The Study of Systemic Method to Achieve Learning Performance - The Case of Core Competencies of C University

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Background/Objectives: Recently, there has been active research on how to achieve learning performance, and this research tried to search for a systematic method of achieving learning Performance. **Methods/Statistical analysis**: This research aims to prepare the basis of achievement of learning performance using the case of C University. It is a descriptive survey research to improve university education. **Findings**: This research did a total inspection of freshmen at C University. It was found that the degree of targeted capacity and achievement of learning performance differ depending on departments. Therefore, it is necessary to share them with students, and have policies and ideas students themselves can manage and systematically plan. **Improvements/Applications**: This research found that goals and degree of achievements of learning performance vary depending on colleges and departments. It's necessary to do various research to improve the learning performance of students.

Key words: *Learning Performance, Systematic, Achievement, University, Core Competences.*

Introduction

With the advent of the 4th Industrial Revolution, colleges need to change, and they face overall challenges (Kang, 2018). As elements determining quality of college education, teaching-learning quality and learning experiences of college students have attracted attention. In particular, there is come criticism on the question of whether colleges achieve intended educational outcomes, and the understanding of the relationship between learning performance and characteristics of colleges has become an important issue (McCormick et al., 2009). And, with the continuous rise of domestic and foreign interests in responsibility of college education and quality of education, the paradigm is changing into outcome-centered college evaluations. Accordingly, learning process and outcomes are emphasized. Therefore, it is necessary for colleges to delve into the problems of what environment and what educational experiences they should provide students, to improve leaning outcomes, and we need to do research on how to prepare ways to support and activate students (Ko et al., 2014).

Generally, the learning performance refers to the outcomes represented through the participation in learning and ultimately means the change of individual, but since this includes countless variables related to teaching-learning contexts, it is hard to define clearly (Caspersen and Smeby, 2018). Classically, the recognition of learning performance has been defined as an act to determine if the learning goal is achieved (Tyler, 1950), and the recognition of learning performance was defined as the participant benefits gain by learner (Boone, 1985). Leaning outcomes comprehensively mean various outputs acquired through educational activities, and their contents are capacities and competences students have to acquire (Choi and Lee, 2009); (Ewell, n.d). Above all, we need to think deeply what 'desirable person' is suitable to such an age, and what capacities are necessary to prepare for the future (Choi, 2018).

Since the learning performance in the university is related to the socioeconomic flow, mission, purpose, history, environment of the university, preference of the students, etc, it is hard to standardize and establish simple learning performance indicators (Parks, 2012). Generally, the learning performance in the university is the outcomes obtained by the learner through the university education and the results that the learner knows or can perform through the learning, and as the core competence is emphasized in the university, the contents of core competence were reflected. That is, the learning performance in the university is the outcomes obtained by the learner through the university education and can be the outcomes that the individual learner learned or can performed through the learning process. Therefore, in this study, the learning performance management is analyzed by verifying the competence achievement degree after establishing the competence pursued by a university in the course (the liberal arts and major) registered in the subject completion

system chart and the non-subject study in a 4-year-course at university. The learning performance in the university education is not simply a reflection of an individual's outcomes but should be measured and managed systematically for the development of the country and society. Therefore, the measures for constant enhancement of learning performance will be discussed through the analysis of learning performance fit to the purpose and to the image of talents pursued by C University.

The detailed objectives are as follows.
1) To prepare the basic data to achieve the student learning performance through systematic contemplation of learning performance.
2) To allow the student to manage the learning performance and to improve the quality of education and to achieve the educational goal by building the feedback system through the learning performance analysis.
3) To attempt the systematic management through building the sequential learning performance management system from entrance to graduation.
4) To manage systematically the talent image realization through the achievement of competence by analyzing the learning performance established by university.

Research Method
Research Design

This research is a descriptive survey research to examine and search for ways to improve learning performance using students of a university as the research objects.

Research Subjects

The subjects of this study are the freshmen who entered in the 2018 academic year out, of the students of C University. C University established the core competences in 2018, which set the learning performance and the target competence. The student who entered in the 2018 academic year received the education based on the core competences. The survey was provided to all freshmen, a total of 492 students.

Research Tool
Target Competence of Department

Target competences of a department is the value of core competences that the student must achieve for 4 years and the target value is automatically set based on the subjects registered in the subject completion system chart. The value of the core competence to be achieved for 4 years refers to the value of the credit multiplied by class week (15 weeks) and the subject refers to the subject of liberal arts and a major.

Average Competence of Department

The average competences of a department is the average value of the core competences achieved by the relevant department student (by current academic year) and refers to the achievement degree of competences according to the subject of liberal arts, major and non-subject study completion.

Learning Performance

Learning performance is the value that the individual student has achieved for the core competences and refers to the degree of competences according to the completion of liberal arts, major and non-subject study. In case of non-subject study, the learning performance was calculated according to the hours. Therefore, the learning performance was calculated with the completion of liberal arts and major study and the participation time of non-subject study.

Core Competence

The core competence of C University analyzed in this study was divided into a total of 5 categories: Creative convergence competence, empathy-communication competence, love-devotion competence, affectional multi-citizen competence and network competence.

Creative convergence

The competency to acquired knowledge through the exploration method, to gain the insight of the meaning of knowledge and value, to combine the existing knowledge and information and to practice them in the reality and to create the new value by identifying the correlation between the knowledge.

Love-devotion

The competency to equip the attitude to share having the mind to serve for me, you and us and to act honestly and consistently.

Empathy communication

The competency to make harmony in the community by recognizing the emotion of oneself and others and to equip the attitude to empathize in the relationships with others.

Affectional Multi-citizen

The competency to establish the identity demanded as a member of a country, world community and local community, to understand and accept the diverse cultures and to use diversity in analyzing the given situation or problem with a new perspective.

Network

The competency to solve the complex problems by cooperating with people in the interaction between information and knowledge, using digital technology.

Data Collection

This study intended to analyze the student learning performance data of University in K region, Korea. The subjects are the 492 students entered in the 2018 academic year whom the competence-based education was performed and the data was processed through the school electronic system.

Research Procedure

The procedure to draw the research results is as follows.

1) To verify the definition and the meaning of learning performance, investigation and analysis are performed by contemplating the literatures for the last 10 years.
2) The achievement rate is verified by analyzing the target competence and the average competence of leaning performance.
3) Investigation and analysis the measures to identify the variables related to learning performance and to enhance the learning performance; performed by verifying diverse researches on learning performance.
4) To seek the complementary points and the measures for systematic management of learning performance through the learning performance analysis of the university.

Data Analysis Method

In this study, following analyses were performed with data using SPSS 20 (PASW Statistics 20) program.
1) The target competence and the average competence for the core competence of the students were calculated as average.
2) The achievement rate was calculated as percentage.

Results and Discussion
Complete Enumeration of Freshmen

The complete enumeration of freshmen is seen in Table 1.

Table 1: Proportion of achievement of core competences among freshmen (N=495)

Category	C	L	E	A	N
Target Competence	790.6	309.6	362.9	273.8	232.9
Average Competence	172.9	81.7	134.4	80.5	29.8
Proportion of achievement of core competences (%)	21.9	26.4	37.0	29.4	12.8

C: Creative convergence, L: Love-devotion, E: Empathy communication, A: Affectional Multi-citizen, N: Network

In the results of analyzing the target competence and achievement rate of the freshmen's core competence, for the target competence, the creative convergence was the highest (790.6 points), followed by empathy communication (362.9 points), love-devotion (309.6 points), affectional multi-citizen (273.8 points) and network (232.9 points), in order. In the results of analyzing achievement rate of learning performance, the empathy communication was the highest (37.0 points) and followed by affectional multi-citizen (29.4%), love-devotion (26.4%), creative convergence (21.9%) and network (12.8%) in order [Figure 1].

Figure 1. Proportion of achievement of core competences among freshmen
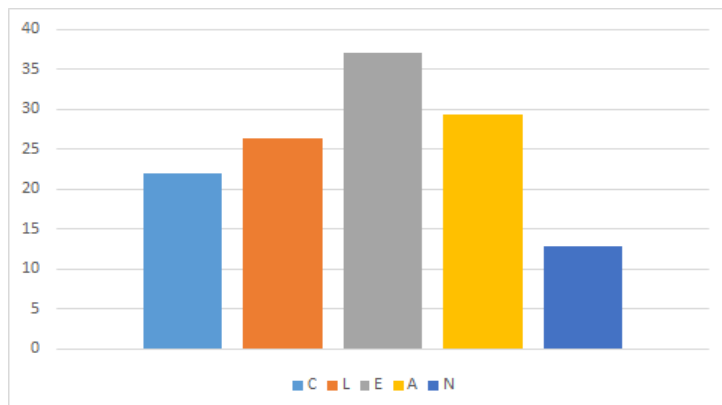
Learning Performance Target Competence and Achievement Level of Health Welfare and Culture College and Future Convergence Knowledge College

The findings of this research divided into different colleges are shown in Table 2.

Table 2: Comparative Analysis of Health Welfare and Culture College and Future Convergence Knowledge College (N=495)

College	Category	C	L	E	A	N
Health Welfare and Culture College (n=313)	Target Competence	994	316	384	276	217
	Average Competence	197	72	135	76	19
	Proportion of achievement of core competences (%)	19.8	22.8	35.2	27.5	8.8
Future Convergence Knowledge College (n=182)	Target Competence	505	136	311	238	227
	Average Competence	154	57	125	88	45
	Proportion of achievement of core competences (%)	30.5	41.9	40.2	37.0	19.8

C: Creative convergence, L: Love-devotion, E: Empathy communication, A: Affectional Multi-citizen, N: Network

C University consists of Health Welfare and Cultural College and Future Convergence Knowledge College. The former is composed of 8 departments including the Nursing Department, and the latter is composed of 10 departments including the Aviation & Mechanical Engineering Department.

According to Table 2, aimed competences of Health Welfare and Cultural College are as follows: Creation convergence competence is the highest with 994 points, followed by empathy communication competence (384 points), love-devotion competence (316 points), affectional multiple-citizen competence (276 points), and network competence (217 points). The proportions of learning performance are as follows: empathy communication competence (35.2%), affectional multiple-citizen competence (27.5%), love-devotion competence (22.8%), creation convergence competence (19.8%), and network competence (8.8%) [Figure2].

In the aimed competences of Future Convergence Knowledge College, creation convergence competence is the highest with 505 points, followed by empathy communication competence (311 points), multiple-citizen competence (238 points), network competence (227 points), and love-devotion competence (136 points). The proportions of learning performance are as follows: love-devotion competence (41.9%), empathy communication (40.2%), affectional multiple-citizen competence (37.0%), creation convergence competence (30.5%), and network competence (19.8%) [Figure3].

■ Department of Health and Welfare and Culture College: Dept. of Nursing science, Dept. of Social Welfare, Dept. of Early Childhood Education, Dept. of Food Science and Nutrition, Dept. of Police Administration, Dept. of Music, Dept. of Costmetology, Dept. of Art Design

■ Department of Future Convergence Knowledge College: Dept.of Aeronautical Mechanical Engineering, Dept. of Airline Service Management, Dept. of Computer Software Engineering, Dept. of Fire and Disaster Prevention Engineering, Dept. of Real Estate, Dept. of Chinese Business, Dept. of Korean, Dept. of Hospitality and Tourism, Dept. of Business Administration and Accounting, Dept. of Civil and Plant Engineering

Figure 2. Health Welfare and Culture College -Proportion of achievement of core competences (%)
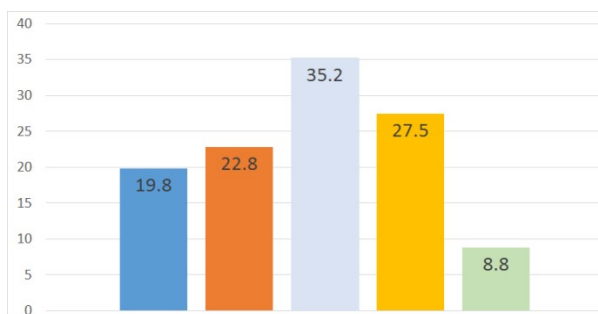
Figure 3. Future Convergence Knowledge College -Proportion of achievement of core competences (%)
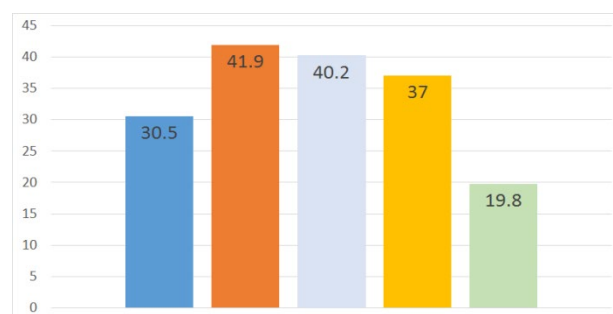
Learning Performance Target Competence and Achievement Level by Affiliation

The results of analyzing by affiliation are as follows [Table 3].
Affiliation is classified into humanities and social studies-related departments, natural science-related departments, engineering departments and arts and physical education-related departments.

In the target competence of the humanities and social studies-related departments, the creative convergence was the highest (553 points) and followed by empathy communication (325 points), affectional multi-citizen (298 points), network (241 points) and love-devotion (159 point) in order. The learning performance achievement rate was analyzed as the empathy communication (38.8%), love-devotion (35.2%), affectional multi-citizen (32.9%), creative convergence (28.9%) and network (15.4%) [Figure4].

In the target competence of the natural science-related departments, the creative convergence was the highest (1,026 points) and followed by love-devotion (345 points), empathy communication (230 points), affectional multi-citizen (222 points) and network (201 points) in order. The learning performance achievement rate was analyzed as the empathy communication (50.0%), affectional multi-citizen (27.9%), creative convergence (22.9%), love-devotion (21.7%) and network (9.0%) [Figure5].

In the target competence of the engineering departments, the creative convergence was the highest (584 points) and followed by empathy communication (337 points), network (257 points), affectional multi-citizen (161 points) and love-devotion (125 points) in order. The learning performance achievement rate was analyzed as the love-devotion (56.0%), affectional multi-citizen (42.9%), empathy communication (35.0%), creative convergence (31.8%), and network (16.7%) [Figure6].

In the target competence of the arts and physical education-related departments, the creative convergence was the highest (1,381 points) and followed by the empathy communication (554 points), love-devotion (485 points), affectional multi-citizen (263 points) and network (114 points) in order. The learning performance achievement rate was analyzed as the empathy communication (31.4%), affectional multi-citizen (24.7%), love-devotion (15.5%), network (12.3%) and creative convergence (11.2%) [Figure7].

**Table 3:** Comparative Analysis of Affiliation (N=495)

Affiliation	Category	C	L	E	A	N
Humanities and Social Studies-related Departments	Target Competence	553	159	325	298	241
	Average Competence	160	56	126	98	37
	Proportion of achievement of core competences (%)	28.9	35.2	38.8	32.9	15.4
Natural Science-related Departments	Target Competence	1,026	345	230	222	201
	Average Competence	235	75	115	62	18
	Proportion of achievement of core competences (%)	22.9	21.7	50.0	27.9	9.0
Engineering Departments	Target Competence	584	125	337	161	257
	Average Competence	186	70	118	69	43
	Proportion of achievement of core competences (%)	31.8	56.0	35.0	42.9	16.7
Arts and Physical Education-related Departments	Target Competence	1,381	485	554	263	114
	Average Competence	155	75	174	65	14
	Proportion of achievement of core competences (%)	11.2	15.5	31.4	24.7	12.3

C: Creative convergence, L: Love-devotion, E: Empathy communication, A: Affectional Multi-citizen, N: Network
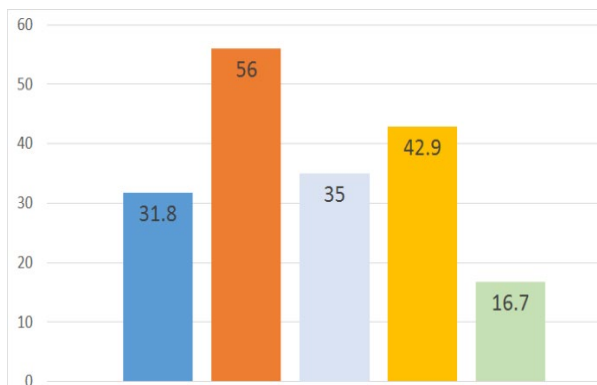
Figure 4. Humanities and Social Studies-related Departments -Proportion of achievement of core competences(%)
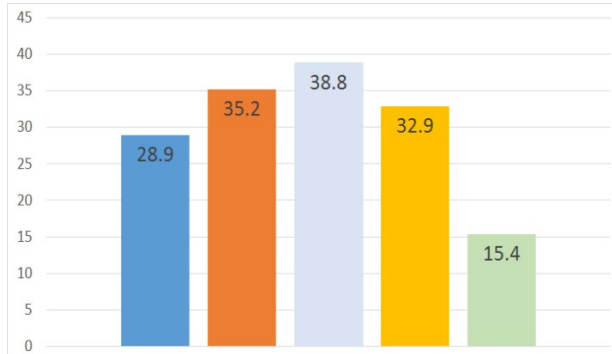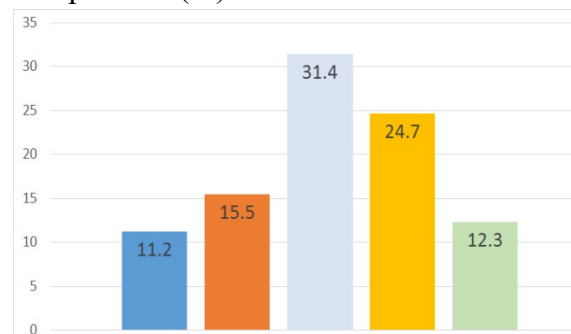
Figure 5. Natural Science-related Departments Proportion of achievement of core competences(%)
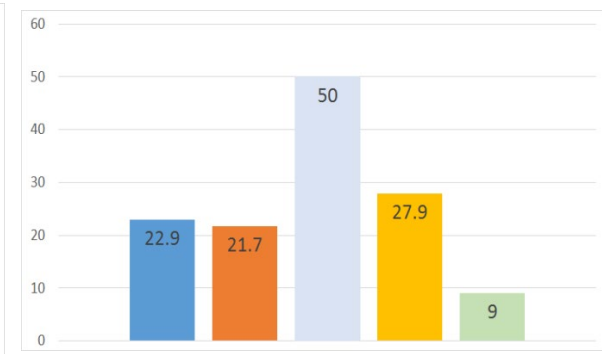
Figure 6. Engineering Departments -Proportion of achievement of core competences (%)

Figure 7. Arts and Physical Education-related Departments Proportion of achievement of core competences(%)

Humanities and Social Studies-related Departments: Dept. of Business Administration and Accounting, Dept. of Early Childhood Education, Dept. of Social Welfare, Dept. of Police Administration, Dept. of Hospitality and Tourism, Dept. of Chinese Business, Dept. of Korean, Dept. of Airline Service Management, Dept. of Real Estate

Natural Science-related Departments: Dept. of Nursing science, Dept. of Food Science and Nutrition

Engineering Departments: Dept. of Computer Software Engineering, Dept. of Fire and Disaster Prevention Engineering, Dept.of Aeronautical Mechanical Engineering, Dept. of Civil and Plant Engineering

Arts and Physical Education-related Departments: Dept. of Costmetology, Dept. of Art Design, Dept. of Music

Discussion

This University education is facing great change according to the social environment, demands of the students and the industry. In the past, developing a new theory and acquiring the knowledge are the major function of the university education but now, the university education is transformed to cultivate the future talents in the 4th industrial age. According to the rapidly changing socioeconomic environment and the change in the employment structure, the university places importance on exerting excellent job performance in the field, coping flexibly with new and diverse jobs and on cultivating various abilities required to live successful life by creating new jobs (Yoo, 2002). Various research related to the learning performance were carried out and diverse variables related to the learning performance such as the satisfaction and pride of the students for the school, sense of psychological stability and anxiety, curriculum, attending attitude in the class (Sin et al., 2008), university atmosphere and quality of lecture, student participation level, counselling with the professor, participation in study group, teaching method (Kim and Rhee, 2003), student participation activities, interaction with professor etc. are under research. Therefore, through the results of this study, the research suggests that attempts to enhance the learning performance should be made continuously.

Conclusion

In this study, the learning performance data of the students in C University in K region, Korea were analyzed. The research concerned 492 students entering the university in 2018. For these students the competence-based curriculum was implemented. The core competence of C University is divided into a total 5 categories" creative convergence, love-devotion, empathy communication, affectional multi-citizen, and network. The core competence was established based on the competence of the liberal arts subject and major studies and the learning performance was calculated according to the achievement in liberal arts, major studies and non-subject studies.

This study analyzed the data of complete enumeration, by university and by affiliation and in the results of comparing the target competence and the average competence, the results were varied. This is because the level of competency to be acquired is different by the area of major study. Particularly, the creative convergence competence is demanded most highly, which is deemed to reflect the goal of the university to cultivate the talents for the 4th era of industrialisation. However, to acquire diverse abilities in the changing modern society, the effort of the university responding to the social change through the continuous development of competence and reflection of competence-based curriculum would be needed. In addition, the learning performance achieved by students should be shared between the professor and the students so that the students can examine and manage their competence

and become talents to lead the 4th industrial revolution. The systematic concentration on the enhancement of student competency is required by attempting the analysis and feedback of learning performance and by reflecting on their results in the university education.

For the limitations of this study and the development direction of learning performance in future, the author suggests the following.

1) Research including diverse factors, to verify the factors influencing the enhancement of student's learning performance, is needed.
2) Sharing the measurement results of learning competence between the university and the students. Diverse measures and policies to manage them systematically by the students are needed.
3) For the balanced development of learning performance, the development and diversification of non-subject studies are needed.
4) For the specialization of university and talent cultivation responding to the 4th era of industry, the consensus of the members to develop continuously the competence and learning performance according to the change of society.
5) This is a study performed with the competence-based freshmen of C University located in K province, Korea and for in-depth analysis and expansion, a replication study is suggested.

Acknowledgment

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