331	2,064,670	2,123,472	
Change	-	17.9%	-4.8%	5.2%	2.8%	
Lots	3,542,448	3,575,430	3,836,823	4,016,436	4,083,252	
Change	-	0.9%	7.3%	4.7%	1.7%	

4. Current Status of Forest Project Execution Rate

4.1. Status of forest management plan preparation

As shown in <Table 4>, a recent forestry management survey conducted by the Korea Forest Service also found that the ratio of forest management plans for privately owned forests was 20.4% of preparation vs. 79.6% of non-preparation in 2015.

Table 4. Status of forest management plans for private forests. (Unit: ha)

Description	1995	2000	2005	2010	2015	Remarks
Target area	4,539,400	4,496,470	4,262,924	4,364,200	4,241,543	
Planned area	2,645,771	2,244,821	1,681,082	1,571,451	1,497,515	
Ratio	58.3%	49.9%	39.4%	36.0%	35.3%	

As shown in <Table 5>, the implementation in accordance with forest management plans and plan to prepare forest management plans were significantly lagging. 2016 Yearbook of Forestry Statistics also showed that the preparation of the plans for the target forest areas was low with the total of 54%, 99% for the national forest, and 41% for public and private forests, which coincided with the ratio of the implementation versus the preparation of forest management plans.

Table 5. Preparation of forest management plans. (Unit: ha)

Description	Total	Target areas of the preparation of forest management plans				Exceptions for preparation for the year
		Target	Preparation	Ratio(%)	Non-preparation	
Total	6,282,350	6,093,436	3,278,069	54	2,821,367	188,513
Total of the forest service	1,462,598	1,378,921	1,367,040	99	17,881	83,677
Total of the municipalities and provinces	4,819,752	4,714,515	1,911,029	41	2,803,486	104,836

4.2. Status of forest project execution rate

According to the Forestry Statistics of the Korea Forest Service in 2017, the forest management plan covers 1,388,646 hectares of national forest and 4,603,098 hectares of public/private forest out of 5,991,744 hectares of the total target area of forest management plans.

Among them, the national forest accounts for 1,370,386 hectares, and the public/private forest 1,843,534 hectares, with the preparation rate of 99 percent and 40 percent, respectively. After the approval of the forest management plans, the national forest carried out 3,692 hectares of afforestation, 597,734 cubic meters of logging, 42,857 hectares of forest cultivation, 204 kilometers of forest trail, and 150,345 hectares of income businesses. For public/private forest, it was 16,664 hectares of afforestation, 955,998 cubic meters of logging, 86,372 hectares of forest cultivation, 13 kilometers of forest trail, and 5,762 hectares of income businesses. The ratio of the implementation of the forest projects between the national forest and public/private forest were 23.1% vs. 76.9%.

Table 6. Implementation of forest management plans.

Description	Implementation of forest management plans				
	Afforestation	Logging	Forest cultivation	Forest trail	Income businesses
Total	16,253	2,004,465	129,695	657	93,064
Total of the forest service	3,522	576,770	41,674	238	88,814
Total of the municipalities and provinces	12,731	1,427,695	88,022	419	4,250

5. Survey of Mountain Owners' Consciousness

The rate of preparation of forest management plans for private forests in Cheongdo-gun and the rate of implementation of forest projects after approval were also low. In order to promote forest management, a survey was conducted on the mountain owners in Cheongdo-gun and the following results were obtained(an analysis of the survey on the consciousness of the mountain/forest owners in Cheongdo-gun).

5.1. Survey of the general consciousness of the owners

1)Aggregation by age: A total of 133 people participated in the survey, and 68 people, which is the majority, were aged 60 or older, indicating the aging era.

2)Aggregation by forest ownership area: According to the survey, 46.6% of the total forest area owned by the owner was less than 1ha, followed by 1ha to 3ha, 27.8% of the total, and 74.4% of the forest owned by less than 3ha, making forest management more difficult.

3)Motivation of forest purchase and ownership: The number one motivation was to purchase the forest and mountain with 57.1%, followed by 36.8% in inheritance from their families, indicating that forest owners were motivated to own forest and mountain.

4)Reasons for forest purchase: The reasons for forest purchase by the owners are 49.6% of real estate investment, followed by 31.6% of forest complex management(such as the production of timber and other short-term forest products), indicating an increase in real estate investment rather than forest management.

5.2. Forest owners consciousness in relation to the improvement of the implementation rate of forest projects

1)The forest management plan preparation and preparation by agencies: 66.9% of the respondents answered that they had written a forest management plan, and 33.1% said they had no experience in writing a forest management plan, and none of the cases were prepared by the owner. This suggests that it is difficult for the owners to draw up a forest management plan, and measures should be taken to ensure smooth preparation. According to the survey of 89 owners who have experience in drawing up forest management plans using agencies, local forest cooperatives account for 95.5 percent of the total. This indicates that they prefer forest cooperatives with forest management guidance staff. Therefore, the ways for forest/mountain owners to get help and smoothly resolve problems at the forest cooperatives should be devised.

2)Experience in forest project execution after approval of forest management plan(89 people): After the approval of forest management plans, 92.1 percent were found to carry out the forest projects. However, due to the characteristics of Cheongdo area, most of these included logging of oak trees for shiitake mushrooms and forest cultivation.

3)What is the difficulty of carrying out the forest projects after the approval of the forest management plan?(89 people): "The process of change is complicated and difficult when changing the volume of forest projects" was 24.7%, "Report of commencement of the forest management is difficult and complicated" was 22.5%, "Not knowing how to commence the forest project" was 20.2%, consisting the total of 67.4%, indicating most forest owners were having difficulty in going through administrative processes. Therefore, the ways for them to easily process the forest projects including reporting the commencement should be suggested.

4)Whether the owners know that there is a special system of inheritance/gift tax for those who have prepared forest management plans and implemented the actual forest management: 58.7% of the respondents said that they did not know, indicating that more than two-thirds of the owners do not know this, so it was found that it is urgent to promote tax benefits(as of 2017) for lots authorized after forest management plans were prepared.

5.3. The owners' consciousness for the improvement of forest policies

1)The route of obtaining information on forest policy: 48.9% from forest cooperatives and 21.8% from forest administrative agencies, with a total of 70.7%. It suggests that more information should be provided for their right to know.

2)The most necessary support measures for the expansion of forest income sources: 29.3% for providing short-term forest product income crop information and 24.8% for forest management consulting, indicating that various aspects of support are needed to expand forest income sources.

3)Proxy management: As for proxy management, 63.9% said that they had never heard of it, so most were not involved in proxy management. Although the proxy management system was introduced to improve the structure of private forest management, it is still in a lagged situation because of the difficulty in securing the budget for proxy management projects and the lack of differentiation from proxy management projects and general forest projects, of publicity, and of the details on the development of proxy management bodies. Therefore, it is necessary to solve the needs of private forest owners by identifying and supplementing the current operation status and problems.

4)Factors hindering investment in forest management and forest projects: 30.8% of "lack of forest management technology" and 24.0% of "low profitability due to high costs" were found to be the main factors, so measures are needed to reduce the risk of private forest owners' investment in forest management and forest projects.

6. Problems and Direction of Forest Management

According to the nationwide survey including Gyeongsangbuk-do and Cheongdo-gun, the projects for the national forest were mostly implemented by preparing a forest management plan in 99% to 100% of cases. However, in the case of private forests, it is poor both in preparing the plans and implementation rate after the authorization, leading to the smaller planned area and lower preparation rate, indicating that private forest management has not been activated. In order to revitalize private forest management, the preparation of forest management plans, which is the basic element, must be strengthened, and given the proportion of private forests, forest management is of great importance in terms of forest resource creation[11][12][13][14][15]. In the future, national forests will be used for the purpose of storing timber and improving public service functions, which will further highlight the economic importance of private forests centered on timber production. In addition, it is expected that the value of private forests will be further increased due to carbon emission restrictions. However, private forests are neglected due to the small size of forest management and the large number of absent owners, with an average forest ownership area of less than 2ha, along with economic problems such as low capital recovery rate, which is the most important factor in private forest management, and a long time to harvest timber. Among private forests, the area of forest management plans has been continuously decreasing, and the rate of preparation of forest management plans has been also steadily decreasing[16][17][18].

Korea has put continued efforts in forest management, starting with the first forest master plan, preservation and greening period, to the fifth forest master plan, the realization of a green welfare state[19][20]. Sustainable forest management is to manage the forest so that it can meet diverse social, economic, cultural, and spiritual demands of not only the present generation but also future generations through the promotion of the ecological health of forests and the long-term maintenance of forest resources. A survey of local forest/mountain owners shows that their consciousness is more negative than positive for private forest development, so reasonable measures are needed to promote the change of their consciousness[20][21].

In conclusion, the forest management plan organization project should be improved as an integrated project, not just a project of the Korea Forest Service, and the forest resource creation, infrastructure development, and functional management should be developed into a plan for sustainable management linked to the industrialization of forests, and the planning cost should be rationalized. To revitalize private forest management, it needs to be provided, first, forest project subsidies and direct payment system, second, securing the potential for high value-added products of forest resources, third, expanding the use of organic and clean forest products, fourth, increased demand for forest recreation, healing, and welfare services, fifth, increase in private forest area, and sixth, manpower and investment in relation to the trend of "back to forest villages."

7. Conclusion and Suggestions

Based on the findings from this study, the following conclusions were drawn: In the case of private forests, the ratio of forest management plan preparation and the rate of implementation of forest projects after authorization are low in contrast to national forests, and the decrease in the area and the rate of preparation suggests that private forest management is not active. Therefore, in order to promote private forest management, it is necessary to strengthen the preparation of forest management plans, and it is the most ideal way for metropolitan and provincial governments to organize forest management plans for each management district and evaluate and manage forest projects in the future. The planning management system should be overhauled so that at least the city hall and county office can manage the plan. Since forest management becomes a social task to manage public goods, it would be appropriate to be managed by the government.

In addition, in order to promote forest management by forest/mountain owners and professional forestry workers, the government also needs to change the current forest management support method to allow forest management from individual financial support for forest management to one that actually allows them to execute forest management. The management of private forests cannot be expected in the current form of professional forestry management and general industrial management. Therefore, a system should be developed to select and train professional forest managers living in areas where management is possible and forest management instructors working for each local forest cooperative as professional forest managers and to foster them as local forest management leaders.

Finally, as a way to improve the integrated management of forest projects, it is necessary to expand the comprehensive fund for forest projects, the project to increase forest income, the project to support forest management planning, the project to create forest resources, and the project to support customized management for professional forestry workers.

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9. Appendix

9.1. Authors contribution

	Initial name	Contribution
Lead Author	JWL	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑
Corresponding Author*	WHL	
Co-Author	GSK	
Co-Author	WKC	

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Corresponding author
E-mail: 962052@naver.com

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The Implications of Police Gender Incusive LEADERSHIP

Hyeshim Jung

Police Human Resources Development Institute, Asan, Republic of Korea

Abstract

Purpose: *The purpose of this study is to find the meaning of gender Incusive leadership from the perspective of diversity in the police organization and to present its developmental implications.*

Method*: The method of this study analyzed previous studies related to gender inductive leadership and changes in the system environment. Until now, discussions on gender differences in leadership have been largely divided into complementary contribution models and fairness models. The former accepts the difference between women and men as positive and strong.*

The view of the European study is to assume that women and men can contribute equally to other characteristics of the organization. While the fairness model is based on similar assumptions denying the fundamental difference between women and men, this idea is ostensibly considered an equal model. Analyzing these preceding studies, we suggested gender inclusive leadership suitable for our police organization.

Results: *As a result of the analysis of previous studies, there is no difference between men and women in the viewpoint found in North American studies, so it is believed that women can practice leadership like men if they are given equal opportunities to prove their abilities. Sexual issues have been treated as private issues in our society and have not been recognized as one of the diversity factors that society should manage. The reason why we should deal with gender diversity effectively is that the mainstream culture of our society and organization is unified around male values, and diversity, which is a prerequisite for creativity and innovation, is absolutely lacking. Diversity is like having various expansions in these frames and It is considered an essential element in solving complex problems in modern society.*

Conclusion: *Police organizations need an approach to fostering female leaders and gender-inclusive leadership in both men and women to become more flexible and creative organizations required in the era of the Fourth Revolution. The first person to introduce the concept of gender integrated leadership was Kim Yang-hee, CEO of gender and leadership. Policy and system to create gender equality organizations are important, but the most important thing is the perception and attitude of those who implement them. Especially, it is most urgent to embrace gender diversity and actively participate in male members who occupy the majority. Police commanders should be interested in gender-inclusive leadership so that they can build strong gender partnerships in police organizations to create synergies and create an organizational environment in which members can maximize their abilities without gender discrimination.*

***[Keywords]* Police, Diversity, Leadership, Gender Inclusive Leadership, Gender Partnership**

1. Introduction

1.1. Changes in the defense and security environment during the era of the fourth industrial revolution

The Fourth Industrial Revolution has already begun in the field of defense. The Ministry of National Defense is making efforts to foster network oriented digital elite lecture group based on four strategies: development of creative information promotion system, improvement of information system service ability, establishment of common service infrastructure, and strengthening of defense cyber protection capability[1]. It is applying 10 core technologies such as virtual reality, artificial intelligence, and big data by fusion and application, and is building information and communication technology(ICT) professional manpower and civil and military ICT convergence ecosystem. The Defense Science Institute plans to deploy the ground unmanned transport system for combat combat in the early 2020s. The "Robot", a transport intelligent robot capable of self-operating on the ground, will assist in 3D tasks and carry out military operations on behalf of combatants in the future. In the future war, network-centered warfare(NCW), information and cyber warfare, effect-centered warfare, and rapid maneuvering warfare are applied more extensively, and new war paradigms such as unmanned robot warfare are emerging, and technology of the era of the fourth industrial revolution such as efficient combat power management, robot, artificial intelligence, and big data through information superiority will be actively utilized. The Ministry of National Defense is building a network-oriented environmental system to enable NCOE operations to be carried out in preparation for these future wars[2][3].

The development of communication and technology has a great impact on the security environment. While violent crimes such as murder and robbery are on a steady decline, intelligent crimes and cybercrimes based on new industries and communication technologies are rapidly increasing. The intelligent crime method of electronic financial fraud such as voice phishing, pharming, smsing, and ransomware is developing in various ways. Cyber space spreads the damage of illegal photography extensively and is used as a supply route for drug crime. In addition, violence through media is increasing, and the proportion of non-contact sex crimes such as camera-using shooting and pornography using communication media is increasing. There are many runaway youths exposed to prostitution among individuals through chat apps, and cyber gambling sites and pornographic sites are operating servers in foreign countries to avoid investigation.

Recently, the spread of Internet of Things(IoT) devices has expanded, and the risk of security threats and cybercrime using them has also increased. The CSI effect through the American criminal investigation drama has raised the public's expectation of the scientific investigation, but on the contrary, it has become an opportunity for criminals to commit crimes intelligently by imitating them, and as a result, the absolute value of basic evidence such as fingerprints and foot lubrications, which can be the basis of scientific investigation, has been reduced in our circumstances.

Therefore, it is urgent to upgrade scientific investigation techniques and equipment, specialize human resources, and strengthen internal and external cooperation. Currently, 107 coroner investigators, 30 criminal analysts, and 64 scientific investigators are working. Statistical experts are employed as analysts to analyze case information such as Geopros and KICS, and support various police activities such as investigation as well as prevention and policy. It is important to combine the 4th Industrial Revolution technology with defense and security, but securing professional manpower to operate it is more important than anything else. It is no longer possible to secure creative and diverse talents suitable for the fourth industrial era by recruiting based on collective standards such as academic background, physical strength, age, specs, and gender. Therefore, organizations need to change into flexible organizations that promote passion and creativity by acknowledging and integrating diversity of members while hastily laying the foundations for cooperation and convergence in the hierarchy and the super-sector.

1.2. Necessity of diversity management leadership

In the age of infinite competition, organizational workforce diversity is a source of competitive advantage, and effective diversity pursuit is an essential element of organizational survival and development. Mercer, one of the world's leading human resource-related consulting groups, has selected diversity among corporate members as one of the major changes that will have the greatest impact on human resource in the next 10 years.

Many global companies, consisting of multicultural and multi-ethnic people, have already shown interest in this diversity for a long time, but it is true that Korea has not been interested in it so far. In the past, most of the members of the organization of domestic companies were men, and they had the same level of education as uniform open recruitment, so companies did not have to seriously consider the diversity of manpower composition.

However, since the IMF, Korean companies have become more complex workforces than now due to the entry of women into the labor market, frequent M&A and joint ventures with foreign companies, an increase in various members, and changes in personal values. As the number of female employees in the public sector as well as the labor market has increased sharply, and the number of female executives has increased, the members of the organization experience new order and culture. Until now, gender diversity management has approached the direction of eliminating institutional discrimination or discrimination against physical and biological differences and providing equal opportunities for recruitment and promotion, but in the future, it should move toward accepting and actively managing differences with members in terms of efficiency and competitiveness of the organization. In other words, it is necessary to have wisdom to actively manage diversity as a source of competitiveness, not to see diversity as a cause of conflict. In addition, diversity management is required not only for organizational diversity management such as recruitment, education and training, evaluation and compensation promotion, flexible work system, vacation and leave system, over-sufficient system such as childcare and care system, and policy to create organizational culture that accepts diversity, but also for diversity management, individual members' consciousness changes are required, and efforts to destroy existing order are also needed. In order to recognize diversity, it is necessary to escape self-centered thinking, and it is also necessary to change the leadership that embraces various members.

2. Analysis of Preceding Studies

2.1. Research on diversity and performance

Since the IMF economic crisis, as the diversity of human resources in domestic companies has increased, discussions on diversity effects and diversity management methods are actively underway. Diversity means that there is a difference between members within a single social unit, and in 1996 Milliken and Martins presented 14 heterogeneous attributes of individuals in the study of organizational diversity, including racial/ethnic background, nationality, gender, age, personality, cultural value, socioeconomic background, educational background, functional, occupational background, industrial experience, organizational group tenure, etc. Among these heterogeneous attributes, the diversity that is treated as important is gender, educational background, and function experience background.

The first of the studies on the impact of diversity on performance is the claim that discriminatory effects occur according to the type of diversity. Educational and functional differences are called information diversity, which is positively influenced by performance. On the other hand, gender and age differences are called social category diversity, which is an empirical analysis that negatively affects performance. In domestic studies 2012 Kwon Seok-gyun, Choi Bo-in, 2007 Sung Sang-hyun and two others, social category diversity has a negative effect on performance while information diversity has a positive effect on performance. However, these results are due to the fact that diversity with high visibility such as gender, age, and race easily causes responses such as bias, prejudice, and stereotypes [4].

The second is the argument that the effects of diversity occur from differences in theoretical perspectives. The theory that asserts the positive effect of diversity is information decision-making theory, which is a view that the increase in availability of information brought by diversity provides various perspectives and ideas to the organization members, which has a positive effect on performance[5]. On the other hand, theories that emphasize the negative effects of diversity include social categorization theory, similarity attractiveness theory. The social categorization theory is to claim that the members of the organization view the inner group more favorably than the outer group[6], and the similarity and attraction theory is to claim that the members of the organization feel attractive to people similar to them and share their same beliefs and values. Individuals think they are reliable and easy to communicate with others, while they tend to evaluate negatively against others who are not similar, and it can easily cause negative conflicts[7].

2.2. A study on the differences in leadership according to gender

The discussion of gender differences in leadership is largely classified into complementary contribution models and fairness models; the former sees and accepts the differences between women and men as positive and strong.

The view of European studies presumes that women and men can contribute equally to different characteristics in the organization. The idea is that both sides can create greater synergy by complementing each other, while the fairness model is based on similar assumptions that deny the fundamental differences between women and men. Since there is no difference between men and women in terms of the perspective found in North American studies, it is believed that women can practice the same leadership as men if they are given equal opportunities to demonstrate their abilities. The problem of fairness model is that women are required to adapt to existing male-centered organizational structure and culture, but do not take issue with being evaluated by male standards[4].

2.3. Preceding study on gender differences in leadership styles

The analysis of gender differences in leadership styles was conducted to find out the differences between women and men in two aspects of leadership: task orientation and interpersonal orientation. In general, men tend to think that they are strong in self-assertion, independent and dominant, and women are altruistic, kind, understanding, and sensitive to the emotions of others. In 1990 Igly & Johnson studies compiled more than 160 papers on gender differences in leadership and conducted a meta-analysis[5].

First, the analysis of the difference between task orientation and interpersonal orientation showed that men showed more task-oriented behavior than women, while women showed more interpersonal behavior than men. Laboratory studies showed results in a direction consistent with the above stereotypes, but not proven in field studies.

Comparative studies of democratic and authoritarian styles have consistently shown that women take more democratic and participatory leader behaviors than men, while men take more dominant and authoritarian behaviors than women. In 1998 Carles's study analyzed gender differences in transformational leadership. And as a result, female leaders showed a transformational leadership style that fosters others, such as making more participatory decisions and giving appropriate feedback or tasks than male leaders, while male leaders were more directive, task-oriented, and controllable than female leaders[8].

2.4. Gender differences in leadership effectiveness

The gender difference of leadership effectiveness is not consistent. Rice et al., 1980, etc., examined the difference of leadership effectiveness according to the gender of the leader at West Point Military Academy[9].

The study was conducted during the first time that women were admitted to the military academy, and half of the subjects were trained by female supervisors and then evaluated by their superiors. While cadets with traditional thinking rated female leaders less positively than male leaders, those with progressive and equal attitudes toward women rated female leaders more positively.

A survey of 600 male and female workers working in 30 businesses in six industries in Seoul and the metropolitan area by Kim Yang-hee and Kim Hong-sook(2000) also found that the evaluator's gender equality consciousness influenced the evaluation of female leaders. The higher the consciousness of gender equality among workers, the more positive attitude toward female leaders was seen as the concept of cooperative influence rather than the concept of competition and control. In the case of male workers, the longer the period of working with a female boss, the more positive the female leader was. Therefore, it can be interpreted that raising the gender equality consciousness of male members and having more opportunities to work with female bosses helps to eliminate stereotypes about female leaders and form positive attitudes[10].

2.5. Implications of preceding studies

Many previous studies show that gender diversity has a positive effect on organizational performance, but gender diversity is a negative factor in conflict if members' gender equality consciousness and gender equality organizational culture are absent.

The difference in leadership behavior or leadership style according to gender is actually biological, but it is learned in the socialization process or formed in the social role. When women leaders work in male-dominated areas, less participatory leadership styles are seen because women are also pressured to follow leadership styles that reflect male values in situations where men are numerically dominant.

There is no single type of leadership that is effective in all situations. The effectiveness of leadership is a much more complex problem, and it is a compound product of the motivation and characteristics of the organizational members as well as the leader himself, the legal authority given to the leader, and the characteristics of the organization and task. However, in the era of competition by writing, where diversity and creativity are the hot topic, leadership should change in the direction of voluntary and creative participation of organizational members[11].

3. Leadership Necessary for Managing Gender Diversity

3.1. Change from a dominant model to a partner model

Among the attributes mentioned as the qualities of modern ideal leaders, there were more attributes classified as 'feminine attributes' than those classified as 'male attributes' themselves. The characteristics of planning, expressive, flexible, patient, and cooperative are more important as leadership qualities than the attributes of active, analytical, independent, and self-esteem that have been emphasized as the qualities of leaders in the past[12].

The cultural critic and historian suggested a new social analysis framework for the change of the times, and classified it into a society of the dominant model and a society of the partnership model, focusing on the main concepts of society and the way of practicing value power. The dominant model society has a strong, rigid and unequal governance structure, institutionalized violence, and devaluation of women and feminine values.

Partnership model society, on the other hand, is based on democratic and equal social structure, diversity value and partnership. In a society based on a dominant model like Korea, the principles such as coldness, toughness, competition, and control of conquest are given priority, while the principles such as care and cooperation sympathy and nonviolence are overlooked. In the dominant model, the social system works in a way that benefits those in the upper part of power and control, and in this model, the relationship between the person with power and the person who does not have it, the parents and children, the relationship between men and women are often oppressive[12].

In dominant model societies, diversity is not recognized, so uniform and gender roles are rigid. On the other hand, in the partnership model, the difference is regarded as a major value for a diversified society, so it aims at a more flexible and democratic social structure and emphasizes partnerships that are more equal than hierarchy. Nordic countries such as Finland, Sweden, and Norway introduced the political economic system of the partnership model earlier, and it became a prosperous economic rich country since the 20th century. Since the ruling model of the past is no longer sustainable, it is now necessary to change the paradigm to a partnership-based model. This transition means a change in beliefs and values.

From a gender perspective, the key to transforming an organization from a dominant model to a partnership model is to redefine power and leadership as a more democratic concept. It is necessary to reinterpret the power of the leader not to control and control the members but to promote, nurture and promote vitality.

3.2. Gender in leadership

Gender issues have been treated as private issues in our society and have not been recognized as one of the diversity factors that society should manage. The reason why we should deal with gender diversity effectively is that the mainstream culture of our society and organization is uniformized around male values, and diversity, which is a prerequisite for creativity and innovation, is absolutely lacking[13].

Diversity is like having multiple extensions in a toolbox, and is considered an essential element in solving complex problems in modern society. Evidence is also being published that gender diversity in the context of the organization increases innovation potential and leads to financial performance. While the investment in women's education has increased rapidly in Korea, the utilization of female workforce is generally very sluggish and becomes more serious as they go to high-ranking positions [14].

The structure of decision making in most organizations is very uniform and masculine, and it is urgent to ensure that women are fully involved in each sector of society and gender values are balanced. Gender integrated leadership is what is needed for effective gender diversity management. In order for the existing organization, where decision making is mainly made by men and centered on masculine principles, to fully accept women as members and to achieve gender diversity, fundamental transition is needed.

If the entry of women into existing male-centered organizations is expanding and moving to an era requiring gender diversity, it is necessary to have leadership capacity to manage the diversity more effectively. In this transition period, new learning and adaptation are needed for both women and men. It is necessary to create a friendly environment by systematically supporting them through leadership, not leaving them to individual people.

Gender integrated leadership means leadership to understand the way sex is written in an organization, to improve the system that enables women and men to work more efficiently and creatively, to create culture and to create new practices, while collaborating and supplementing each other's stereotypes. If a leader who wants to demonstrate gender integrated leadership, he/she should recognize that the power relationship between social value and attitude toward women and men can affect the expectation and behavior of members in the organization with gender sensitivity to understand gender differences. It is the basis of gender integration leadership to give equal value to different perspectives and life experiences of women and men and to ensure the equity of opportunities and conditions so that each contribution can be made in the organization[14][15].

First, it is important to understand the differences in specificity and differences according to the conditions of life of women and men at the individual level and to escape from gender role stereotypes. And we must work together, complement, and respect and understand our opponents in our organizational lives with other gender members[10][11].

In the organizational level, it is necessary to introduce diversity personnel policy to balance gender and support the cultivation of female talents. In the discussion of female leadership, if the subject of change was women, both women and men are the subject of change in gender integration leadership. If women leadership is emphasized as an alternative to traditional patriarchal leadership in women leadership, gender integration leadership emphasizes alternative leadership that integrates gender diversity. It emphasizes the practice of gender partnerships that save both women and men's strengths.

If the purpose of women's leadership in the past is to promote gender equality in the organization through the expansion of women's leadership, the purpose of gender integration leadership is to fundamentally change the main structure and culture in the direction of integrating women's and men's experiences and perspectives, to promote gender equality and gender diversity, and to establish gender partnerships. Organizations embrace heterogeneous members to have the best human resources, improve the flexibility and adaptability of the organization, and create a healthy culture, ultimately helping the sustainable growth of the organization[4].

3.3. The importance of male roles for the establishment of gender partnerships

Gender partnerships are simply a relationship in which all members of an organization understand gender differences, respect and cooperate equally with each other. Women and men learn from each other, escape misunderstandings, prejudices, and stereotypes, rely on each other's talents and strengths, and productivity together.

As women's entry into the organization expands, it is a desperate task for the success of the organization to form a relationship in which men and women work efficiently and cooperate without conflict. However, men who have not worked together as equal personalities in a position similar to women often do not even know how to have a relationship with women. There are a few men who vaguely fear or refuse change.

This may be due to anxiety that you will lose your superior position or to the obsession that you should perform your patriarchal duties. More opportunities need to be provided for men to overcome these problems and become the subject of gender integration leadership; the following three factors are essential to building gender partnerships:

First, it is to support more women to become leaders. Second, men should actively participate in promoting female status. The important point is to persuade men to understand the necessity and join the change and take the initiative. Third, the support system should be established to change the organizational culture at the organizational level. The organization should improve its institutions and customs in the direction of promoting gender diversity and provide incentives to promote changes in members' behavior. Earlier, the United Nations emphasized the full participation of men in gender equality in the fourth UN World Women's Congress Declaration held in Beijing in 1995, and has also campaigned for Hipposh[16]. As such, voluntary participation through changes in men's perceptions is the key keyword for gender partnership success.

4. Changes in the Gender Landscape of Police and Military Organizations

4.1. The status of female police officers in the police organization

As of October 2017, the total number of female police officers in the Republic of Korea totaled 12,611. In the past, female police officers were placed in various tasks such as police, transportation, and civil affairs, but now they are active in various departments such as detectives, investigations, information, and security. The status and treatment of the police officers in the police organization seems to have not changed much as the number and role of the increased police officers. Although the age of 10,000 women has reached, it is still 10.8% of the total police officers(116,914)[17].

In addition, there are only two high-ranking female police officers with more than a police officer, and they are distributed in the rank of 80% or less of the female police officers. More than half of the police officers have more than senior positions, and there is an invisible glass ceiling in the police organization regarding the promotion of the police officer. In 2006, the Human Rights Commission recommended the National Police Agency to abolish the 20% restriction on women in hiring 10% of police officers and police officers. However, they refused to use physical strength because of the speciality of work, childbirth, and childcare.

In the police organization, the police are a minority and belong to the periphery of the organization, which is very disadvantageous in terms of opportunity, authority and human rights. In male-centered organizational culture and practices, they experience sexual harassment and sexual violence, and they are prejudiced that they are inadequate for the core work of the police. As a result, they are experiencing discrimination such as exclusion or undervaluation in major tasks, and sometimes they are exposed to a controversy over reverse discrimination and experience a new type of human rights violation[17].

4.2. Measures for managing gender diversity of police officers

The most important point in the diversity management according to the change of police gender topography is the establishment and operation of gender equality policy promotion system. This year, the National Police Agency has established a gender equality policy officer office to oversee gender equality policies, and has established a basic gender equality plan to promote systematic gender equality policies and tasks[16].

In order to diagnose and check the level of gender equality in the organization, the gender survey was introduced to reflect the results in the personal evaluation of the head of the government when evaluating the performance. In addition, as basic data to quantitatively identify the level of gender equality of police and establish and evaluate gender equality policy goals and strategies, it was designed to contribute to systematic goal management and realization of gender equality in the organization by developing 'police gender equality index' and measuring it and reflecting it in performance.

Finally, it is strengthening education for raising awareness of gender equality and creating a gender equality culture of members and commanders. In order to ensure that women's human rights are fully respected in the investigation of female violence cases and to create a gender-equal organizational culture such as sexual harassment and eradication of sexual violence in the organization, internalization of gender sensitivity of commanders and middle managers is the most important. In addition, the gender equality consciousness of the police command is a key requirement to establish and prepare gender equality policy, so since 19th, education contents suitable for the object and purpose of education are being developed to expand the gender equality education time and maximize the effectiveness of gender equality education in basic education for general police, police officers and relief.

The process of the general affairs will include subjects such as empathy for gender equality values, victim-centered attention related to women's violence response, gender integration leadership for gender equality culture, and so on.

5. Conclusions

In order to respond to the rapidly changing defense environment and the security environment in the future and to realize the gender equality society, which is the government's national task, both the military and the police should prepare for the change of gender topography of the organization in advance. It is important to diversify the organizational members through the expansion of women's recruitment, but it is necessary to preemptively manage gender diversity in the organization so that gender partnerships are established in the organization and leaders have gender sensitivity and cultivate gender diversity management leadership. Leaders who are still unable to prepare for this big wave of change and rather adhere to male-centered leadership or culture may be swept away by the tide of change in the era of creativity and diversity of the Fourth Industrial Revolution[1][2][3].

In the police organization women police officers saved a lot of lives in the security field, investigated difficult and difficult cases, and no longer questioned their capacity as a police officer. The Fourth Industrial Revolution will bring a breakthrough in defense and security. Even in this situation, our organization still consumes unnecessary energy due to gender conflicts and wastes manpower by preventing many female talents from spreading their abilities properly.

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Police organizations should change their uniformity to masculine values in order to become more flexible and creative organizations required by the fourth revolution era. This requires the approach of fostering female leaders and gender-inclusive leadership of both men and women.

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7. Contribution

7.1. Authors contribution

	Initial name	Contribution
Author	HSJ	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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A Case Study of the FLIPPED LEARNING Based on Google Classroom -Focused on the Japanese Service Practical Conversation-

Jeumnam Kim

Howon University, Gunsan, Republic of Korea

Abstract

Purpose: *The purpose of this study is to find out whether the flipped-learning class case applied to the foreign language subject <Japanese Service Practical Conversation> is a suitable teaching method, whether Google Classroom-based media classes are effective in achieving learning goals, and what specific factors affect student satisfaction.*

Method*: The method of investigation was to analyze the study reflection diary and end-of-semester questionnaire posted in the class room for one semester with prior consent from the students(33 students) of the subject in the second semester of 2019. According to the analysis result, it was suitable as a teaching method and was very effective in achieving the learning goal, and the factors such as interaction, interest and motivation, media utilization efficacy, and learner satisfaction greatly influenced the evaluation of the class case. In the meantime, there have been only a few attempts to teach " flipped learning" and "blended learning," which are a mix of on and off, in Japanese language courses in universities.*

Results: *The case analysis by Google Classroom base and factor in Japanese subject was attempted for the first time, and it is expected that the learner-centered teaching method will be widely attempted by actively utilizing Corona 19 times and online digital contents and using Google Classroom-based mediums.*

Through this study, it is meaningful to provide basic data in predicting and implementing effective education in the future, and suggests that it is attempted by utilizing various digital contents.

Conclusion*: Flipped learning promoted the innovation of classroom instruction by converting the teaching-oriented teaching method into learner-centered participatory learning as a means of interaction of technology. This study is able to find out that it is an opportunity to build a new teaching culture such as improving the participation of learners in class, self-directed learning, mutual communication, and teaching ability in the language class(Japanese) using the Google class room-based medium.*

***[Keywords]* Google Classroom, Flipped Learning, Blended Learning, Learner-Centric, Learner's Satisfaction**

1. Introduction

The Fourth Industrial Revolution heralds a radical change in our lives. The field of education in this era, called the digital revolution, is also rapidly changing, and the core of education is that it is centered on learners. Today's learners are self-directed, have critical thinking, problem-solving skills, and a society based on creativity. Emotional skills, etc. are required as essential competencies. Therefore, in order to enhance learners' competencies, it is necessary to explore various possibilities for teaching methods in which learners can actively participate in the teaching-learning process and have a real interaction between professors and students, rather than a teaching led by professors[1][2].

Flipped -learning classes, which have recently attracted attention as a new education system, can be an alternative to overcome the problems of one-sided, professor-oriented classes and knowledge-transfer-oriented classes without interaction between professors and students[3]. Flip learning reverses traditional teaching practices, meaning learning methods in which a student learns from online content in the form of video at home before coming to school and performs things like question and answer, discussion, or joint collaborative activities in the classroom[4].

There have been various discussions so far about the positive effects of flipped learning on education, which generally help students build knowledge by internalizing knowledge and providing opportunities for peer interaction, resulting in a positive impact on academic performance[5].Thus, the study of flipped learning is also active in universities today, and has become a method of teaching that is spotlighted as a learner-centered teaching method.

Learner-oriented education does not mean that students listen to, follow, and give autonomy to students as they want. Education that recognizes diversity, believes in possibilities and potential, and encourages self-directed learning with mutual respect and interest are learner-centered education. Since the core keyword of learning is interest and there are professors at the core of it, it should be oriented toward a class that satisfies not only students but also professors by experiencing and building skills that suit their aptitude among educational models.

The development from an information society to a knowledge-based society has led to the need for radical changes in the paradigm of university education. New teaching tools have emerged, and since the quality of college education can mean the quality of classes, professors feel the need to improve the quality of classes by selecting various skills to suit the information age[6]. Among the major subjects in the university, the Japanese language-related subject Japanese Service Practical Conversation has only one semester in the H University curriculum, making it difficult for Japanese introverts and beginners to achieve their desired learning goals in three hours of offline classes a week. In order to be interested in this and continuously self-directed learning, Google Classroom-based flipped learning method was applied.

The purpose of this study was to find out whether the flipped-learning class case applied to the foreign language subject <Japanese Service Practical Conversation> is a suitable teaching method, whether Google Classroom-based media classes are effective in achieving learning goals, and what specific factors affect student satisfaction.
For the smooth operation of flip-learning, a platform that provides prior access to video or lecture materials plays a very important role[7]. Among many learning management systems, I chose the Cloud Collaboration-based Google Classroom to conduct performance evaluations (process-based assessments) more efficiently.

First, I introduce the function and utilization of Google Classroom. Learners can be invited to the Google Classroom, a virtual space, by receiving their own class code given to each subject, or by a professor. Google is easy to access and easy to use because all features of the Google Classroom are free to anyone with a Google account without a paid account for G Suit for Education[8].

It can conduct real-time smart classes with students and share opinions with each other, enabling smooth communication between professors and students. Questions are also free from time to time through comments and e-mails. In addition, it is easy to make and submit all kinds of documents, videos, and images stored on Google Drivers as assignments by working with Google Drivers. In addition, a drive folder can be created for each learner to organize tasks easily for both professors and learners. Learners can check and submit deadlines on the assignments page, and professors can quickly check whether assignments are submitted and provide real-time feedback.

They also used Google Docs and Google Slides to work on one document in a group at the same time and use it as a collaborative foundation. In addition, the Google Classroom was introduced in all subjects in the second semester to maximize educational utilization by utilizing various free Google tools. YouTube Literacy[9] for professors-students interactive real-time communication classes needs to be enhanced, so Google tools are being used in classes by acquiring Google Certified Education Level 1[10].

2. Direction of Flipped Learning Classes

2.1. Outline of subjects

For the purpose of the curriculum, the focus was on learning the characters and simple real-life-oriented conversational expressions as subjects for the beginner's Japanese language course in the second grade. In addition, the basic Japanese aviation service, which can be applied to practical work, will be acquired with fun and curiosity by covering various contents such as aviation dramas, Japanese culture, and children's songs. And for self-directed learning, collaboration and cooperative learning, and student-student and student-professor interaction, we proceed with the flipped -learning method. The goal of the class is to motivate students to become interested in Japanese and to have confidence in their ability to continue learning step by step. The level of foreign language students is all different, and the understanding of the contents of the class is also different. Therefore, it is highly likely that step-by-step learning will be maintained with interest if one becomes interested in learning in the introductory course.

There are 33 second-grade students in this course, 21 are Japanese introductors, and 12 are beginners of Japanese characters(Hiragana, Katakana) and beginner-level learners who can only read simple words. After reviewing the student characteristics analysis and survey through the class orientation in the first week of the semester(2 o'clock, 1 o'clock) in general, related to the contents of the class were "easy learning, fun and interesting classes, interesting classes, and smooth communication between professors and learners." There were various types of academic practices, such as 'improving daily conversation skills, systematic learning of grammar, and practicing sentences to help practice.'

Flipped learning to meet needs after understanding the characteristics of the students I was motivated by introducing learning methods. At the beginning of the semester, in order to help the beginners of Japanese language learn texts, YouTube videos were linked and QR codes were scanned to learn Hiragana and 50 Katakana first with images, and repeated text practice was divided into individual learning and teams during class.

2.2. An Introduction to comprehensive class progress

In the beginning of the semester, learners generally watched videos poorly and came right before midterms to have an adaptation period. It was conducted with Bled Learning, a mix of offline classes[11]. After the midterm exam, the company voluntarily organized a team of four and created team names and slogans to operate a collaborative-based peer teacher system for self-directed learning and problem-solving while conducting flip learning where prior learning(video viewing and assignments) is essential.

In online lectures, the author mainly organizes the contents of textbooks and quizzes. I edited and dealt with grammar-related perturbation and aerial drama video so that I could enjoy watching the video. In addition, offline classroom classes focused on practical practice such as game-based quizzes, feedback on assignments and questions, organizing key points for 5 to 10 minutes, and guiding role play by teams using aviation dramas.

3. Class Content

3.1. Pre-class online learning

3.1.1. Production and preparation of teaching materials

For pre-learning, the lecture materials are written on PPT and video is filmed. Tools mainly use Gommix for Doczoom, Ocam and editing. It is convenient to organize the contents of teaching materials because it can produce lecture videos based on images, documents, videos, ppt, and pdf. The content of the video is composed for 10 to 15 minutes and adjusted according to its progress.

First, for video quality, the professor's face was put on the bottom so that learners could have a bond after checking the condition of webcam, microphone, and lighting during filming, and props were used to match the lecture's theme. After filming, upload to YouTube with some public release, and link to Google Classroom by shortening the long Url. It also links to Kakao Talk to induce prior learning.

3.1.2. Support comments for task feedback and prior learning

We checked the individual assignments in the class room assignment section in advance and cheered them on with encouragement, support, praise, and feed forward. The students said, 'It's encouraging to communicate through comments. Thank you for always showing interest.'

3.2. In class offline learning

3.2.1. Rapport formation

At the beginning of the class, professors and learners greet each other warmly, clap their hands, sing a song of gratitude and happiness, and sing a video of Japanese children's song that was provided as a prior study. Sometimes, they actively participate in singing children's songs because they have been preparing for the dance by learning the children's songs by team. It motivated me to watch and participate in classes while enjoying video clips and classes.

3.2.2. Confirmation of prior learning(watching video) and inducement of interest through game-based kahoot

During the lecture time, eight to 10 quizzes are held on average to see if the learners have watched and attended the video as a prior study and to see if they have understood the contents of the lesson well.

To solve quizzes that are mainly conducted by checking and reviewing prior learning, Google Forms(a questionnaire) is used to survey students' satisfaction, such as Kahoot, Ping Pong, Social, quizzes and tests. Quiz) was used. Kahoot was able to double the learning effect because of his high level of immersion by using the quiz that the professor made in advance to check the correct answer and explain the problem.

In addition, it was used as an objective data when reflecting performance evaluation since it can be saved in the answer and Excel file for each quiz after the quiz. Convenient functions can be easily participated in quizzes by simply entering a pin number without authentication procedure. In cases where the purpose of the attendance check and the announcement is to reflect the grades, they requested to enter their names after entering pin numbers, but most of them were able to enter nicknames to check their skills without any burden, so they joyfully participate in the quiz game. The game-based Kahoot focuses on and responds to each quiz because it has time to solve quizzes and set up sound effects. In the following picture, you can see a positive response often in the learner's reflection diary filled out in the Google Classroom.

Student A said, "Example before class to answer the question. I got to review harder."

Student B said, "It's the right way to study for students, so I'm interested in the Japanese language I'm learning for the first time."

Student C said, "Game-based classes want to do better with a little bit of competition, so I study harder and fit my style perfectly."

The composition of the study journal for hand-written records was simply filled out before, during, and after classes, and detailed information about learning activities. It was written five times before the class deadline 10 times with understanding the degree of learning, learning in the course, and activities, feelings, and questions in the classroom. And for online use, after self-study after class, it is composed of activities, feelings, and questions before, during class, and after class and entered in the Google Classroom six times.

3.3. In Class offline learning

The following are examples of children's songs and drama classes using Youtube among Google apps.

3.3.1. Learn words and sentences with children's songs and popular songs

In my previous class, I have experienced that the combination of sound, rhythm, and song with the contents of learning has a very high learning effect as well as interest. The basic characters and grammar explanations that beginners find particularly difficult were used to learn by adding notes.

Japanese is a rhythmic language. Therefore, it is effective for beginners of Japanese to practice songs that reflect rhythms such as children's songs, which they used to enjoy singing when they were young, in order to learn the sense of rhythm. Since Youtube provides a variety of Japanese children's songs with video[12], it is frequently used in classes and students are highly responsive.

First, record a video of paragraphs related to class topics and contents by parking. And we record children's play videos related to the subject in class every week with words, grammar, and sentence descriptions, and link them together for prior learning. Learning-motivated and active learning-free people generally watch videos quickly. They also post comments and submit individual questions and questions from professors without exception professors. The members of the group, who had fun learning children's song videos, voluntarily add creative rhythm to film videos and link them to share. The lyrics, which were memorized according to rhythm and rhythm, were remembered for a long time, and it became a trend for other members to enjoy and imitate together.

3.3.2. Effective methods practicing conversation using media and videos

The service industry, especially for learners whose goal is to be flight attendants, is highly concentrated when learning how to respond to passengers in Japanese by utilizing Japanese airline, hotel and service-related dramas. In particular, the in-flight crew-related drama <Attention please. Happy Flight. Chief Flight>, and other airport-related dramas, and daily conversations are edited to show only videos without subtitles at first, while the second one is viewed in video and Korean subtitles, and the third one is played repeatedly in video and Japanese subtitles to check understanding. When you encounter pre-learned sentences in an airline video, your eyes shine and you are happy. It is a reflection journal that learners who draw vivid dreams filled out online.

Student D said, "I remember the sentences I learned through prior learning, and it made me interested because I think I'm good at Japanese."

Student E said, "I will learn the script through the airline drama and work harder. I really feel like I've become a flight attendant."

In a handwritten personal reflection diary, a foreign language can have a learning effect when it is motivated to read, write, listen, speak and communicate.

3.4. Collaborative classes of students(solving problems and playing the role of fellow teachers)

Each team has a team leader, but each week, one person takes turns asking questions to the team members in a prior class and gets help in the areas where they lack. Using Google Docs, group Q & A was used as a basis for collaboration by working on a single document at the same time.

3.5. After class tutorial(learner's reflection diary, teamwork, and questions)

Teams share assignments that learners have done in class by filling them out in the Google Classroom or by linking photos or videos. The self-study activities were conducted autonomously or on a team. Through the reflection diary, it was often found that it was good for learners to sing Japanese children's songs, quizzes, and enjoy learning Japanese as they moved to the classroom before class or to the dormitory after class. Or, when roommates study by themselves, they study by referring to videos, or on weekends, they stay in the dormitory and take videos of what they have learned while studying Japanese.

Professors also have time for real-time questions from learners. He posted a reply without any restrictions on the days of the week, showing interest in helping his understanding and always being with him as a helper.

4. Questionnaire Analysis

The feedback of learners about flip learning based on Google Classroom, which was examined using Google Forms, was generally positive. In the learner analysis stage, there were no Google Classroom users, and they answered that they experienced flip learning classes in high school(5%) and none other than that(95%). As a tool used while watching videos as prior learning, smartphones were the most utilized(84.8%), followed by computers(15.2%) including laptops and desktops.

Satisfaction with the class <Table 1> has a total score of 55,000, and this course is suitable for the application of the flip learning method(4.1), helps in self-directed learning(3.9), and takes regular online classes(2.6), slightly above the average of 2.5. It was enough.

Table 1. Satisfaction with flip learning class.

Questions	Satisfaction
1. This course was suitable to apply the flip learning method.	4.1/5.0
2. It was helpful for self-directed learning through flip learning classes	3.9/5.0
3. I took online classes regularly	2.6/5.0

The majority of learners responded very positively to self-directed learning. Particularly, the part that was identified through the subjective questionnaire was the part that was able to watch the video according to the level of learners and the speed of understanding in order to understand the content of the video. The satisfaction with self-directed learning[13] was high by cultivating the ability to selfize and internalize knowledge.

In order to smoothly proceed with the flip-learning class in the future, I had to think about finding a way to motivate me to regularly watch videos.

Satisfaction with Google Classroom-based flip-learning pedagogy by factors <Table 2>.

Out of a total score of 5.0, the average value of interaction(4.2), the average value of interest and learning motivation(4.3), the average value of media utilization efficacy(4.1), learners The average value of satisfaction(4.2) was very high.

Table 2. Satisfaction by factors for google classroom-based flip learning teaching methods.

Factor	Research variable(manipulation)	Satisfaction
Interaction	1. Q&A between professors and learners is smooth.	4.1/5.0
	2. Exchange of opinions between learners, collaboration is cooperative learning each other.	4.3/5.0
	3. Communication between professors and learners is smooth.	4.3/5.0
Interesting and motivations	1. The materials for the preceding class and the method of teaching are interesting.	4.3/5.0
	2. Interesting in communicating and sharing with me, team members, and other teams.	4.2/5.0
	3. Learners are waiting for assignment feedback and evaluation.	4.3/5.0
	4. The more I am interested, I want to learn more.	4.4/5.0
	5. The more I try, the better I can understand the learning content.	4.4/5.0
Media utilization efficacy	1. Classroom is convenient to obtain and manage necessary information.	4.3/5.0
	2. They are familiar with Classroom's features and technologies.	3.9/5.0
Learner satisfaction	1. I am Satisfied with the Google class-based flip learning method.	4.3/5.0
	2. It delivered more results than expected of the learning goal.	4.2/5.0
	3. I will continue to take classroom-based flip learning classes.	4.1/5.0
	4. I will recommend Classroom-based flip learning to a friend.	4.2/5.0

In terms of interaction, interest, and motivation, the self-organized team members were mainly roommates, so they continued to study together before and after classes, and they also participated more actively in class cooperation activities. I understood the contents of the subject well because the parts that I did not know and solved the tasks and problems were better remembered, remained longer, and I was able to study with fun.

It was confirmed that the interaction between professors and learners was smooth through individual guidance, tasks, and feedback on questions by the professors. In particular, the frequent use of comments and e-mails due to the use of media in the Google Classroom, and the subject characteristics and grammar questions were actively asked as beginners in Japanese, but the expansion of the question area is also a remarkable achievement compared to the teaching method class.

And it is observed that the learners' familiar digital devices were positive for the effectiveness of functional media utilization, and that the fun and enjoyable learning influenced the learners' satisfaction through the provision of various contents and the learning environment without any interest, time and space constraints. Thus, the Google Classroom-based media classes were effective in achieving the learning goals, and factors such as interaction, interest and motivation, media utility, and learner satisfaction could be seen to have a good effect on the evaluation of class cases.

5. Conclusion

The purpose of this study was to find out whether the flipped -learning class case applied to the foreign language subject <Japanese Service Practical Conversation> is appropriate, whether Google Classroom-based media classes are effective in achieving learning goals, and what specific factors affect learners' satisfaction.

According to the analysis of the study reflection diary and end-of-semester questionnaire posted in the class room, it was suitable as a teaching method and was very effective in achieving the learning goal, and the factors such as interaction, interest and motivation, media utilization efficacy, and learner satisfaction greatly influenced the evaluation of the class case.

The unexpected results in this case showed the results of the top five Japanese entrants. He is a learner who played the role of a fellow teacher, and the four team members who actively commented on Google Classroom and submitted team assignments are the main characters. On the other hand, among beginner-level learners who studied Japanese for about a year in high school, three learners who did not submit their assignments within the period due to the burden of collaborative classes showed a mid- to low-level grade distribution.

The degree of active involvement in the interaction of professors-students-students-students-to-students can be seen as internalizing knowledge and improving academic performance through the reflective diary of learners. Watching the course of the class, I also learned that reducing the professor's instructional explanations would result in learning within the classroom as much as that time[14][15][16].

Motivation measures take into account the characteristics of learners and suggest ways to continuously arouse students interest by inserting the right quiz in the middle of the video so that watching the pre-video is a meaningful learning. Learner satisfaction can be used in part as an indicator of the quality effectiveness of education. Through this study, it is meaningful to provide basic data in predicting and implementing effective education in the future, and suggests that it is attempted by utilizing various digital contents.

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7. Contribution

7.1. Authors contribution

	Initial name	Contribution
Author	JNK	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Corresponding author
E-mail: rupek2014@dyu.ac.kr

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Analysis on the Cases of Railroad Traffic Response and the Future Strategies Under CORONA-19

Eunkyung Park

Dongyang University, Yeongju, Republic of Korea

Abstract

Purpose: *The first half of this year began with an unprecedented infection crisis called a novel coronavirus. As of July 2020, the number of infections with Corona 19 that has spread worldwide has exceeded 15 million, and the number of deaths has exceeded 620,000. As the infection rate of the novel coronavirus has accelerated, the World Health Organization(WHO) has declared an international public health crisis for the new coronavirus infectious disease in order to jointly respond to the international community. Invisible virus infection speed is so fast that epidemiological investigation is impossible, and if it is connected to transportation, it spreads rapidly to a large area and is very threatening.*

Method: *This study collected data on the transport performance before and after Corona 19. First, in order to analyze the impact of the corona 19 epidemic on the railroad transportation sector, data on changes in transport performance of high-speed rail and general railroads were collected while continuously monitoring the countermeasures of Korea's leading railroad operating organization. In addition, data on changes in subway traffic were collected by monitoring the step-by-step emergency response measures of Seoul Transportation Corporation, which has 7-8 million subway users per day. Through this, data of the anti-virus system of overseas subway operating agencies and Seoul Transportation Corporation were collected and compared and analyzed. Since Corona 19 traffic trends are expected to change a lot, foreign metropolitan cities are implementing new traffic policies to cope with the daily life changed to Corona 19. Therefore, this study proposed a plan to improve the convenience of service through untect technology and the establishment of a safety prevention system to improve the reliability of railroad traffic in order to more safely and efficiently operate mass transport and long distance transport, which are the strengths of railroads after Corona 19.*

Results: *All hospitality facilities of the railway used by unspecified people are intensively quarantined several times a day, and in the case of general trains, contact between customers is minimized by prioritizing the window side of the left and right seats. In order to prevent crowds of customers during rush hour and weekends, the number of trains was reduced. As a result, the number of cases of COVID-19 infection on urban railways and high-speed railways is close to zero. Declined to 48%, hitting the overall volume and sales.*

Conclusion: *Most cities are in a situation where they cannot function without rail traffic. As the importance of quarantine of transportation means emerges due to the Corona 19 virus, customized measures for each means of transportation such as buses and subways that have changed in the post-corona era are needed. A long-term and sustainable strategy should be prepared to prevent virus infection in the railroad transportation field, which is one of the pillars of public transportation, and to ensure people's right to move safely.*

***[Keywords]* Corona 19, Infectious Disease, Subway Quarantine, Rail Traffic, Railroad Policy**

1. Introduction

The first half of 2020 began with the Corona virus, which has changed the way people live and travel. In order to minimize the risk of infection, non-face-to-face became common, and non-face-to-face daily life was changed by traffic, and demand for public transportation in the metropolitan area decreased sharply. People tend to avoid using public transportation as much as possible, and there is a situation where people do not move or meet any more unnecessary things. In addition, the traffic congestion and road congestion of public transportation during commuting time continued to decrease due to the spread of flexible work system of companies and non-face-to-face classes of schools, but the congestion of highways again occurred when the Corona 19 spread slowed down.

The conflicting phenomenon of passenger cars and trains, which are representative means of transportation, is seen as a measure of the traffic paradigm of the Post-Corona era. Many transportation experts predict that passenger cars will increase and public transportation such as trains and buses will decrease. However, this phenomenon is confusing because it is a big difference from the existing traffic policy that the government has been pursuing so far. Prior to Corona 19, we have been pushing policies to curb passenger cars and encourage public transportation such as buses, subways, and trains to solve environmental problems. This is because the transportation means that are eco-friendly and accompanying regional development are railways.

These railways responded to the chaotic crisis by implementing the principle of use for customers who use trains and urban railways to prevent infection when the spread of Corona 19 virus infection was in serious phase. This made it impossible to use the train without wearing a mask due to the mandatory wearing of the mask in the car, and reduced the number of train operations to 15 ~ 30% of the normal level in order to put social distance. This reduced the possibility of infection spread due to train use, but transportation sales plummeted.

The highly contagious Corona 19 contributes to changing traffic trends as fast as the speed of diffusion. Now, if safety is not premised, passenger movement will decrease while logistics movement will increase. In addition, as flexible work system becomes common, the demand for public transportation for commuters is also decreasing and the perception of preference for passenger cars is expanding. In urban areas, the use of shared mobility such as bicycles is increasing, and on weekends, passenger car traffic on the main road is recovering to the level of corona transfer. The perception that railways, which are crowded with people, are no longer safe is formed.

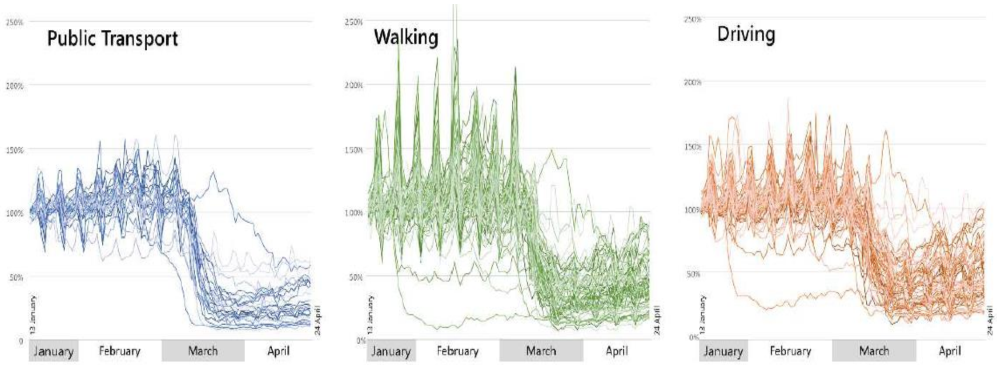
This is because Corona 19 is the time to check the frame of the new railway traffic policy. This paper examines how Corona 19 is responding based on trains and urban railways that occupy the largest portion of public transportation, and suggests a railway transportation strategy that can be secured and fast-moving even if it is high cost for policy preparation for railway transportation in the post-corona era.

2. Various Effects of Corona 19

2.1. Corona 19's effect on the railway traffic

As Corona 19 spread worldwide, each country issued a movement restriction measure that isolates people to minimize the risk of corona infection. As a result, the use of public transportation has been the lowest in the world, and the amount of transportation using public transportation has decreased sharply and the number of cars and do boys has increased[1]. As shown in the following <Figure 1>.

Figure 1. Corona 19 traffic policy cases and prospects.



A new aspect of this corona is the rate of spread: many of the infected people are asymptomatic, infected without being conscious of themselves, and the number of infections has increased exponentially. Air transportation accelerated the global spread, spreading viruses to more than 170 countries in just a few months, and road traffic and rail transportation also played a role in spreading infections to cities and countries. Public transportation contributes to the spread of viruses, but is a very useful means of transporting essential supplies. This illustrates how complementary transportation and health systems are due to the Corona 19 virus[2].

In Korea, the core of urban transportation used by 10 million citizens is subways, with an average of 7.5 million subway users per day. The subway has always been a constant in the development and change of the metropolitan area, and has become a living space with various cultures and information, not a simple transportation, but a meeting place where people and people are connected. When the Corona 19 virus occurred at the beginning of this year was in serious phase, the subway operating agency faced this unprecedented situation and carried out a total preventive measures to minimize the cause of infection in the subway by converting all employees into emergency systems. It was a demonstration-level anti-virus. Through an internal campaign called “Excessive preemptive response is better than infection,” the subway operator has taken preemptive measures, and as a result, infections spread on subways, which has become a rare routine[3].

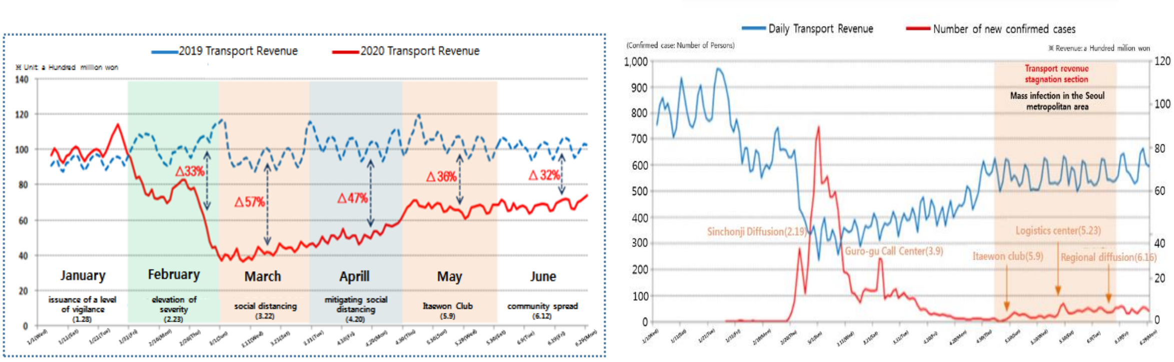
2.2. Corona 19 countermeasure for high speed railways

Korail started operating an emergency management committee in February by forming an emergency response TF team led by the president. First of all, the government focused on preventing the spread of infection by installing 102 thermal imaging cameras in 92 major areas across the country. In order to maintain social distance, various measures were attempted to minimize contact between customers by prioritizing the left and right seats of the train, and to allow them to sit as far away as possible from the train as possible by expanding the supply of free seats by three to five for customers with regular passes[4].

In particular, KTX special transport service was implemented for overseas entrants to help them overcome the Korona19. After creating and accommodating isolation compartments specifically for the arrivals, the front and rear compartments attempted to transport them to the blanks without carrying other passengers, and took the lead in realizing their role and value as a public corporation by transporting them free of charge for medical volunteers in Daegu. Although this contributed to reducing the spread of infection, sales were shown to be a huge loss. Transportation sales plunged to 495 billion won, down 4.2 billion won a day on average, and down to 55 percent year-on-year, indicating a serious deterioration in management. Fortunately, the impact of sales decline was relatively lower than that of high-speed trains, with metropolitan railways falling 30 percent and the logistics sector falling 7 percent.

<Figure 2> shows the trend of monthly transportation revenue, which shows that when the Corona 19 incident was upgraded to a serious level in February, transportation revenue dropped sharply and peaked in March, when social distinctions were implemented, and as the distance eased a little, it started to recover slowly from April and remained stagnant in May-June. The picture on the right shows the daily trend of Corona 19 confirmed numbers and transportation revenue fluctuations, which can be seen as a sharp drop in transportation revenue on the day when the Corona confirmed numbers are high. It can also be inferred that the train utilization rate in areas where multiple confirmed cases have occurred has decreased by a greater margin[5].

Figure 2. Monthly transport revenue trend and variation of corona 19 confirmed number and transportation revenue.



2.3. Corona 19 countermeasure of urban railway

Since the early days of the Corona 19 crisis, subway trains in Seoul have been thoroughly disinfected and disinfected every day, and there have been no cases of infection in the subway. Believing that "excessive preemptive response is better than infection," he made all-out efforts to prevent and overcome Corona 19. Of course, urban railroads also saw their transportation volume drop by 30 percent and transportation revenue by 28 percent, but they were able to provide safe service to passengers with a preemptive response.

First, the public transportation usage rules were disseminated to all users, and the work was actively promoted, such as the necessity of wearing a mask, not standing facing other passengers, cell phone or companionship, hand washing after using public transportation, and applying hand sanitizer. Not only Seoul but also local governments across the country operate subways, and various attempts have been made to cope with the Corona 19. The Daegu area operated the first senior citizen preferential section to protect the elderly, and social distance stickers were attached to encourage users to participate in the natural distance zone. Daejeon published an English version of the Corona 19 response white paper and delivered it to local governments around the world. In Busan, passengers who ignored the recommendation to wear masks were restricted from boarding, while Gwangju Metropolitan Rapid Transit enforced a 50 percent reduction in rent for rental facilities in the station district to revitalize the shrinking local economy[6].

The most impressive measure is the 'crowd forecast' of the Seoul subway system. By providing the highest congestion section, congestion time zone, and congestion level by route through official SNS, users can avoid congestion time zones on their own. In addition, it is judged that it was a very appropriate measure to thoroughly follow the step-by-step management details by establishing the management standards for congestion on its own. The table below is the subway congestion management standards prepared by the Seoul Metro for the safety of subway passengers.

Table 1. Management standards by subway congestion level.

Phase	Congestion degree(%)	Civic feeling	Key management content
Margin	Less than 80	Most of them are seated, aisle available	Safety personal ride and maintain order
Normal	80-130	Easy to move	Safety personnel guide passengers to distributed boarding
Attention	130-150	Collision on the move	Strong recommendations for wearing masks
Congestion1	150-170	Unable to move in train, shoulder to shoulder	Restrict entry when not wearing a mask, emergency standby train input
Congestion2	More than 170	Unable to move in train, close to body, unable to lift aims	Congestion 1 level measurer, passing uninterrupted major cognition section

There have been a flood of requests from overseas subway operators to share their experiences in preventing and responding to the Seoul subway system. Through this, it is believed that the world recognizes Korea's efforts to respond to Corona 19. The high-population subway system is drawing keen attention not only to the Seoul subway but also to the response of subway operators around the world. It is time for each national subway operator to share information on how they are responsible for the safety of many people and play a role as a means of transportation in a restricted and restricted environment due to the unprecedented corona virus.

2.4. Corona 19 response cases for overseas urban railway

CoMET is a worldwide urban railway research organization led by the Transportation Strategy Center(TSC) of Imperial University in the United Kingdom. It is an organization that has 42 companies that operate the world's leading urban railway, and measures to cope with the Corona 19 crisis are becoming a big issue. Recently, the Seoul Metro's response to infectious diseases was jointly ranked No. 1 with Hong Kong's MRT, prompting the Seoul Metro's response to become known worldwide. Next, we would like to look at examples of 42 subway operators around the world that have been well-shared with response data and draw suggestions[5].

2.4.1. Hong Kong metro

The response to the Corona 19 incident in Hong Kong's subway system is considered one of the most outstanding areas in the world along with the Seoul subway. Hong Kong Metro operated separate health and health committee from the corporate infectious disease management team for proactive response and preventive measures, and continued public relations and education through seminars and posters to the public. The employees conducted daily health monitoring, maintained their work places and commuting management through the rear support department, and thoroughly carried out internal quarantine systems, including banning all group activities and visitors while allowing about half of the employees to work from home.

In addition, employees were encouraged to work from home through special paid vacation spots and special allowances, disinfection on stations and trains was carried out every day, and vehicles and facilities were cleaned every two hours. All employees were required to wear masks, check their body temperature before starting work, and strengthen disinfection on trains using robots. Hong Kong's subway system saw a 33.6 percent decrease in passengers due to the Corona crisis, and has maintained subway demand through a 20% discount on train fares for one year.

2.4.2. Beijing subway

The Beijing subway currently has about 40,000 daily workers, but zero cases of infection have been reported. In addition to basic history and disinfection of vehicles, this is the result of body temperature measurements on all passengers entering and leaving history, and customers without masks refused to transport them. In addition, the waiting time was reduced by conducting a trial ride on a reservation basis, and preventive measures were taken in advance by predicting an increase and decrease in the number of passengers in each stage[7].

2.4.3. Delhi metro

The Delhi subway allowed only essential travel from the severe stage of Corona 19, and trains operated flexibly as well. From the end of March, the train service was operated only twice in the morning and afternoon, and the rest of the trains were suspended. In particular, the measure was taken to keep employees in history only, to not reside employees every six days, to conduct video meetings and telecommuting, and to operate employees with minimal staff.

2.4.4. Sydney trains

In order to keep social distance, the Sydney subway system has also been implemented to maintain only the required workforce and work from home, and has continued to operate flexible work patterns to get positive reviews from employees.

2.4.5. Barcelona Spain

Spain is a region with a large number of Corona 19 infections, with a far greater drop in traffic than other countries. This seems to be the result of the suspension of the subway. The biggest feature was that e-learning services were implemented to strengthen telecommuting and communicate with related employees by conducting a campaign called "Don't move if you don't need it."

2.4.6. Portugal Lisbon

Transportation demand for the Lisbon subway in Portugal also plunged 85 percent. Currently, there are no infected employees, and even on weekdays, the operation rate was naturally reduced by 30%. Although all subway stations have isolation spaces, gates are open at all times, and temperature measurements are not taken for passengers, employees in the customer contact department are required to wear masks at all times.

2.4.7. Moscow metro

The Moscow subway also saw a 50 percent drop in traffic and, in particular, kept passengers at 65 percent by operating vehicles with air purification systems. More than 5,500 air purifying devices, including air sterilizers, were installed, and disinfection was carried out every hour along with water cleaning in all areas within reach. Passengers are remotely sensing body temperature.

2.4.8. Buenos Ayres metro

The Buenos Aires subway system saw a 98 percent decrease in passengers due to government quarantine measures. In particular, trains were allowed to operate only at adjacent stations, and only one entrance was used in one history, and only seat passengers were allowed to transport. For on-site manpower management, employees aged 60 or older were relieved of their duties and adjusted their work schedules to prevent contact with shift workers. Cleaning and disinfection were changed to surface cleaning, which could be contagious, and psychological atrophy was prevented by praising hard work such as encouraging field staff through SNS.

2.4.9. New York mta

New York is an area where the number of corona 19 infections has soared in a short period of time. As of March 15 this year, all schools were closed, minimum necessary movement was allowed, and only stores such as supermarkets and pharmacies were operated. Compared to last year, passenger traffic decreased by 90%, and only the Metro card was used to close face-to-face zones with employees and passengers.

As seen above, subway operators around the world have implemented telecommuting to prevent infection of employees who can contact customers first and greatly reduce the number of train operations. In common, it can be seen that the volume of transportation and transportation sales have dropped sharply. These factors are due to the issuance of the restriction on movement and show that each country's subway operators are implementing a quarantine suitable for the level of exhibition. CoMET members are responding to the Corona 19 incident by sharing various preventive know-how with each other, although the environment is different for each operating institution[8][9].

3. Future Response Strategies for Railway Transportation

3.1. Future prospects for public transportation

Unlike natural disasters and wars, the pandemic of the Corona19 epidemic has been shown to require the establishment of a more reliable sustainable transportation system without affecting the physical infrastructure of transportation[10]. Given that the post-Corona era is likely to maintain or expand the flexible work system, such as telecommuting, along with experts' judgment that a complete end to the Corona 19 crisis will be difficult, it is possible to predict that people's traffic patterns will change. After all, in terms of transportation policy, the constant of infectious viruses has been added. Future transportation policies must meet both aspects at the same time: existing policies and infectious virus situations. To reflect this, measures to reduce the density of use should be preceded first. This is due to concerns that the inherent nature and possibility of public transportation, which transports large numbers of people quickly and effectively at low prices, could rather increase the chances of infection. Although the Corona 19 incident reduced the number of trains to implement social distance, it is desirable to increase the number of trains during rush hour to disperse the density of passengers. Strengthening the flexible work system and the jet lag system in a company will prevent excessive concentration during rush hour.

In addition, the government should find ways to enhance the safety competitiveness of public transportation by strengthening the quarantine system so that it can be operated on a regular basis even after Corona 19. A policy approach is needed to drastically strengthen quarantine measures so that passengers can ride safely and to reduce the congestion of public transportation as much as possible. On top of that, it is also necessary to consider changing the seating arrangement of trains used for long-distance travel to a form that minimizes contact between passengers. As travel by rail has greatly decreased, but the essential manpower of the operating institution is still needed, it is also necessary to consider redesigning the overall railway system to sustain these services.

The good thing about the Corona 19 incident is that it quickly recognized the need for new technologies such as big data, artificial intelligence, the Internet of Things, 5G, and block chain.

Applying these technologies to transportation could help solve traffic problems that have become difficult due to the Corona19. As demand has decreased, efforts to save money by overhauling systems and systems are also important[11].

3.2. Establishment of a safe quarantine system to improve the reliability of railway traffic

The use of cars has increased due to the Korona19, because safety cannot be trusted when people use crowded trains. Therefore, the most urgent issue for railway transportation is to give people the confidence that the railway is operated by safe prevention. For this purpose, the service facilities such as stations and trains are equipped with a regular quarantine system in preparation for another infectious virus. Through regular quarantine of stations and trains, which are multi-use facilities, the government should focus on improving public transportation awareness and securing customer trust. In particular, it is necessary to refine cleaning standards by developing pollution indicators while strengthening the standards for regular quarantine by applying the standards of Corona 19 cautionary steps. In addition, in the case of subways, it is absolutely necessary to operate air purification systems tailored to underground stations by thoroughly managing fine dust due to the nature of underground stations.

The second is the establishment of a preemptive quarantine response system. It is urgent to strengthen expertise in crisis management, expand professional manpower and introduce emergency response training for anti-virus in order to systematically respond to the phased issuance of infectious diseases. This is because no one can predict what strain of the virus will occur again. Therefore, it is possible to enhance the ability to respond to various anomalies caused by virus infection by manualizing the response systems such as public health, quarantine, employee protection, and train operation in stages of infectious disease risk.

The third is the development of railway disaster management technology using IoT technology. It is necessary to develop an intelligent platform for responding to disasters so that optimal evacuation route information can be provided to customers in real time in case of disasters such as fires and terrorism in history. In addition, it is necessary to develop a system that adds automatic detection or automatic notification in a system that analyzes situations such as trespassing on tracks, fire monitoring in stations, or falling on escalators through CCTV footage. Costs for developing the system should be recognized as post-corrosion or value investments to prepare for the era[12].

Finally, it is going to implement a safe railway by providing customized real-time information. Immediate action can be taken if information is shared in real-time regarding inconvenience(crowdness, room temperature, etc.) or emergency(train accident, sex crime, etc.) of customers based on customer location while using trains or trains. In addition, in case of unusual cases such as delays in trains, a safe railway can be implemented to customers by providing customized guidance depending on the situation, such as waiting for trains or boarding trains.

3.3. Improve service convenience through untact technology

Many things are being done non-face-to-face when people are out of touch with the Corona 19 incident. Against this backdrop, railways should also apply the untact technology to lay the foundation for more convenient use of railways by customers. Above all, convenience should be enhanced by the purchase of online rail tickets. Train inquiry and ticket purchase services may be provided in connection with Internet portal sites, SNS, etc. From the beginning of the simple task of booking tickets, if various services are provided for customers, customer satisfaction will rise. In addition, if the train is inquired through voice assistant(Bixby) by linking external AI and voice platforms to make it easier for IT vulnerable people to purchase tickets, it is expected that the responses of young people as well as the elderly will be very big[13].

The second is to expand non-face-to-face information services using IT technology. A separate app can be installed on a customer's smartphone to digitize services that guide the location of facilities in the station, information on platforms, and routes of movement. These services will be well received by young people who are familiar with digital. In addition, an unmanned in-vehicle check-in system allows customers using in-flight QR scanners to perform their own checks, omitting the cumbersome face-to-face ticket verification process. If we introduce AI-based customer guide robots such as airports to solve simple civil complaints and simple queries, it will not only provide prompt service at the site but also increase the efficiency of employees' work.

The third is to provide customized integrated transportation services using big data from train use. It provides customized information optimized for customers based on personal usage data such as inquiry information, purchase history, and preference through Korail Talk. By predicting preferred ticket information through user data analysis and providing customized information such as frequent stations and preferred train recommendations, tickets can be paid immediately, which can improve convenience of purchase. They may also consider providing integrated transportation services so that they can freely use public transportation and transfer without a terminal tag.

If speedgate, which is automatically paid in conjunction with the mobile app when entering and entering the fare area by recognizing the location information of customers, is introduced, it will not only improve convenience of movement but also provide optimal traffic route information based on user-specific traffic information by minimizing contact between people and objects in the process of using the means of transportation[14].

Finally, there is a need to improve the way employees work using IT technology. In particular, mobile offices can be implemented by expanding practical functions such as receipt of documents, reading, drafting, and sending of work-related materials through mobile devices and improving accessibility of work-related materials so that they can be applied flexibly to various working patterns such as business trips and telecommuting. On top of this, we can improve work productivity by automating simple and repetitive tasks and focusing on valuable tasks through minimizing human error.

4. Conclusion and Implication

So far, it has examined how railway traffic has responded to the Corona 19 crisis and suggested what strategies should be prepared for changing traffic patterns. In the post-Corona era, as the overall frequency of traffic decreases, the use of cars instead of public transportation is expected to increase, and even if public transportation is used, high-end service means with low congestion in cars are expected to be preferred. Large cities in foreign countries are implementing new policies to cope with daily changes changed to Corona19, seeking substantial changes, including measures to protect drivers and ban passengers from boarding front doors to ensure normal operation of public transportation even when shut down.

In addition, the number of users in urban areas overseas is increasing significantly as attention is focused on small mobility devices(PM) such as bicycles and electric kickboards, which minimize contact with other people rather than public transportation[1][15].

As mentioned above, I would like to stress that the only way to enhance the competitiveness of railway transportation, which is initiated by 10 million citizens, is to establish a reliable prevention system for railways and apply the expanded safety concept to cope with all factors threatening safety, such as disasters, diseases, and environmental issues, amid expectations that the use rate of self-driving vehicles will increase and the amount of railway transportation will decrease.

In addition, it is considered to be a major role of railways to promote the expansion of non-face-to-face services and the overall smartization of railway services in the 5G era in response to accelerated digital innovation. Railways form a close relationship with the local economy. In order to revive the sluggish domestic economy, the government should also actively express the value of railroads linked to the local community. The Corona 19 incident is still ongoing and should not be neglected until the situation is over. The way to prevent another confusion is to diagnose the upcoming post-corona era in advance and establish countermeasures. This is why we need to prepare for the railway traffic we always encounter and use.

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6. Contribution

6.1. Authors contribution

	Initial name	Contribution
Author	EKP	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Corresponding author
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Analysis of the Perception of Leaders and Participants for the VALUE Creation of Sports for All in Urban Society

Sungho Nam[1]
Myongji University, Seoul, Republic of Korea
Jaebum Lee[2*]
Myongji University, Seoul, Republic of Korea
Jungmin Oh[3]
Dongbang Culture University, Seoul, Republic of Korea

Abstract

Purpose: *The purpose of this study is to present a policy plan for the activation of life sports through the survey of participants and leaders about Sports for All in urban society.*

Method: *The subjects of the study were sampled by 309 participants and 151 leaders in 25 districts of Seoul, Korea, and the sampling method was based on the convenience sampling and judgmental sampling. For this, conducted frequency analysis and technical analysis on Sports for All program, information and publicity provision, awareness of leaders, Sports for All facilities by dividing them into life sports participants and leaders followed by comparison and evaluation. And the independent-sample t-test was performed to examine the awareness difference between the two groups.*

Results: *First, as for an activation plan for Sports for All program, it is necessary to secure diversity according to sport events, to construct a program according to local characteristics, and to gradually improve physical and mental factors. Second, as for an activation plan for information and public relations of Sports for All, it is necessary to expand the participation of potential sports enthusiasts by establishing/operating a life sports information support system, providing personalized information, and diversifying public relations media. Third, as for an activation plan for activation of Sports for All leaders, this suggested the establishment of institutions for the training of high quality leaders, the institutionalization of free discussion time, the investment of continuous leader education, and the efforts to improve the treatment of diverse leaders. Fourth, as for an activation plan for activation of Sports for All facilities, this suggested the expansion of auxiliary facilities and major facilities, the improvement of accessibility to Sports for All facilities, and the development of developed country type life sports.*

Conclusion: *These results are expected to be provided as useful data for increasing the quality of Sports for All and enhancing participation rate. Furthermore, it is expected that they will be the important data for establishing a policy plan to improve citizen's health and quality of life in urban industrial society.*

[Keywords] Perception, Leaders, Participants, Value, Sports for All

1. Introduction

Unlike in the past, modern people's living standards are changing rapidly, and changes in daily life following the revolution of information and communication are being projected in various ways throughout life in general. In particular, it can be seen as a time when the quality of life related to health is changing significantly due to the increase in national income and the wider movement of the national welfare policy[1][2].

On the other hand, the increased leisure time prefers active leisure activities such as mountain climbing, travel, and sports to improve health, satisfaction of life, and quality of life rather than passive methods such as watching TV, watching movies, and sleeping[3][4]. In particular, the decrease in human physical activity brought about by economic prosperity and the incidence of obesity, diabetes, and various adult diseases are considered a serious social problem, and many people have come to pay attention to improving the quality of life through increased sports activities.

Due to this change in perception, Sports for All are recognized as an important social phenomenon to utilize leisure time, and it is said that this is the background in which the general interest in sports, which is the most basic element of the desire to lead a healthy life, has become established as a general means to be healthy[5][6]. In Korea, in 2016, Korea Council of Sports for All and the Korean Sports & Olympic committee were integrated, and the historical movement of the sports history began, in which the elite sports and the life sports were mutually active, such as programs[7].

At the time of integration, it was expected that the sports activities of the Korean people would be improved to a more convenient and professional environment, and Sports for All would greatly develop, but in reality, they are experiencing a lot of difficulties, and it is confirmed that many organizations are still suffering from pain. Seoul is the capital of Korea, counted as the first among 17 metropolitan cities, and as a metropolitan with a population of 10 million, it is also a political, economic and administrative hub. Therefore, it is not unreasonable to say that the administrative matters and activities related to sports in Seoul are representative of other local governments.

Accordingly, in this study, for participants who are active in the sports club in Seoul and sports leaders in each district, through quantitative research, this study attempts to find out how to create the value of Sports for All. Examining the previous studies, it can be seen that research is being actively conducted for various participants in Sports for All, such as activation plan for foreign migrants' participation in Sports for All for social integration[8], activation plan for life sports for the elderly in the aging era[9][10], and activation plan for women's Sports for All[11], etc.

According to a study[2][12], that investigated capacity building and activation related to Sports for All, it is argued that life sports should be encouraged and nurtured so that all citizens can engage in voluntary and sports activities to promote health and physical fitness, rather than fostering professional sports support centered on elite athletes. In addition, to activate Sports for All, the capacity of leaders, safety of facilities, and diversity of programs should be constantly maintained, and also emphasis is on the delivery of efficient and correct exercise methods through the creation of culture of Sports for All leaders[13].

Therefore, the subjects of this study were divided into sports participants and leaders, and this study compared and evaluated on sports programs, information provision and promotion, perception of leaders, and Sports for All facilities. These efforts will help to identify the social value of sports and to suggest policy measures to improve individual happiness and welfare level.

2. Methods

2.1. Participant

For the selection of participants in the study, a survey was conducted by extracting samples from participants and leaders in sports in 25 districts of Seoul. As for the sampling method, survey subjects were sampled by convenience sampling and judgmental sampling among the non-probability sampling methods. As for the participants in Sports for All, 309 valid questionnaires were used for analysis, in the case of Sports for All leaders, all three or more leaders from

25 districts of Seoul participated, and 151 copies of questionnaire were collected and used for analysis.

2.2. Instruments

The measuring tool used in this study was the research contents of Lee(2015) that was supplemented[14], and the items used in the questionnaire were revised to suit the purpose of this study by referring to the opinions of the leaders of the Seoul Council of Sports for All. First, to grasp the level of participation in life sports, what kinds of sports are participating was checked, and the items with regard to participation effects of participants in Sports for All and the work perception of the leaders were constructed. In addition, the measurement questions for each study subject were finalized with the contents of the perception of the composition of the sports program for Sports for All, information and promotion of Sports for All, the leaders' perception of Sports for All, and the contents of Sports for All facilities.

2.3. Data analysis

The following empirical analysis was conducted using the SPSS 21.0 program for data analysis. First, frequency analysis and descriptive analysis were conducted to compare and evaluate the Sports for All program, the provision of information and promotion of Sports for All, the leaders' perception of Sports for All, and the perception of Sports for All facilities. Second, the Independent-Sample t-test test was conducted to confirm the difference in perceptions between the groups of participants and sports leaders of Sports for All, and the statistical level of this study was verified at $p<.05$.

3. Results

3.1. Sports for all participants' participation items and recognition effects and leaders' work-related perception

It was found that participants in life sports participated in various sports according to their personal preferences rather than participating in Sports for All with high recognition. Football(18.8%), body-building(12.8%), table tennis(11.7%), yoga(11.0%) swimming(9.4%), and badminton(7.9%), were the most active in the major daily life sports participation events, and it appeared in the order of tennis(7.7%), aerobics(4.5%), golf(3.9%), baseball(3.6%), foot volleyball(3.2%) kendo(2.9%), gate ball(1.6%) and others.

There were six types of participation effects and recognition of participants in Sports for All, and priority was identified in the order of fun, physical strength improvement, weight control effect, stress relief, health and help in interpersonal relationships. In addition, there were six types of work perception of life sports leaders, and priority was identified in the order of recruitment method, professional vision, work satisfaction, work value, pride of Sports for All person and support for Sports for All work.

3.2. Analysis of differences in perceptions between groups about sports for all programs

In the results of analyzing the difference in perception between the participant group and the leader group about the sports program, it was confirmed that there was no difference in the case of diversity factors and physical factor and that there was a difference between groups in mental factors. <Table 1> below shows the analysis of differences in diversity and physical and mental perception between groups.

Table 1. Analysis of differences in perceptions between groups about sports for all programs.

Division		Mean		Standard deviation		t-value	p-value
		Participant	Leader	Participant	Leader		
Sports programs	Diversity	3.45	3.57	0.735	0.696	-1.677	0.095
	Physical factor	3.79	3.87	0.667	0.670	-1.200	0.231
	Mental factor	3.80	4.02	0.669	0.709	-3.209	0.001*

Note: *p<.05.

3.3. Analysis of differences between groups on information and promotion of sports for all

In the results of analyzing the difference between the participant group and the leader group on information and promotion of Sports for All, it was confirmed that there was no difference in the case of information factors, and that there was a difference between groups in public relations factors. <Table 2> below shows the analysis of differences in information and promotion between groups.

Table 2. Analysis of differences between groups on information and promotion of sports for all.

Division		Mean		Standard deviation		t-value	p-value
		Participant	Leader	Participant	Leader		
Information and promotion	Information factor	3.40	3.54	0.781	1.233	-1.267	0.206
	Promotion factor	3.27	3.04	0.847	0.783	2.906	0.004*

Note: *p<.05.

3.4. Analysis of differences between groups on perceptions of sports for all leaders

In the results of analyzing the difference between the participant group and the leader group on the perception of Sports for All leaders, it was confirmed that there was a difference in perception among the groups in the teaching method and leadership competency factors, and that there was no difference between groups in leader training factors. <Table 3> below shows the analysis of differences in perceptions of Sports for All leaders among groups.

Table 3. Analysis of differences between groups on perceptions of sports for all leaders.

Division		Mean		Standard deviation		t-value	p-value
		Participant	Leader	Participant	Leader		
Perception of leader	Teaching method	3.66	4.09	0.778	0.556	-6.711	0.000*
	Leadership competency	3.71	4.24	0.812	0.542	-8.317	0.000*
	Leader training	3.48	3.56	0.810	0.791	-0.977	0.329

Note: *p<.05.

3.5. Analysis of differences between groups in sports for all facilities

In the results of analyzing the difference between the participant group and the leader group for Sports for All facilities, it was confirmed that there was a difference in perception between groups in the factors of auxiliary facilities, and that there was no difference between groups in major facilities and accessibility factors. <Table 4> below shows the analysis of differences in Sports for All facilities between groups.

Table 4. Analysis of differences between groups in sports for all facilities.

Division		Mean		Standard deviation		t-value	p-value
		Participant	Leader	Participant	Leader		
Sports facilities	Auxiliary facilities	3.22	2.98	0.824	0.760	3.023	0.003*
	Major facilities	3.32	3.21	0.765	0.692	1.601	0.110
	Accessibility	3.20	3.06	0.866	1.092	1.334	0.183

Note: *p<.05.

4. Discussion

The purpose of this study is to present a policy plan for the creation of values of Sports for All by grasping the current status and perception of participants and leaders about Sports for All in Seoul. Specifically, after comparing and evaluating the Sports for All program, information provision and publicity, perception of the leaders, and Sports for All facilities by dividing it into sports participants and leaders, an activation policy plan was derived in this study.

In general, participation in sports activities can satisfy the needs of modern people in the most beneficial and generalized way, and healthy sports activities can lead to satisfaction not only for social and psychological health, but also for physical and mental health. Participation in these sports activities is no exception to students, youth, seniors, housewives, and the elderly, and in terms of lifelong physical education, sports activities are very important to individuals[15]. This study attempts to present the following, based on the analysis results from the results of researching policy plans for activating Sports for All in terms of such lifelong education sports.

First, it was found that Sports for All programs were generally positive, but that the diversity factor of the program had areas to be improved for both participants and leaders. The questionnaire items for measuring the diversity factor showed lower score distribution than the physical and mental factors, and similar perception was found in differences in perceptions between participants and leaders. In particular, the lowest score was found in the perception survey of leaders with various program compositions for each category, and it is necessary to consider securing and diversity of programs that take into account the participants' preferences, environment, and level of exercise[16]. Therefore, the policy plan for activating the diversity of program composition by item reflects the opinions of participants in the program operation and through evaluations, programs with low performance will need to be drastically changed or abolished.

Second, the provision of information and public relations was found to be positive overall for participants in the Sports for All program, but in the case of leaders, it was confirmed that there are areas to be improved due to relatively negative perceptions in public relations factors. First of all, in relation to the provision of information on Sports for All, leaders should continue to pay attention so that they can easily, quickly and accurately obtain information on programs and facilities that participants participate in, and the establishment of a systematic information provision system is required so that information provision does not end in a single line[17]. Therefore, for this purpose, it is essential to utilize various media such as traditional newspapers, magazines, TV, promotional materials, movies, newsletters, videos, and exhibitions as well as promotional media using the Internet, and smart phone SNS containing space, time, content, and design that potential participants can easily check. In addition, there is a need to increase the number of participants and opportunities for participation in Sports for All through in-depth research and survey.

Third, looking at the results of analyzing the perception between the participant group and the leader group about the Sports for All leaders, in the case of teaching methods and skills, there was a difference in perception between the two groups, and it is seen that they have different perceptions of each other. However, even if there is a difference in perception between the two groups, the teaching method and teaching competency recognized by the participants are by no means low. Therefore, it is judged that the quality and competence of Sports for All leaders have improved a lot, and accordingly, there should be an effort of gradual improvement to continuously maintain the selection and education of Sports for All leaders and strengthening their leadership capabilities. In addition, among the teaching methods, the relative negative opinion recognized by the Sports for All participants is the provision of feedback, and the relative negative opinion recognized by the participants among the teaching competencies is the familiarity of the leader, so it is judged that the feedback provision and familiarity should be considered together[18].

Fourth, in the case of perception related to Sports for All facilities, participants in Sports for All have generally positive recognition, but it was confirmed that there are areas for improvement, as the leader showed a relatively negative perception of facilities and accessibility. Perception of Sports for All facilities is a major variable that improves the overall vitalization and satisfaction of Sports for All, and improvement measures must be followed[19][20][21]. In the case of auxiliary facilities for Sports for All, it was found that participants and leaders had different perceptions from each other. In particular, it was found that auxiliary facilities were more negatively perceived by the leader group than the participant group, and the convenience of changing rooms and shower rooms and sufficient parking space were shown to be low. In addition, in the case of leaders, their perception of the diversity of exercise equipment among the main factors of facilities was also found to be low. Therefore, through securing parking lot facilities of currently operating sports facilities, improving lighting facilities, establishing changing rooms and sour facilities, and securing diversity of exercise equipment, etc., it is necessary to provide better benefits to sports leaders and participant.

As described above, the results of this study are expected to serve as useful basic data to improve the quality of Sports for All and increase the participation rate. Furthermore, it is expected that they will be important data in establishing value creation for improving the health and quality of life of citizens in urban society.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Lead Author	SHN	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑
Corresponding Author*	JBL	-Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑
Co-Author	JMO	-Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Corresponding author
E-mail: youngdawnk@hanmail.net

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Design of Liberal Arts Curriculum Centered on Core COMPETENCIES

Youngdon Kang

Dongyang University, Yeongju, Republic of Korea

Abstract

Purpose: *This study examined the reinforcement of the linkage of the university's liberal arts curriculum at the revised core competencies in the national education charter in the 2015. In addition, it was to clarify the ways to enhance the completeness of the liberal arts curriculum. the reasons for introducing core competencies into the liberal arts curriculum, the interconnection between core competencies, and ways to enhance the completeness of it.*

Method: *It was investigated that it has a great effect in increasing the value of self-directed learning and improving imaginative creativity by fusion of learners' theoretical knowledge inquiry and performance ability. Moreover, various teaching and learning methods were sought to enhance problem-solving skills centered on core competencies, and the continuity with the local industry was identified through the link between core competencies and liberal arts education talent training. In other words, it was found that certain core competencies do not exist independently, but that there is an organic relationship between core competencies, it has revealed that two or more different core competencies should be converged to develop one core competency.*

Results: *By expanding these discussions, the major features were examined while analyzing the cases of designing the five core competencies of the faculty of the liberal arts department at D University.*

Conclusion: *The design of the liberal arts curriculum based on the core competencies proposed in this study will help to establish the learning performance and evaluation system, and if the detailed competencies of learners are quantified and evaluated, it can be drawn by the conclusion that they can be used to internalize the quality management of competency-based liberal arts education and to improve education on a continuous basis. It is expected that the curriculum designed based on the competency of liberal arts education wil be useful in designing the competency-based education design of other universities, and it will serve as a reference for the internalization of the expanding competency-oriented education and evaluation.*

***[Keywords]* Core Competency, Liberal Arts, Competency-Oriented Education, Curriculum, Feedback**

1. Introduction

As the hyper-connected society that connects people, objects, and space accelerates, almost all industries are undergoing a strong change in the overall structure or social system. In addition, the Internet of Things(IoT) using sensors and networks and super-intelligent society using various big data are becoming reality[1]. With the advent of the era of artificial intelligence, with the ability to predict and judge of itself, starting with deep learning, where machines learn, the human resources required by companies are also gradually changing and becoming increasingly difficult[2]. In other words, beyond the era of the third industrial revolution, which emphasized one's expertise, the artificial intelligence era emphasized the ability to solve creative problems based on expertise. In this regard, it can be summarized that talented people with qualities such as imaginative creativity, problem solving ability, self-directed learning, and collaboration ability can lead the future society[3].

At this point, as the wave of change in the times is flowing rapidly, is the university, a higher education institution, nurturing the human resources required by society? Most colleges in Korea seem to maintain the 20th century education method. Moreover, one of the final goals of liberal arts education in college is to develop the talent needed for each field of industry. However, like the 3rd Industrial Revolution. which started in 1969, the instructor communicates knowledge in one direction and adheres to the class in a classroom environment with little feedback between the instructor and the learner. In other words, the instructor has been conducting classes for the purpose of delivering the contents contained in them through a set of textbooks, and as a result, the learner is in a hurry to memorize the contents of knowledge. These teaching and learning methods must be satisfied only to acquire simple knowledge. Society is changing rapidly, and people are trying to adapt to the changed environment. However, most universities seem to have a tendency to continue to maintain the existing education system rather than actively responding to the trend of the times.

In particular, the biggest problem of the liberal arts education system is that the link between university education and the community is very weak. Also, the creative curriculum required by the future society is extremely insufficient. At this point, changes in the university's liberal arts system are very important. As part of efforts to resolve the fundamental issues of university education, a lot of discussion began as th whether the university's curriculum is consistent with the talents required by society and industrial society. Accordingly, the design and operation of competency-based curriculum for each university has been reached.

The active discussion of competency-based currculum began in Korea after the OECD released the DeSeCo(Definition and Selection of Key Competencies) research report(OECD, 2005) conducted for about 8 years from 1997. Based on the results of this study, the government suggested six core competencies for the first time in the national level education charter. In the 2015 revised curriculum, community competencies, communication competencies, aesthetic sensibility competencies, creative thinking competencies, knowledge information processing competencies, and self-management competencies required by future society were set and presented[4][5][6]. In addition, it is stated to be raised around core competencies through the curriculum.

It is a very important matter how the liberal arts curriculum is structured in the university, and by what standards, the framework of the curriculum is prepared and implemented in order to cultivate excellent talents required across industries. The liberal arts curriculum of the university should strengthen the connection with society, and the most reational and appropriate teaching and learning method should be developed and implemented as the qualitative basis of the curriculum.

In domestic universities, liberal arts education centering on core competencies should overcome the limitations of education that simply transfers knowledge, and should aim for interactive communication between learners and instructors, rather than instructor-oriented one-way classes. In addition, leaners should be oriented toward leading the class, and feedback between the instructor and the learner should be actively made[7][8][9][10]. Moreover, it should be developed in a direction that emphasizes the ability to solve the underlying problem based on knowledge. It is clear that overcoming the problem of transferring knowledge in one direction and developing the ability to solve specific problems and actively cope with society is a very important thing in the liberal arts education of universities[11].

This study intends to propose a plan to strengthen the linkage of the university's liberal arts curriculum, focusing on the core competencies identified in the national level education charter in the 2015 revised curriculum. Several research topics were set up to achieve the purpose of this study. First, what are the main reasons for introducing core competencies into the liberal arts curriculum? Second, what are the prominent features of core competencies? Third, are there interrelationships between core competencies? And fourth, what is the plan to improve the completeness of the liberal arts curriculum?[12]

In order to deal with the above research topics, the analysis such as research reports, papers, and books was conducted first, and then developed through conceptual analysis and interpretation, expandability, and teaching and learning methods. In addition, this paper was conducted based on the design of the core liberal arts curriculum through a case study on the design of the core liberal arts of D University, and the link between the core competency and the liberal arts curriculum was derived.

2. Design Linkage between Liberal Arts Curriculum and Competency Based on Core Competencies

Competency refers to the ability to faithfully understand and practice learning content. This means that when the learning contents are fully understood, competence can be cultivated when the learning contents are functionally inferred, judged, and applied based on the understanding contents. Competency-centered education aims to avoid the acquistion of fragmentary one-way knowledge, and to cultivate the ability of learners to practice through self-directed learning that solves problems on their own and voluntarily participates. The introduction of the core competency concept into education became the basis for structural reform that lays the foundation for university-specific specialization so that learners can strengthen their practical competency while learning based on their core competencies.

The government has accelerated the change in curriculum to apply and operate competency-centered curriculum. However, recognizing that there is a limit to reflecting the specialized part of each university only with quantitative evaluation indicators, the qualitative evaluation rate was increased while reflecting the autonomy of each university. Therefore, the evaluation contents of the competency-centered curriculum included curriculum construction, application, and operating systems of not only the major curriculum but also the liberal arts curriculum and the extracurricular activities[13]. The university's liberal arts curriculum development method can classify in-depth liberal arts curriculum by considering the competency and connection of liberal arts curriculum centering on six core competencies. The most important point to consider at this time is that theoretical knowledge and functional performance need to be interconnected organically, and objective evaluation should be performed according to the learner's competency level.

First, the concept of the six core competencies will be briefly discussed, and the connection between the six core competencies and liberal arts education will be examined. Community Competency is the ability to actively participate with interest in community development such as the region, country, and the world, and is related to empathy that can elicit interest and application to be implemented. And Communication competnece is the ability to express one's opinion well and to listen and respect the opinions of others, and is correlated with empathy and interpretation.

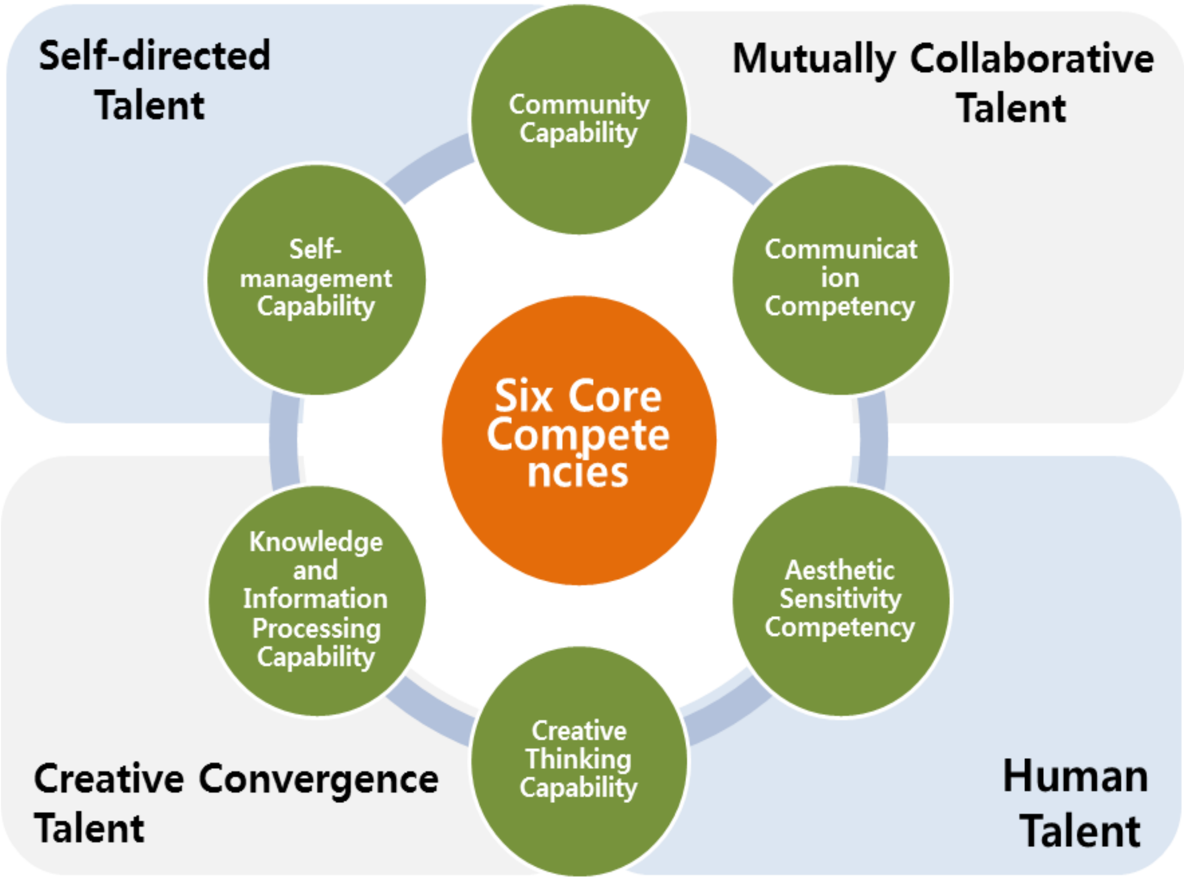
Aesthetic emotional competence is the ability to discover and enjoy the meaning and value of life based on empathic understanding of humans and cultural sensitivity. The concept of aesthetic emotional competency focuses on the ability to reflect and imagine, including openness, sensitivity, and empathy, and needs to be expanded and re-established in the direction of pursuing the possibility of social transformation as well as the enjoyment of personal life. In addition, in the curriculum and classes that develop aesthetic sensibility capabilities, the process of reflecting and imagining together by sharing various perspectives with professors and students through deep attention and open questioning should be reinforced.

Creative thinking competency is the ability to create new things by the convergence of knowledge, skills, and experiences in various specialized fields centering on a wide range of basic knowledge, and it is related to the perspective and use that can lead to insightful abilities[14][15][16].

Knowledge information processing competency is the ability to process and utilize knowledge and information in various fields in order to reasonably solve a specific problem, and is related to understanding the objective validity of collected information and explaining and interpreting the underlying problem.

Self-management competence is the ability to lead a self-directed life. For self-management and preparation for the future, self-management competency is very important in teaching and learning methods of competency-based curriculum for universities in self-directed learning, planning and execution ability, and emotional self-regulation.

Figure 1. Linkage between 6 core competencies and liberal arts education.



As shown in <Figure 1>, it can be understood that the six core competencies do not exist independently, but that two or more different competencies must be integrated in order to maximize one competency.

For example, in order to cultivate creative thinking capabilities, it is possible to cultivate creative fusion talents by fusion with knowledge and information processing capabilities, and to cultivate human talents by fusion with aesthetic and emotional capabilities.

It is necessary to develop a liberal arts curriculum so that learners can be drawn to the surface through performance tasks to design and apply the connection between these core competencies and liberal arts competencies.

Initially, core competencies-centered education focuses on competencies for targets and then reflects actual core competencies. Throughout the curriculum activities, objectives, content, methods, and evaluations also provide methods to develop competencies.

Competency for goals is emphasized throughout the curriculum, and in particular, it is bound to be deeply related to the core competencies of liberal arts education that match the characteristics of liberal arts subjects.

Competency for goals is emphasized throughout the curriculum, and in particular, it is bound to be deeply related to the core competencies of liberal arts education that match the characteristics of liberal arts subjects[17].

As a method to increase the degree of completion of the liberal arts curriculum, this paper is to present three competencies including content-specific competency, methodological competency, and evaluative competency.

First, in terms of content competencies, classes should be conducted so that the contents of liberal arts subjects can properly apply the true meaning of core competencies.

For example, there are reinforcement of core knowledge and skills for each liberal arts subject, classification of core concepts according to systemic standards, and reinforcement of general knowledge and skills for the contents of a curriculum that requires theoretical understanding.

Second, in terms of methodological competencies, various teaching and learning methods should be developed according to the characteristics of liberal arts subjects in order to perform the core competencies well.

For example, there are Flipped Learning-based teaching and learning methods[18], Project-based learning methods, Havruta-style discussion classes, and cooperative activity learning. What is important at this time is that learners must understand the concept of core competencies faithfully, and a learning method in which theoretical knowledge and inference, judgment, and applicable function performance can be organically related to each other should be implemented.

Third, in terms of evaluative competency, rather than sticking to the existing methods such as paper-based evaluation or multiple-choice evaluation, it should be designed and developed in the direction of evaluating task performance evaluation, project evaluation, and creation evaluation.

3. Analysis of Cases of Designing Core Competencies in Department of Liberal Arts, University D

Liberal arts enhances the value of life by acquiring a wide range of cultural knowledge and humanities literacy in the process of personal formation and development of individuals based on academic, knowledge, and social activities. And liberal arts is a valuable academic field that presents a milestone in life. In order words, the degree of interpretation of liberal arts education at university may vary little by little, but it is a fundamental force that creates a rich and prosperous life by cultivating a wide range of disciplines, knowledge, emotions, and morality to lead a social and cultural life. Liberal arts courses are not disciplines that can be solved logically by approaching them objectively like mathematics or physics. Liberal arts can be interpreted differently according to the trend of the times and the environment. This is why liberal arts education is necessary in universities.

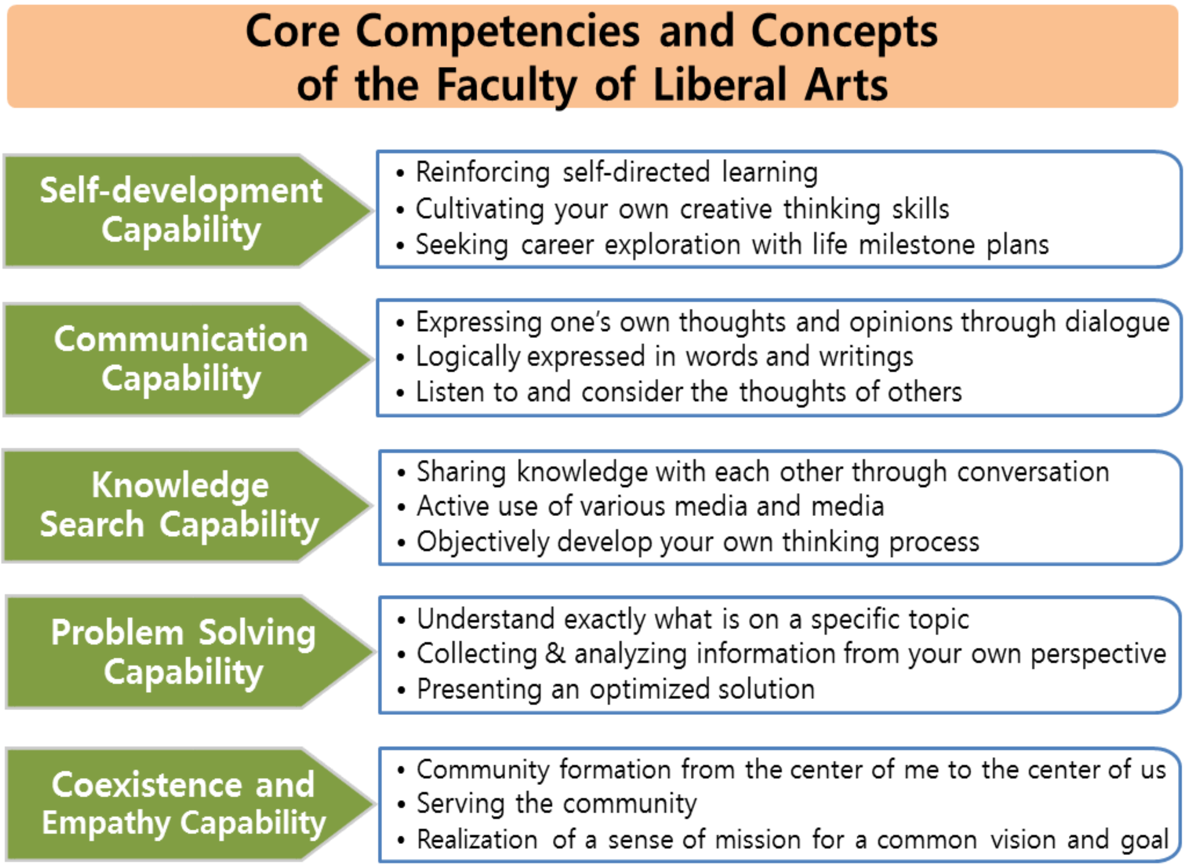
Prior to the design of the liberal arts curriculum based on the core competencies of the department of Liberal Arts of D University, after defining the purpose of the liberal arts education according to the core competencies, it is intended to link various sub-areas of the liberal arts education standard draft of the Liberal Arts Foundation of D University.

The result of designing the curriculum for the core competencies of liberal arts education at D University showed that liberal arts education was not focused on any one area, and it was organized in connection with various core areas so that whole-person education was possible.

D University's Faculty of Liberal Arts aims to cultivate comprehensive thinking and judgment skills, strengthen the ability to actively respond to the era of internationalization and information, and cultivate true intellectuals with desirable values and a view of life.

The core competencies of the Faculty of Liberal Arts are composed of five core competencies: self-development capability, communication capability, knowledge search capability, problem solving capability, and coexistence and empathy capability. The curriculum is structured based on these five core competencies. The definition of each core competency is shown in the following <Figure 2>.

Figure 2. Definition of each core competencies in the faculty of liberal arts.



The five core competencies of the Faculty of Liberal Arts must maintain an organic relationship with each other in major education, liberal arts education, and non-credit courses. In other words, efforts to improve the quality of school education, including major education and liberal arts education, are urgently needed.

The biggest problem in improving the quality of liberal arts education in domestic universities is that they adhere to the teaching method that is not suitable for the trend of the times[19][20]. As the learners' environment is called the smart generation, they quickly acquire and learn various information and knowledge technologies using smart devices, while on the other hand, university liberal arts classes are traditional teaching and learning that simply conveys fragmentary knowledge as mentioned earlier. This may be one of the reasons why learners avoid liberal arts education classes.

The following briefly discusses the main characteristics while analyzing the cases of designing the five core competencies of the Faculty of Liberal Arts[3].

First, rather than conveying a lot of information and knowledge to learners, the content of the curriculum should be structured based on the central idea or core concept of the subject content. The core content of the subject, that is, the formation of the knowledge structure of the subject, should set the direction to focus interest and attention on learners, and to express continuous understanding and creative ideas.

Second, in the course of implementing the curriculum, classes must be conducted so that learners can fully understand the learning content and perform their functions. The content of liberal arts should be formed so that learners can recognize the true value of learning in continuous superficial learning, thereby enhancing the degree of completion of the content.

Third, it is necessary to evaluate learners' comprehension ability in order to measure how much understanding of the learning content has been reached. In the search of subject content, the knowledge of the main content and the performance of the function must be acquired simultaneously based on the inquiry of the question. The degree of comprehension can be assessed in an objective and rational way using a strategic measurement tool. The strategic measurement tools may vary depending on the content of the subject, but should include the ability to perform the project, the ability to understand the content, the ability to understand and use core knowledge, and the ability to communicate to the other party.

Fourth, in-depth learning should be done centering on the core contents of the subject beyond the scope of the traditional teaching and learning methods. In-depth learning is effective when transfer learning is possible based on selected content. Focusing on the development of teaching and learning methods so that in-depth learning can be properly performed centered on the selected subject content.

4. Conclusion

This study proposed a design for a liberal arts curriculum centered on core competencies. In the proposed design model, the value of liberal arts education, which is studied based on core competencies that combines theoretical knowledge and function performance, can be attributed to the following.

First, changes in education can be pursued in various ways beyond the scope of the existing traditional teaching and learning methods. Second, the goal, the contents, teaching methods, and the evaluation method of liberal arts education can break away from the existing practice. Third, a quality management system can be established by developing various teaching and learning methods. Fourth, it is possible to conduct practical classes in accordance with the trend of the times, that is, considering the connection between the university's liberal arts education and the local industry. Fifth, a system of liberal arts curriculum can be built around core competencies.

The design of a university liberal arts curriculum centered on core competencies emphasizes true education that combines learners' theoretical knowledge inquiry and performance ability, and this convergent education has a great effect in enhancing the value of learners' self-directed learning and the imaginative creativity.

Moreover, various teaching and learning methods were discussed to enhance problem-solving skills centered on core competencies. In addition, the continuity with local industries was examined through the link between core competencies and liberal arts education talent training.

In other words, it was confirmed that specific core competencies do not exist independently, but that there is an organic relationship between the core competencies, and it was revealed that two or more different core competencies must work in a fusion to cultivate one core competencies.

In addition, it was confirmed that major education, liberal arts education, and non-credit courses should not be operated individually, but should maintain an organic relationship with each other. Moreover, it was also discussed that learners' comprehension should be evaluated and implemented in an objective and rational way using a static measurement tool. By expanding these discussions, the major characteristics were examined while analyzing the cases of designing the five core competencies of the Faculty of Liberal Arts at D University.

The design of the liberal arts curriculum based on core competencies proposed in this study will help to establish a learning outcome and evaluation system, and if the detailed competencies of learners are quantified and evaluated, the quality management of competency-based liberal arts education can be improved. Therefore, it can be concluded that this can be used for continuous education improvement.

The results of this thesis are expected to contribute to the public value of not only enrolled students but also graduates, and the curriculum designed based on the competency of the Faculty of Liberal Arts can be usefully utilized when designing the competency base of other universities. In addition, it is expected to serve as a reference for reinforcing competency-oriented education and evaluating learning outcomes that are gradually expanding.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Author	YDK	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑