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Structural Analysis on University Students Who Participated in the Courses of the Lifelong Educator in Consciousness of Lifelong Education, Everyday Creativity, Leadership, Cognitive Learning Competency and Life Core Competencies

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Abstract

This paper is an in-depth study on the positive effects of the consciousness of lifelong education among university students. This research found the following results. First, the consciousness of lifelong education among university students has a positive effect on their life core competencies. Second, it increases everyday creativity, leadership, and cognitive learning competency of students. Third, it promotes the life core competencies for students. Fourth, it also advances the mediating effect between consciousness of lifelong education and life core competencies. In other words, the consciousness of lifelong education of university students influences their everyday creativity, leadership, cognitive learning competency and their life core competencies positively as well.

Keywords*: university students, lifelong education consciousness, everyday creativity, leadership, cognitive learning competency, life core competencies*

1. Introduction

The 21C knowledge-based society needs talented people with key competencies that are different from previous societies. In such a fast-moving society, everything is changing, including knowledge, occupations, competencies, and attitudes that the society demands. There is a great need for fostering creative and analytic people who have life core competencies [1]. A terminology, competency, has become an important keyword in various fields recently. This trend is easily identifiable from representative magazines or publications from the U.S. Several innovative domestic companies have actively argued for the notion of the competency-based curriculum, competency-based selection, and competency-based reward [2].

This knowledge-based society puts a greater importance on information and data research, processing of the information and application, and utilization ability for human purposes rather than who has the greater amount of the knowledge [3]. University students need to change their lifelong education consciousness and to develop their everyday creativity, leadership, cognitive learning competency and core competencies related to lifelong education. Because social participation, communication skills and problem solving ability are requirements to live as a healthy member of a society, university students need to promote those [4]. These competencies should be fostered through qualified lifelong education at university and be developed through a campus life. To achieve the desired social and economic results, their effective utilization is necessary.

A modern society needs the flexibility, abilities and skills beyond the conventional ones to work, to live and to learn. Therefore, the preparation ahead is constantly necessary in

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order to foster skills, abilities, competencies and attitude through our life and job. This makes university students prepare for the complicated challenges and complete their responsibilities as citizens and lead a satisfying life through these educational changes. University students should be ready to be capable and creative citizens as social members in the 21C global society after going through this. As long as life goes on, learning should never stop. Therefore, students should be prepared for their life core competencies and be able to access some help for their problem solving abilities. Nations and societies already have started asking for talented people who are qualified with competitive life core competencies. Therefore, the life core competencies -- in other words, communication skills, problem solving abilities and self-directed learning abilities -- are essential basic abilities to live a life as a member of a society. Therefore, a person should promote these core competencies through lifetime [3].

The 21C is a lifelong learning society wherein it is crucial for all members to have a transition of consciousness in building up a lifelong learning society oriented in continuous education. It is necessary to boost lifelong education consciousness to set up a lifelong learning society and make it settle down so that all the members in the society can learn throughout their whole lives by creating a society as a lifetime learning field. To make it happen, it is important for the university students who are about to enter society to realize the necessity and importance of lifelong education as members of society. It is a crucial time for university students to establish an attitude for lifelong education. This time is a starting point to experience and to realize the necessity and importance of it. The lifelong education consciousness of university students can have a direct effect on the development of lifelong education and on continuous participation.

The new millennium will be a creative age that needs the ability for problem solving through creative thinking and fresh, ingenious ideas. Creativity will be the most important ability in the 21C. Scholars have proposed that creativity should be displayed not only at the professional level but also in daily life [5]. There have been lively arguments over the measurements for promoting everyday creativity. In particular, there is significant importance in creativity and its application and practice. Creativity is receiving attention as a precedent condition for a university student to enter society. Therefore, university students must have the ability for everyday creativity. Leadership is also an important ability for leading a successful life as a member in a modern society. In particular, leadership is essential for a person who leads a group with personal abilities for arbitration, responsibility, and captainship to reach a goal effectively with satisfaction in group activities as much as possible. This basically influences the behavior of others in a group, and it is an action for creating a certain social norm. It directs a goal and decides a way to finally achieve it [6]. Therefore, each person can be a leader, depending on the situation; each person should know how to display his or her own leadership in life. University students should try to foster cognitive learning competency for knowledge and thinking, creativity, problem solving ability, and learning methods. Having a cognitive learning competency is the key for obtaining competitive advantages in a society, and it is a part of the basic foundation for learners in a lifelong learning society.

There have been arguments on the lifetime competencies or lifetime skills as basic abilities for the various dimensions of a life related to the life core competencies in Korea. Research on the lifelong education consciousness [7-11], everyday creativity [5, 11-13], leadership [6, 12-15], cognitive learning competency [17-19], and life core competencies [3, 11-13, 17, 18, 20-24] have been carried out. However, these researches have limitations in the structural analysis in each of the categories just listed. This paper takes an in-depth study on the structural analysis among lifelong education consciousness, everyday creativity, leadership, cognitive learning competency and life core competencies.

This study aims to promote lifelong education participation with continuous interest and participation in lifetime education even after graduation. It hopes to promote this through structural analysis among lifelong education consciousness, everyday creativity,

leadership, and cognitive learning competency as well as the life core competencies, and to promote these factors which are necessary for their reality in order to improve the lives of university students. Thus, this paper puts forth a problem posing for structural analysis of variables like the following.

First, how does lifelong education consciousness affect the life core competencies of university students?

Second, how does lifelong education consciousness affect everyday creativity, leadership and cognitive learning competency?

Third, how do everyday creativity, leadership, and cognitive learning competency affect the life core competencies?

Fourth, how does lifelong education consciousness affect the life core competencies with a meditating effect on everyday creativity, leadership and cognitive learning competency?

2. The Relationship of Lifelong Education Consciousness, Everyday Creativity, Leadership, Cognitive Learning Competency and Life Core Competencies

The Korean Educational Development Institute [9-11] has researched life core competencies related to lifelong education consciousness and the characteristics of adult learners (consciousness: understanding, value, and attitude) and how they influence the lifetime learning attitude. The research proposes that most adults in Korea have a substantially high consciousness for lifelong education and they think intrinsic values are more important than extrinsic ones. It shows that the higher level of understanding and value for lifelong education, the more the positive attitude for lifetime learning is. It suggests that setting up the proper consciousness should be a precedent condition. According to this [8], the systematical analysis investigates lifelong education consciousness, leadership, and life core competencies. It explains that the leadership of university students has a meaningful influence on the life core competencies, in addition to having a mediation effect between lifelong education consciousness and life core competencies. Transformation of lifelong education consciousness and the promotion of leadership and life core competencies can be utilized for the lifelong education. Even after graduating from a university, the participation in lifetime education can be increased by active interest and continuous participation in lifetime learning. The consciousness for lifelong education of females [7] was reported to be 87.3% for their awareness of the meaning in lifetime learning and 97.0% of females feel that lifelong education is a necessity.

The study for the feasibility and development of everyday creativity [5] shows that everyday creativity includes ingenious flexibility, problem solving ability, adventurous pursuit of liberty, altruistic self-affirmation, relational openness, personal independence and exploratory immersion. The study on the effects of creative problem solving programs for university students majoring in nursing found [12] that creative problem solving programs influence their leadership, creativity and problem solving ability. Additionally, the study on the effects of everyday creativity, leadership and strategies for emotional regulations [13] reported that everyday creativity, leadership, and strategies for emotional regulations affect problem solving ability.

The development study on leadership evaluating tools discussed [6] that adult, middle, and high school students and elementary school students have higher scores in a row for leadership or human relations ability, but middle and high school students have the highest recreational ability. Elementary school students have the highest life goal awareness. The study on creative problem solving program for nursing students [12] investigates that it affects leadership, creativity, and problem solving ability. The research on how lifelong educators' communication type, ability and leadership influence educational satisfaction

for adult learners [15] shows that lifelong educator's communication type, ability and leadership influence education satisfaction are co-related to each other, and lifelong educator's communication type, ability and leadership influence education satisfaction of adult learners. Among them, the communication ability has a significant effect on the educational satisfaction.

The research on the effect of everyday creativity, leadership and strategies for emotional regulations to the problem solving ability [13] shows that they affect everyday creativity, leadership and strategies of the university students for the emotional regulations to the problem solving ability. The communication ability, lecture skills and self-leadership of lifelong educators [14] have significant influence on lecture skills, self-leadership and self-determination. Additionally, lecture skills and self-leadership have a meaningful mediating effect on the relationship between the communication ability of lifelong educators and self-determination of adult learners. Furthermore, the research on the communication type and effective leadership [16] emphasizes smooth and accurate communication between a leader and the members in a group.

[19] divides learning competence into learning motivation, learning behaviors and cognitive domain through the development and validation of cognitive learning competence. The cognitive domain, in other words, the cognitive learning competency, is subdivided into knowledge and thinking, creativity and problem solving ability. [3] researched the life competencies, including communication ability, problem solving ability and self-directed learning ability through a study on the measurement instrument of life competency.

[17, 18] investigated the structural analysis of lifelong educators' core competencies. In this study, adult learners' cognitive learning competency and life competency show that lifelong educators' core competencies, which adult learners were aware, of has a significant effect on the life competency of adult learners. It also shows that lifelong educators' core competencies which adult learners were aware of affect the cognitive learning ability of these adult learners, and it also shows that the cognitive learning ability of adult learners has a meaningful influence on the life competencies. Additionally, the cognitive learning ability of adult learners has a mediating effect on the relationship between the core competencies of lifelong educators which adult learners were aware of and the life competency of adult learners.

The previous research shows that there is a co-relation among lifelong education consciousness, leadership and life core competencies. Therefore, our research tried to investigate the structural analysis among lifelong education consciousness, everyday creativity, leadership, cognitive learning abilities and life core competencies of university students.

3. Research Methods and Procedures

3.1 Exemplified Research Model

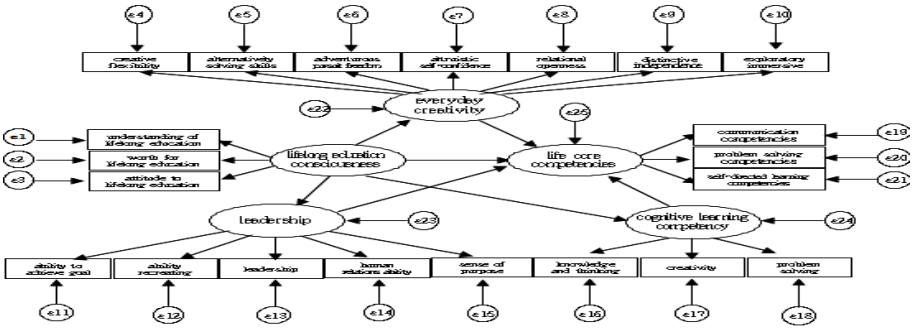


Figure 1. Structural Equation Models Analysis Figure

3.2. Research Objects

Table 1. Demographic Characteristics (n=607)

variables	contents	Frequency (n)	Proportion (%)	variables	Contents	Frequency (n)	proportion (%)
sexuality	man	218	64.1	participation Period	1-2 semesters	88	14.5
	woman	389	35.9		3-4 semesters	279	46.0
years	20-21 years(a)	145	24.3		5-6 semesters	203	33.4
	22-23 years(b)	109	17.8		7-8 semesters	37	6.10
	24-25 years(c)	270	44.4	courses number completed	1-2 courses	177	29.2
	25 years(d)	83	13.5		3-4 courses	298	49.1
cademic years	year 1	78	16.4		5-6 courses	108	17.8
	year 2	236	38.8		7-8 courses	24	4.0
	year 3	255	42.0				
	year 4	38	6.20				

3.3. Measurement Instruments

The measurement method for this study used a Likert scale, ranging from 1 to 5. The choices were: "absolutely not (1 point)", "not particularly (2 points)", "generally (3 points), "mostly yes (4 points)" and "totally yes (5 points)". The higher points mean the higher level of lifelong education consciousness, everyday creativity, leadership, cognitive learning competency, and life core competencies.

As an independent variable, the measurement instrument for lifelong education consciousness used in the lifelong education consciousness scale was developed by Choi, Donmin and others [9]. The measurement instrument for this study consists of 25 questionnaires in total with 4 questionnaires regarding the understanding lifelong education, 12 questionnaires on the values of lifelong education, and 9 questionnaires on the attitude toward the lifelong education. This study has 0.948 of Cronbach's value. It also results in 0.939 of understanding of lifelong education, 0.945 of values of lifelong education and 0.921 of attitude for lifelong education. The measurement instrument scale developed by Jung, Eunee and Park, Yonghan [5] was used as a parameter for everyday creativity. This measurement instrument consists of 36 questions in total, including 8 questions on creative flexibilities, 5 questions on alternative problem solving abilities, 5 questions regarding on adventurous pursuit of liberty, 6 questions on altruistic self-confidence, 6 questions on relational openness, 3 questions on individual independence, and 3 questions on explorative immersion. The Cronbach's value is 0.872 for this study. It also results in 0.704 for creative flexibilities, 0.728 for alternative problem solving abilities, 0.702 for adventurous pursuit of liberty, 0.684 for altruistic self-confidence, 0.673 for relational openness, 0.661 for individual independence and 0.689 for explorative immersion. The leadership scale developed by Lee, Seokjae and others [3] from the Korean Educational Development Institute was used as the measurement instrument for leadership. This measurement instrument consists of 50 questions in total with 10 on goal achievement abilities, 10 on re-inventive abilities, 10 on leadership, 10 on human relations and 10 on purpose awareness. This study has Cronbach's value of 0.935. It also results in 0.927 for goal achievement abilities, 0.893 for re-inventive abilities, 0.899 for leadership, 0.911 for human relations and 0.922 for purpose awareness. The learning competence test for college students (LCT-CMB) developed by Lee, Kyunghwa and others [19] was used as

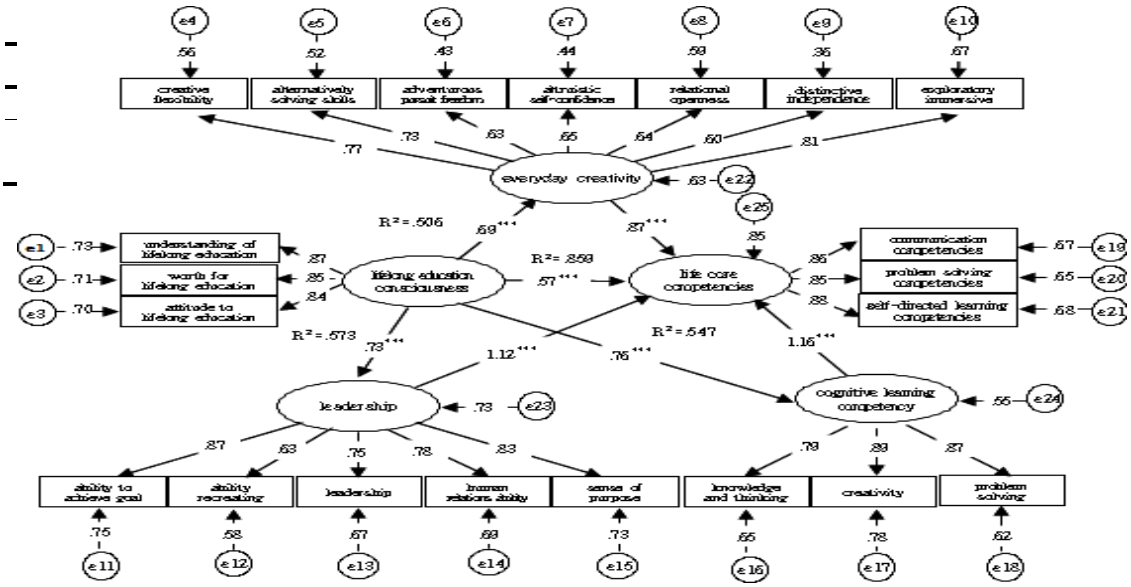
the measurement instrument of cognitive learning competency. The cognitive learning competency consists of 34 questions in total with 12 for knowledge and thinking, 12 for creativity and 10 on problem solving abilities. Cronbach's value for this study is 0.851. It results in 0.910 for knowledge and thinking, 0.937 for creativity and 0.886 for problem solving abilities. For the measurement instrument of the life core competencies, the scale by Lee, Seokjae and others [3] from the Korean Educational Development Institute was used. This measurement instrument has 138 questions in total with 48 on communication abilities, 45 on problem solving abilities, 45 on self-directed learning ability to measure the life core competencies. This study has Cronbach's value of 0.938. It shows 0.934 for communication abilities, 0.921 for problem solving abilities and 0.948 for self-directed learning ability.

3.4. Data Collection and Analysis

SPSS 21.0 Program was used for the calculations of Cronbach's reliability coefficient and correlation analysis, descriptive statistics analysis and frequency analysis to analyze collected data. Then, the confirmatory factor analysis was conducted using the AMOS 21.0 Program. To validate the structural equation modeling, the effect on measurement model was identified.

4. Research Results

4.1. Empirical Tests on Structural Relations of the Measurement Model



$^{***}p$ <.001, Path Coefficient: Regression Coefficients (β)

Figure. 2. Structural Relations Model the Path of the Measurement Model

Table 2. Fit Indices for the Measurement Model

division	χ^2	p	df	CFI	GFI	AGFI	IFI	TLI	RMR	RMSEA
fit indices	938.850	.000	64	.935	.928	.917	.932	.921	.012	.063
Optimal cutoff	-	< .05	-	> .90					< .05	< .08

4.2. Decomposition of the Effects on the Structural Path of the Measurement Model

Table 3 shows results from the structural analysis of lifelong education consciousness, everyday creativity, leadership, cognitive learning competency, and life core competencies by mediating with everyday creativity, leadership and cognitive learning competency of university students who participated in the lifelong educator-training program.

The analysis is as follows: lifelong education consciousness for life core competencies was .573 (p<.001), everyday creativity was .694 (p<.001), leadership was 1.122 (p<.001), cognitive learning competency was 1.161 (p<.001). It is statistically meaningful for the life core competencies. This suggests that the lifelong education consciousness of university students affect the life core competencies for mediating everyday creativity, leadership and cognitive learning competency. The variation explained with major variables by variables was 50.6% of everyday creativity, 57.3% of leadership, 57.3% of cognitive learning competency of university students and 85.9% of life competencies of adult learners.

Table 3. Path Coefficients and Explanatory Power of the Measurement Model (SMC/R^2)

hypothesis path			B	β	S.E.	C.R.
lifelong education consciousness	->	life core competencies	.495	.573	.039	6.874***
long education consciousness	->	everyday creativity	.374	.694	.025	17.617***
lifelong education consciousness	->	leadership	.278	.733	.017	17.639***
ifelong education consciousness	->	cognitive learning competency	.251	.760	.015	19.694***
everyday creativity	->	life core competencies	.138	.873	.089	16.437***
leadership	->	life core competencies	2.033	1.122	.121	16.694***
cognitive learning competency	->	life core competencies	1.864	1.161	.093	19.825***
everyday creativity SMC/R² .506(50.6%), leadership SMC/R² .573(57.3%)						
cognitive learning competency SMC/R² .547(54.7%), life core competencies SMC/R² .859(85.9%)						

*** p<.001

4.3. Decomposition Effect on the Structural Model of the Measurement Path

Table 4 shows the effects of a casual relationship of measurement models. It presents the direct, indirect and total effects of the variables for lifelong education consciousness, everyday creativity, leadership and cognitive learning competency of university students.

First, the lifelong education consciousness, which is an external variable, has the greatest effect (.760) on the cognitive learning competency, leadership (.733), everyday creativity (.694) and life core competencies (.573). The indirect effect affects life core competencies (.384). Second, the internal variables, which are playing as mediating variables with cognitive learning competency (1.164), leadership (1.122), everyday creativity (.873), affect the life core competencies as a direct effect. The total effects have the greatest effect (.957) of life core competencies from the lifetime education consciousness of university students. The cognitive learning competency (.760), leadership (.733) and everyday creativity (.694) are following behind this. The internal variable, which is a mediating variable, shows that cognitive learning competency (1.164), leadership (1.122) and everyday creativity (.873) affect the life core competencies (1.122) of university students.

Table 4. Degradation Effect of the Measurement Model

variables		life core ability			
		Direct effect	indirect effects	Total effect	path effects
exogenously variables	lifelong education consciousness	.694	-	.694	lifelong education consciousness->everyday creativity
		.733	-	.733	lifelong education consciousness->leadership
		.760	-	.760	lifelong education consciousness->cognitive learning competency
		.573	.384	.957	lifelong education consciousness->life core competencies
endogenous variables	everyday creativity	.873	-	.873	everyday creativity ->life core competencies
	leadership	1.122	-	1.122	leadership->life core competencies
	cognitive learning competency	1.164	-	1.164	cognitive learning competency ->life core competencies

4.4. Mediating Effects between the Measured Variables for the Measurement Model Validation

Table 5. Mediating Effects Validation Result Between the Measured Variables for Measurement Model

variables path between			Z_{ab}
independent variable	medium variable	dependent variable	
lifelong education consciousness	everyday creativity leadership cognitive learning competency	life core competencies	48,725***

$^{***}p<.001$

Table 5 shows the results of validation of Sobel's mediating effect and the path between the variables, which has lifelong education consciousness->everyday creativity, leadership, cognitive learning competency->life core competencies with mediating effect (48.725^{***}). Since the significance probability is $p<.001$, it suggests that everyday creativity, leadership, and cognitive learning competency of university students have a significant mediating effect between lifelong education consciousness and life core competencies.

5. Discussion and Conclusion

The research results are as follows: First, lifelong education consciousness of university students has a significant effect on the life core competencies. This suggests that if lifelong education consciousness becomes higher, the life core competencies will also become higher. Therefore, increasing lifelong education consciousness influences life core competencies at the end. Second, lifelong education consciousness also affects everyday creativity, leadership and cognitive learning competency significantly. This means lifelong

education consciousness has an influence on everyday creativity, leadership and cognitive learning competency. When the level of lifelong education consciousness is higher, higher effects on everyday creativity, leadership and cognitive learning competency also occur. Third, everyday creativity, leadership and cognitive learning competency have meaningful effects on the life core competencies. This suggests that everyday creativity, leadership and cognitive learning competency influence the life core competencies. Everyday creativity, leadership and cognitive learning competency have a parameter role in affecting the life core competencies. Fourth, everyday creativity, leadership, and cognitive learning competency play a meaningful parameter between the lifelong education consciousness and the life core competencies. This suggests that everyday creativity, leadership and cognitive learning competency are affected through lifelong education consciousness and have a positive influence on the life core competencies in turn In other words, this proposes that improved everyday creativity, leadership and cognitive learning competency can have a positive influence on the life core competencies.

Therefore, universities should teach basic professional skills for promoting the lifelong education consciousness of students to foster it so that it also influences the life core competencies. Lifetime educators should also play a role as promoters and supporters in order to help everyday creativity, leadership, cognitive learning competency and life core competencies of university students.

These research results suggest that lifelong education consciousness, everyday creativity, leadership and cognitive learning competency of university students and the application of life core competencies are closely related. It was identified that everyday creativity, leadership, cognitive learning competency and lifelong education consciousness should be preceded for university students. The results of this study are consistent with [8,11-17,19,20, 22,23] prior results. Therefore, we found a close relation among lifelong education consciousness, everyday creativity, leadership, cognitive learning competency, and life core competencies.

Based on these results, this study came up with the following conclusion:

First, it is necessary to develop and operate educational programs from various angles in order to promote the lifelong education consciousness of university students. Second, systematic lifelong education program development and its operation are urgently needed to enhance everyday creativity, leadership, cognitive learning competency, and life core competencies from the university lifelong educator fostering courses. Third, it is necessary to make students apply their participation experience in lifelong education for their actual life. Besides, it is necessary to develop not only various competencies for their real life but also their everyday creativity, leadership, cognitive learning competency and life core competencies. Lastly, the role of lifelong educators is crucial in developing everyday creativity, leadership, cognitive learning competency and life core competencies as well as promoting lifelong education consciousness. The lifelong education consciousness, knowledge and experience of lifelong educators would pass onto the university students, and this becomes a foundation for lifelong learning society realization.

This paper suggests that the lifelong education participation can be increased by boosting lifelong education consciousness, everyday creativity, leadership, cognitive learning competency, life core competencies and students have continuous interest and participation in lifelong education even after their graduation with application to their actual life. This study provides theoretical and empirical consideration to develop lifelong education consciousness, everyday creativity, leadership, cognitive learning competency and life core competencies for university students. Furthermore, this study proposes implications to consider the level of quality of lifelong education by promoting everyday creativity, leadership, cognitive learning competency and life core competencies by strengthening the education power as measurements in promoting the lifelong education consciousness for university students.

This study investigated limited research objects with university students who participated in the lifelong educator training program at 4-year universities located in Daejeon and the Chungnam and Chungbuk areas. This paper also researched only cognitive domain with knowledge and thinking, creativity, and problem solving ability among 3 domains with learning motivation, learning behaviors and cognitive domain of learning competencies. Additionally, this paper only dealt with the core competencies among 4 different life competencies in basic problem solving ability, core competency, civic consciousness and vocational capabilities. Therefore, there should be further studies with nationwide research objects. Also, 3 variables, including basic problem solving ability, civic consciousness and vocational competencies, should be dealt as well as 3 different domains with learning motivation, learning behaviors and cognitive domain of learning competencies. Those further studies will lead to a wide range of domains, which will promote the lifetime education consciousness, everyday creativity, leadership, cognitive learning competency and life core competencies leading to a successful life.

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