

Factors on Lecture Immersion among College Students in Online Learning Environments- A Psychosocial Behavioural Study

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ABSTRACT

Background: The objective of this research is to classify the degree of self-determination, major correctness, self-leadership, lecture immersion, and the connection among this factor. It also determines the factors affecting the lecture immersion for college students;

Methods: The data were collected through online questionnaires answered by 173 university students in G province on December 2020. This is evaluated by IBM SPSS WIN/25.0. Questionnaire is comprised of 99 questions assessing overall features, self-determination, major suitability, and lecture immersion in a virtual education situation.

Results: A general characteristics is measured by their occurrence, mean, and standard deviation while the dissimilarity of variables was evaluated by t-test and one-way ANOVA. The post analysis is evaluated using Scheffe's test. Pearson's relationship was used to examine the relationship among each variable. Factors influencing lecture immersion were obtained by stepwise regression. The factors most influencing the subject's lecture immersion were self-leadership ($\beta = .539, p < .001$), self-determination ($\beta = .184, p = .019$), and main suitability ($\beta = -.173, p = .036$). The descriptive power of the framework is 33.4%.

Conclusions: To improve the lecture immersion in the non-face-to-face era, it is necessary to give learners a choice, provide informational feedback, and create an autonomous learning environment.

Keywords: College Student, Lecture immersion, Major suitability, Self-determination, Self-leadership, Statistical analysis, Online learning

1. INTRODUCTION

1.1. Significance

The COVID-19 epidemic has altered all elements of South Korea's school system by 2020. Learning via the internet has supplanted traditional instruction in person. In order to prepare for the digital future, the demand for non-face-to-face schooling has continuously increased. These, however, were not simply presented and were also utilized as a supplement for face-to-face sessions. Also, the onset of the epidemic altered the learning situation to non-face-to-face classes within time. Without enough planning, the quick introduction of non-face-to-face classrooms generated uncertainty and challenges, learning environment problems such as traffic jams, the discomfort of virtual lessons, the difficulty of lessons, and lowly educational value [1]. Non-face-to-face classes necessitate more extensive general modifications than just introducing novel technological methods to current face-to-face classes.

To avoid spreading of the COVID-19, the unfamiliar method of non-face-to-face education was introduced from the first semester of 2020 leaving teachers and students with various teaching-learning challenges. Most of the schools did not have the necessary equipment and tools to conduct non-face-to-face classes. They started to conduct the class by utilizing a one-way teaching method that makes learning materials available on existing online learning. The class utilized these contents, and the teachers provide feedback based on the students' per-

performances on the given tasks. Teachers also have individual differences in their ability to conduct non-face-to-face classes (e.g. the use of IT organizations, proficiency in using non-face programs, etc.). There were difficulties in switching to non-face-to-face classes, which needs comprehensive examination and planning for the fundamental change and future course of a higher education.

Members of the modern society, who heavily rely on the Internet as part of their daily lives, are shifting from the same education for large groups to diversified education in response to individual education needs. There is a shift from heterogeneous education to self-directed learning that solves problems by acquiring necessary knowledge and information. Because online learning takes place by the autonomous and independent learning efforts of the learner, the learner's self-regulated learning ability or ability to control is required more than the existing face-to-face education, and in the end, it is believed that learning outcomes vary depending on how much self-managed learning the learner has.

Online learners have a personalized learning environment. Because learners choose and control many factors related to learning by themselves, their ability to self-regulate is required more than in traditional face-to-face education. Self-regulation is important because it is difficult to expect effective learning if learners themselves lack self-regulating learning, and their learning performance varies depending on how self-managed learners have learned. Prior studies have reported that self-regulation is affecting academic performance not only in traditional classroom classes but also in online classes. It must be an important factor in the presentation of online classes. Self-management is intimately associated with non-face-to-face distance learning. The pupils need to possess self-guideline and self-observing skill in the virtual learning setting now that classes are not taking place in a physical classroom, and independence relating to each individual's capacity to decide on decisions and handle their own affairs is just one of the necessities for the pupils. Self-determination empowers humans to believe in charge of their decisions and life. It also helps with learning achievement and lecture participation [2]. Lecture immersion is a major variable affecting the correlation among self-determination, enthusiasm, and learning effects. This shows that lecture immersion becomes the basis for raising the motivation for self-determination. Redundant and is an important variable that affects learning outcomes.

Self-leadership is a responsible behavior that leads one-self through active and challenging thinking with strong self-esteem and a desire for achievement, not by interference from others [3]. To immerse their-self in the course in online classes, they lead their-self and realize that they become their true leader. No supporting fact or supporting research. According to previous research, the greater the connection within what a pupil requires (individual needs) and a component provided by the intended setting (college environment), the greater the degree of learner fulfillment, and a student's primary selection lead to an optimistic mindset into lecture immersion and organizational dedication [4]. Key rightness tells the level of how matched the individual's decided career is to their learning motivation. It is also linked to the educational process in order to improve the impact that learning has on learners. Furthermore, it may have an impact on the growth of college students' abilities and traits, as well as the supply of a context in which they acquire knowledge, abilities, and traits for the growth of knowledge and usefulness needed by community [4].

The majority of previous research on self-determination, lecture immersion, and major appropriateness focused solely on determining the connection among these three variables. In this regard, no research has been conducted on the factors of self-determination, lecture immersion, self-leadership, and major appropriateness. Moreover, although the increasing popularity of online learning settings, which is viewed as the sole approach to overcoming this pandemic condition, a few investigations have been conducted, with the majority of research focusing on classroom settings.

The objective of this research is to find the level of self-determination, key suitability, self-leadership, and lecture immersion, and the connection among these variables. It also determines the factors affecting the lecture immersion among college students. The research problem is "Is there a relationship between self-determination, major suitability, self-leadership, and lecture immersion among college students?"

1.2. Theoretical Background

Flow is a concept first proposed by Csikszentmihalyi [5] and defined as an optimal experiential process. The state of immersion means that because the width of perception is narrowed, irrelevant perceptions or thoughts are filtered out and the person is more immersed in the action. Learning immersion refers to the optimal psychological state [6] in which learners exposed to various educational environments feel a lot of pleasure by actively participating in academic situations and are completely absorbed in the learning process using their attention freely. If subjects undergo involvement in the knowledge development, the knowledge development will be fun and they participate more actively in learning, and they will gain satisfaction and fulfillment in the learning process. Immersion in learning not only promotes shorter learning hours and active participation in learning activities but can also have an affirmative effect on educational accomplishment. Learning habits in the non-face-to-face era are connected openly with self-regulation for students.

Lecture immersion is a phase in which pupils are totally absorbed in the learning development in which they're participating. It can be said that the various activities composing the learning process are in harmony with the purpose of learning participation, and thus the state of psychological stability is reached. It is a state of having fun or interest through one's own learning activities and interactions. When learners' self-determination is high, it has been shown to have a positive effect on learning immersion [7].

According to Deci and Ryan [2], people have a desire to choose how to behave in their environment and it has the characteristic of taking responsibility for the actions it chooses and resisting external control. They also saw that people wanted to recognize that they were acting according to their will rather than doing something to pursue external compensation or avoid punishment. Self-determination refers to the desire of people to choose something on their own, and the degree to which learners find and internalize the meaning to perform tasks on their own. In other words, how much the learner's will is reflected in deciding to learn, and the reason for studying can be said to be attributed to his or her own choice [8].

Individual-major suitability is the application of the concept of individual-job suitability in the professional world to majors in college [4]. The subjects of suitability for college students are the school itself, majors, professors, seniors and juniors, and classmates. And the success of college life depends on how harmonized and appropriately interacted with these subjects. Among the many subjects, the most important is school and major. The higher the individual-major suitability, the more positive it has on academic adaptation, social adaptation, and college environment adaptation, excluding individual emotional adaptation among the sub-factors of college life adaptation [9]. In addition, the higher the individual-major suitability, the more positive the influence was on learning commitment, employment possibility, and academic achievement [4].

Self-leadership is a process of increasing individual efficiency, and an internal exploration process to ask their-self what they really want to do and to implement what they want to do in their daily life [10]. It is to control actions and thoughts in order for individuals to achieve their own goals. In other words, it is to discover actions that can motivate their-self and change their thoughts so that they can think constructively with a positive mind.

2. CONTENTS

2.1. Study Design

This research was developed as a descriptive questionnaire to determine the extent and relationships among the factors influencing university students' lecture immersion. It will determine the factors that mostly influence the lecture immersion.

2.2. Subjects

The participants were a selection of university pupils in G-province and C-city through convenient sampling. They were individuals who registered for the research and decided to join upon learning about the intent of the poll. Employing G*power 3.10 program [11], in regression analysis, the data analyzed resulted to the effect size of .15 (median), significance level (α) of .05, and power ($1-\beta$) of .80. We were also able to identify and test 18

variables. By calculating the dropout rate of 20%, we initially sampled 180 people. Of these, 173 were used excluding 7 poor answers.

2.3. Study Tools

An organized survey was utilized consisting of a total of 99 questions that measure overall features (14 questions), self-determination (24), major suitability (8 questions), self-leadership (35 questions), and lecture immersion (18 questions).

The overall features were calculated to 14 problems on age, gender, religion, leave of absenteeism, circle action, grade, living situation, parents' financial power, character, reason for selecting a department, department adaptation, last semester rating and conflict experiences, and department satisfaction.

Self-determination was determined by Ryan and Connell [12]'s Self-Regulation Questionnaire-Academic, Valeran and Bissonette [13]'s Academic Motivation Scale, and the tool used by Hayamizu [14][32]. The Stepping Motivation Scale was used by Kim [15], a Korean-style academic self-regulation questionnaire (K-SRQ-A). This tool has a total of 24 questions and is computed on a five-point Likert scale. Greater scores mean greater self-determination. The consistency of the original tool was Cronbach's α .77, and Cronbach's α .87 in this research.

Three assessments evaluating individual-job appropriateness from Park [9], who amended the scoring system from previous research, and a total of five inquiries assessing individual-major compatibility from Kristof [16], Seong et al. [17], and the new version by Cho et al. [4] were utilized for key compatibility. A university student's perception of the understanding, and abilities needed to carry out the course of study and the expertise, abilities, and talents observed by a university student are similar to one another. The questionnaire is scored on a five-point Likert scale, with a greater score indicating better major appropriateness. The Cronbach's alpha in Park is .90 [9], while it is .74 in our study.

For self-leadership, the Revised Self-Leadership Questionnaire (RSLQ) established by Hough and Neck [18] was used. This study also used the tool improved by Shin et al. [19] and added by Kim [20]. This tool is a sub-domain of 'self-goal setting' (5 items), 'self-reward' (3 items), 'self-observation' (4 items), 'self-cue' (2 items), 'self-punishment' (4 items), and positive thinking strategy. It consists of a total of 35 items including 5 items of 'Imagining successful performance', 3 items of 'self-talk', 4 items of 'belief and family analysis' and 5 items of 'natural reward'. It is measured using a five-point Likert scale ranging from one point for 'not at all' to five points for 'strongly agree', and consists of a minimum of 35 points and a maximum of 175 points. At the time of development, the dependability was Cronbach's α .70~.87. In Kim's study, it was .89 [20] while in this study, it was .95.

In the study of Paloff & Pratt [21], lecture immersion was the study of learner characteristics and instructor characteristics in the study of Chen et al. [22], learning commitment based Mihem [23]'s with 18-item tool constructed by Jung [24] was used using the items of learning achievement. The tool is a five-point Likert scale, and the greater the score, the higher the immersion in the course. In Jung [24]'s study, Cronbach's α is .80 or more, and in this research, Cronbach's α is .96.

2.4. Data Collection Period and Method

The information was gathered between December 1 and December 31, 2020. The candidates were chosen as a result of a job posting.

Prior to conducting the investigation questionnaires, the researchers presented the study's findings to the agency's department head, acquired authorization, and posted research advertisement on bulletin boards placed in learner halls or eateries frequented by students.

Data were collected from persons who chose to take part in the research by browsing the survey URL and understanding about the study's goal, study respondents' rights, and ethical issues relating to the investigation.

We sent them a gift when we finished the survey using the contact information they provided on their authorization forms.

The Google forms in which they participated was gathered separately to ensure confidentiality.

2.5. Ethical Considerations

Subjects who showed an interest in participating voluntarily were made aware of the study's objective and confidentially. They were assured that their data would be deleted and that they would suffer no consequences if they failed to cooperate.

A Google questionnaire was conducted before and once obtaining consent online. It was about 20 to 25 minutes to answer the Google form, and it was automatically collected when the Google questionnaire was completed. As a token of appreciation, gift cards were provided to the subjects who participated in the research.

The questionnaire stated that the subject's private details and survey responses will be stored for three years once the study ended before being trashed.

2.6. Data analysis

The gathered information was evaluated by IBM SPSS WIN/25.0. The important degree for the outcome was set to .05 and the consistency of the quantifying instrument was measured.

The single features of the subject were recognized by occurrence (percentage).

The mean and standard deviation were measured for self-determination, major suitability, self-leadership, and lecture immersion.

Differences in self-determination, major suitability, self-leadership, and lecture immersion giving to the subject's features were calculated by one-way ANOVA test.

Pearson's correlation coefficient was intended for the correlation among self-determination, key suitability, self-leadership, and lecture immersion.

Factors influencing lecture immersion were obtained by stepwise regression.

2.7. Results

2.7.1. General Characteristics

Looking at the characteristics of the subjects, 24 people (13.9%) were 'under 20', 130 people (75.1%) were '21-25', 6 people (3.5%) were '26-30', 13 people (7.5%) were '31 or older', and the remaining, which is the most, were '21-25 years old'. Based on gender, 134 (77.5%) were female and 39 (22.5%) were male.

Religious groups consisted of 27 Christians (15.6%), 5 Catholics (2.9%), 24 Buddhists (13.9%), and 117 no religion (67.6%). Most of them were non-religious.

As for leave of absence, 26 (15.0%) had 'experienced leave of absence', and 147 (85.0%) had 'no experience of leave of absence', 147 (85.0%).

There were 87 people (50.3%) with club activities and 86 people (49.7%) without club activities, which were almost the same.

Among the grade levels, 33 were first year students (19.1%), 45 were second year students (26.0%), 67 were third year students (38.7%), and 28 were fourth year students (16.2%). The grade groups were almost identical.

Among living environment, 137 were 'living with parents' (79.2%), 16 were lodging or in the dormitory (9.2%), 12 were cooking for oneself (6.9%), and 8 for other responses including marriage.

As for parental economic power, 19 (11.0%) belongs to the 'Upper' class, 123 (71.1%) were from the 'middle' class, and 31 (17.9%) were from the 'lower' class.

As for the personality, 32 persons (18.5%) were 'extrovert', 50 persons (28.95%) were 'introvert', and 91 persons (52.6%) answered 'mixed' personality.

As for the reason for selecting a department (duplicate response), 63 people (36.4%) answered 'Easy to employment', 21 people (12.1%) for 'according to the score', 47 people (27.25) for 'solicitation around', 126 people (72.8%) for 'voluntary motivation', and 3 (1.7%) for 'others'.

Among department adaptation, 126 people (72.8%) answered 'adapt well', 45 (26.0%) answered 'difficult but trying', and 2 (1.2%) answered with 'difficulty'.

Based on the last semester rating, 42 students (24.3%) were rated '3.5 points', 88 students (50.9%) were '3.5-3.9 points', and 43 students (24.9%) were '4.0 points or higher'.

Among the respondents' conflict experiences, 98 (56.6%) answered 'none' and 75 (43.4%) answered 'sometimes/frequent'.

For major satisfaction, 4 people (2.3%) have 'dissatisfaction', 66 people (38.2%) answered 'usually', and 103 people (59.5%) have 'satisfaction'.

Table 1. Characteristics of Participants (N=173)

Characteristics	Categories	N (%)
Age(yr)	≤20	24(13.9)
	21-25	130(75.1)
	26-30	6 (3.5)
	≥31	13 (7.5)
Gender	Male	39(22.5)
	Female	134(77.5)
Religion	Christian	27(15.6)
	Catholicism	5(2.9)
	Buddhism	24(13.9)
	None	117(67.6)
Leave of absence	Yes	26(15.0)
	No	147(85.0)
Circle activity	Yes	87(50.3)
	No	86(49.7)
Grade	1	33(19.1)
	2	45(26.0)
	3	67(38.7)
	4	28(16.2)
Living environment	Living with parents	137(79.2)
	Lodging/Dormitory	16(9.2)
	Cooking for oneself	12(6.9)
	Other(marriage)	8(4.6)
Economic power of parents	Upper	19(11.0)
	Middle	123(71.1)
	Lower	31(17.9)
Character	Extrovert	32(18.5)
	Introvert	50(28.9)
	Mixed	91(52.6)
Reason for selecting a department (Duplicate response)	Ease of employment	63(36.4)
	According to the score	21(12.1)
	Solicitation around	47(27.2)
	Voluntary motivation	126(72.8)
	Other	3(1.7)
Department adaptation	Adapt well	126(72.8)

	Difficult but trying	45(26.0)
	Difficulty	2(1.2)
Last semester rating	<3.5	42(24.3)
	3.5-3.9	88(50.9)
	≥4.0	43(24.9)
Conflict experience	None	98(56.6)
	Sometimes/Frequent	75(43.4)
Major satisfaction (0-10)	Dissatisfaction (0-3.0)	4(2.3)
	Usually (3.1-7.0)	66(38.2)
	Satisfaction (≥7.1)	103(59.5)

2.7.2 Self-determination, major suitability, self-leadership, and lecture immersion

The normal score for self-determination was 3.76 ± 0.57 points (out of 5). Major suitability was 3.93 ± 0.76 points (out of 5). Self-leadership was 3.68 ± 0.59 points (out of 5). Lecture immersion was 3.33 ± 0.86 points (out of 5).

Table 2. Subject's Self-determination, Major Suitability, Self-leadership, and Lecture immersion (N=173)

Variables	Mean±SD	Min	Max
Self-determination	3.76 ± 0.57	2.63	5.00
Major suitability	3.93 ± 0.76	1.25	5.00
Self-leadership	3.68 ± 0.59	2.14	4.97
Lecture immersion	3.33 ± 0.86	1.00	5.00

2.7.3 Self-determination, major suitability, self-leadership, and lecture immersion according to characteristics of subjects

Self-determination according to various characteristics of subjects, there was a major change allowing to age ($F=2.78$, $p=.042$), but there was no significant difference among groups as a result of post-hoc testing.

There were no significant differences by gender and self-determination according to religion.

The number of cases without a leave of absence was higher than the case of taking a leave of absence ($t=-2.70$, $p=.007$).

There was no significant difference in self-determination according to 'yes' or 'no' of club activities and according to grade.

Self-determination according to the living environment displayed an important change among groups ($F=2.92$, $p=.035$), but there was no important change among groups as a result of post-hoc testing.

There was no important change in parental economic power among groups.

There was an important change in department adaptation among the groups ($F=7.21$, $p<.001$), and as a result of the post-hoc testing, the 'adapt well' group was statistically significantly higher than the 'difficult but trying' group.

There was an important change based on to the grades ($F=3.89$, $p=.022$), and as a result of the post-hoc testing, the '4.0 or higher' group was higher than the '<3.5' group.

There was no important change in conflict experience among groups.

There was an important change among the groups based on the degree of satisfaction with the major ($F=15.52$, $p<.001$), and as a result of the post-hoc testing, the 'satisfaction' group was statistically significantly greater than the 'dissatisfaction' group and the 'usually' group.

In the case of major suitability, there is no significant change based on age, gender, and religion.

The number of cases without a leave of absence was higher than the case of taking a leave of absence ($t=-2.99$, $p=.003$).

There was no significant difference in major suitability according to the presence or absence of club activities.

There was no significant difference in major suitability by grade level and according to the living environment, economic power of parents, and character.

There was an important change among the groups in section variation ($F=20.04$, $p<.001$), and as the outcome of the post-hoc testing, the 'adapt well' group was statistically significantly higher than the 'difficult but trying' group.

There was a significant difference based on the last semester's grades ($F=12.09$, $p<.001$), and as the outcome of the post-hoc testing, it was the highest in the group with 'less than 3.5', '3.5-3.9', and '4.0 or higher'.

There was no major change in conflict experience among groups.

There was a major change among the groups based on the level of satisfaction with the major ($F=47.90$, $p<.001$), and as a result of the post-hoc testing, it was statistically significantly higher in the order of 'satisfaction', 'usually', and 'dissatisfaction'.

In the case of self-leadership, there was no major change according to age, gender, and religion.

The number of cases without a leave of absence was higher than the case of taking a leave of absence ($t=-2.45$, $p=.015$).

Club activities were higher than those without activities ($t=-2.16$, $p=.032$).

There was no major difference in self-leadership by grade and in major suitability according to the living environment.

There was a significant difference in self-leadership according to economic power of parents between groups ($F=3.70$, $p=.027$), and as a result of the post-hoc testing, the 'upper' group had higher self-leadership than the 'middle' group.

There was a major change between groups based on the character ($F=4.07$, $p=.019$), and as the outcome of post-hoc testing, the 'introvert' group had higher self-leadership than the 'mixed' group.

There was a major change among the groups in section variation ($F = 7.34$, $p = .001$), and as the outcome of the post-hoc testing, the 'adapt well' group was statistically greater than the 'difficult but trying' group.

There was a significant difference based on the last semester's grades ($F=7.76$, $p=.001$), and as the outcome of the post-hoc testing, the '3.5-3.9 points' and '4.0 points or higher' groups were higher than the '<3.5 points' group.

Conflict experience showed higher self-leadership than the group with no conflict experience ($t=2.02$, $p=.044$).

There was a major change among the groups based on the degree of gratification ($F=26.78$, $p<.001$), and as a result of the post-hoc testing, the 'satisfaction' group and the 'usually' group had statistically significantly higher self-leadership than the 'dissatisfaction' group.

In the case of lecture immersion, there was no significant change according to age, gender, and religion. There was no significant difference according to the without a leave of absence or taking a leave of absence. Lecture immersion was higher when there was club activity than when there was no club activity ($t=2.09$, $p=.037$).

There was no major difference in lecture immersion based on the grade, living situation, financial influence of parents, character, and department adaptation. There was no significant difference according to last semester's grades. Lecture immersion was higher than in the case of no interpersonal conflict experience ($t=2.09$, $p=.038$).

There was a major change among the groups based on the degree of satisfaction with the major ($F=8.09$, $p<.001$), and as the outcome of the post-test, the 'satisfaction' and 'usually' groups showed statistically significantly higher course commitment than the 'dissatisfaction' group [Table 3, 4].

Table 3. Self-determination, Major suitability according to the General Characteristics of the Subject(N=173)

Characteristics	Categories	Self-Determination		Major Suitability	
		M±SD	t(p)/ F(p)	M±SD	t(p)/ F(p)
Age(yr)	≤20	3.82±0.53	2.78 (.042)	4.11±0.63	1.40 (.244)
	21-25	3.72±0.56		3.89±0.79	
	26-30	3.54±0.69		3.56±0.70	
	≥31	4.16±0.57		4.14±0.74	
Gender	Male	3.77±0.61	0.07 (.937)	3.91±0.66	-0.18 (.851)
	Female	3.76±0.56		3.93±0.79	
Religion	Christian	3.75±0.63	0.03 (.991)	3.90±0.88	0.08 (.968)
	Catholicism	3.81±0.85		3.82±0.75	
	Buddhism	3.79±0.60		3.98±0.68	
	None and Others	3.76±0.54		3.92±0.76	
Leave of Absence	Yes	3.49±0.59	-2.70 (.007)	3.52±1.01	-2.99 (.003)
	No	3.81±0.55		4.00±0.69	
Circle Activity	Yes	3.81±0.53	1.14 (.252)	4.00±0.74	1.29 (.197)
	No	3.71±0.61		3.85±0.79	
Grade	1 ^a	3.81±0.56	0.08 (.967)	4.09±0.70	0.63 (.595)
	2 ^b	3.74±0.50		3.85±0.71	
	3 ^c	3.76±0.60		3.90±0.80	
	4 ^d	3.75±0.64		3.91±0.83	
Living Environment	Living with parents ^a	3.72±0.55	2.92 (.035)	3.88±0.75	1.37 (.253)
	Lodging/Dormitory ^b	3.73±0.60		3.89±0.90	
	Cooking for oneself ^c	4.03±0.60		4.28±0.67	
	Other(marriage) ^d	4.21±0.62		4.21±0.69	
Economic Power of Parents	Upper ^a	3.74±0.70	0.28 (.756)	4.04±0.81	1.57 (.211)
	Middle ^b	3.75±0.55		3.86±0.76	
	Lower ^c	3.83±0.55		4.11±0.72	
Character	Extrovert	3.71±0.66	1.60 (.204)	4.02±0.79	1.57 (.210)
	Introvert	3.67±0.51		3.77±0.79	
	Mixed	3.84±0.56		3.98±0.73	
Department Adaptation	Adapt well ^a	3.86±0.56	7.21 (.001) a>b	4.13±0.63	20.04 (<.001) a>b
	Difficult but trying ^b	3.54±0.52		3.40±0.82	
	Difficulty ^c	3.04±0.05		3.06±0.97	
Last Semester Rating	<3.5 ^a	3.59±0.54	3.89 (.022) a<c	3.56±0.63	12.09 (<.001) a<b<c
	3.5-3.9 ^b	3.77±0.57		3.90±0.80	
	≥4.0 ^c	3.93±0.56		4.33±0.61	
Conflict Experience	No	3.76±0.57	-0.19 (.847)	4.02±0.74	1.89 (.060)
	Yes	3.77±0.57		3.80±0.78	
Major	Dissatisfaction (0-3.0) ^a	3.22±0.57	15.52	2.21±0.92	47.90

Satisfaction (0-10)	Usually(3.1-7.0) ^b	3.51±0.46	(<.001) a,b<c	3.49±0.62	(<.001) a<b<c
	Satisfaction(≥7.1) ^c	3.95±0.56		4.27±0.60	

Table 4. Self-leadership, Lecture immersion according to the General Characteristics of the Subject(N=173)

Characteristics	Categories	Self-Leadership		Lecture Immersion	
		M±SD	t(p)/ F(p)	M±SD	t(p)/ F(p)
Age(yr)	≤20	3.62±0.56	2.30 (.078)	3.50±0.64	1.05 (.372)
	21-25	3.67±0.60		3.27±0.90	
	26-30	3.30±0.50		3.33±0.51	
	≥31	4.01±0.53		3.62±0.81	
Gender	Male	3.64±0.62	-0.42 (.671)	3.32±0.82	-0.04 (.963)
	Female	3.69±0.59		3.33±0.87	
Religion	Christian	3.69±0.63	1.15 (.328)	3.15±0.86	1.42 (.237)
	Catholicism	4.00±0.72		3.65±1.08	
	Buddhism	3.82±0.66		3.59±0.79	
	None and Others	3.63±0.56		3.30±0.86	
Leave of Absence	Yes	3.42±0.68	-2.45 (.015)	3.14±0.82	-1.19 (.234)
	No	3.72±0.57		3.36±0.86	
Circle Activity	Yes	3.77±0.54	2.16 (.032)	3.46±0.87	2.09 (.037)
	No	3.58±0.63		3.19±0.83	
Grade	1 ^a	3.68±0.59	0.003 (1.00)	3.53±0.72	0.91 (.435)
	2 ^b	3.68±0.57		3.30±0.81	
	3 ^c	3.67±0.62		3.23±0.86	
	4 ^d	3.68±0.60		3.37±1.07	
Living Environment	Living with parents ^a	3.62±0.60	2.66 (.050)	3.52±0.81	1.39 (.246)
	Lodging/Dormitory ^b	3.89±0.52		3.33±1.10	
	Cooking for oneself ^c	3.73±0.51		2.90±0.89	
	Other(marriage) ^d	4.12±0.59		3.65±1.00	
Economic Power of Parents	Upper ^a	4.02±0.57	3.70 (.027)	3.47±1.04	1.00 (.370)
	Middle ^b	3.62±0.60		3.35±0.81	
	Lower ^c	3.68±0.54		a>b 3.15±0.92	
Character	Extrovert	3.80±0.66	4.07 (.019)	3.33±0.96	0.75 (.473)
	Introvert	3.48±0.52		3.21±0.77	
	Mixed	3.75±0.58		b<c 3.39±0.87	

Department Adaptation	Adapt well ^a	3.78±0.56	7.34	3.41±0.88	2.80 (.063)
	Difficult but trying ^b	3.41±0.59	(.001)	3.12±0.76	
	Difficulty ^c	3.20±1.33	a>b	2.55±0.39	
Last Semester Rating	<3.5 ^a	3.38±0.58	7.76	3.16±0.62	1.86 (.158)
	3.5-3.9 ^b	3.75±0.57	(.001)	3.45±0.89	
	≥4.0 ^c	3.82±0.56	a<b,c	3.24±0.96	
Conflict Experience	No	3.76±0.61	2.02	3.45±0.82	2.09
	Yes	3.57±0.56	(.044)	3.17±0.88	(.038)
Major Satisfaction (0-10)	Dissatisfaction (0-3.0) ^a	2.87±0.27	26.78	2.22±0.62	8.09
	Usually(3.1-7.0) ^b	3.36±0.48	(<.001)	3.12±0.64	(<.001)
	Satisfaction(≥7.1) ^c	3.91±0.55	a,b<c	3.51±0.93	a,b<c

2.7.4 Correlations among self-determination, major suitability, self-leadership, and lecture immersion

Self-determination had an affirmative connection with key suitability ($r=.52$, $p<.001$), self-leadership ($r=.54$, $p<.001$), and lecture immersion ($r=.39$, $p<.001$).

Main suitability had an affirmative connection with self-leadership ($r=.60$, $p<.001$) and lecture immersion ($r=.27$, $p<.001$).

Lecture immersion course assurance was definitely associated with self-leadership ($r=.56$, $p<.001$).

Table 5. Correlation among the Research Variables (N=173)

	Self-Determination	Major Suitability	Self-Leadership	Lecture Immersion
r(p)				
Self-Determination	1			
Major Suitability	.52(<.001)	1		
Self-Leadership	.54(<.001)	.60(<.001)	1	
Lecture Immersion	.39(<.001)	.27(<.001)	.56(<.001)	1

2.7.5 Factors Influencing the Lecture immersion

In order to check whether the subject's lecture immersion is affecting the lecture immersion, although there is a correlation with the lecture immersion, club activities, conflict experience, major satisfaction, self-determination, major suitability, and self-leadership were independently input.

Club activities, interpersonal conflict, and major satisfaction were treated as dummies. Multiple regression analysis was performed in a stepwise manner.

To test the multi-collinearity problem, as a result of checking whether the tolerance restriction was 0.1 or higher, there was no problem of multi-collinearity with the tolerance restriction of .54-.97.

As a result of checking whether the variance inflation factor (VIF) does not exceed 10, there was no problem of multi-collinearity with VIF 1.02-1.82.

In addition, there was no problem with the autocorrelation of the residuals, as a result of confirming with the Durbin-Watson Test, which is a test of independence of the residuals, $d=1.873$, which met the acceptance criteria.

The factor that most affects the subject's lecture immersion is self-leadership ($\beta=.539$, $p<.001$), followed by self-determination ($\beta=.184$, $p=.019$) and major suitability ($\beta=-.173$, $p=.036$).

The explanatory power of the model was 33.4% ($F=18.22$, $p<.001$).

Table 6. Multiple Regression Analysis on Lecture Immersion (N=173)

	B	SE	β	t	p
(Constant)	0.142	.412		0.34	.731
Circle activity (No)*	-0.112	.109	-.065	-1.03	.304
Conflict experience (Yes)*	0.172	.111	.099	1.55	.122
Self-determination	0.278	.117	.184	2.36	.019
Major Suitability	-0.194	.092	-.173	-2.11	.036
Self-leadership	0.779	.121	.539	6.41	<.001
$R^2= .353$, Adj $R^2= .334$, $F=18.22$ $p<.001$					

*Dummy variable

3. DISCUSSION

The aim of this paper is to gain awareness of the level of independence, major appropriateness, self-leadership, and lecture immersion among college pupils, as well as the link among these characteristics, it also attempted to identify the factors affecting the lecture immersion.

In this study, lecture immersion had a positive correlation with self-determination. This result supports the outcomes of prior studies [25] that described a net association among learners' self-determination and lecture immersion. Although it is difficult to directly compare online learning and offline learning in this study, self-determination affects lecture immersion in the results of this study despite the environmental difference between face-to-face and non-face-to-face classes.

Self-determinism is a factor that determines intrinsic motivation and internalizes extrinsic motivation into intrinsic motivation. Because the higher the intrinsic motivation, the more challenging and active it is, the more likely it is to perform something or solve it on its own. The intrinsic motivation correlates statically with academic achievement. Intrinsic motivation is closely related to immersion, allowing one to experience optimal satisfaction and immersion if conditions such as interest and value are balanced.

Improving self-determinism can also increase learning immersion and classroom performance. The online educational environment has limitations because there is no direct contact between professors and students, thus, there is less opportunity to engage in social interactions than the face-to-face educational environment, making it difficult to synchronize with the learners [26]. Therefore, it is necessary to help strengthen self-determination in online classes that are difficult to synchronize learners. Providing educational programs based on the degree of self-determination will help they concentrate on learning.

In this study, there was an affirmative connection among main suitability and lecture immersion. It supports the results of the study by Cho et al. [4] in which individual major suitability and learning immersion was correlated. Although it is difficult to directly compare the exact meaning of course immersion and learning immersion, there was a connection among main suitability and immersion in class.

According to prior research results, the usefulness or importance of learning tasks or activities given by learners is closely related to the use, self-control, and performance of cognitive strategies. Recognizing that learning content or tasks are relevant to or can be useful to one's goals tends to become more interesting and engrossed in those

learning tasks or activities. Prior research was conducted offline, but this study was conducted in an online environment, and despite environmental differences, the study results are similar, so major suitability is also considered to be related to course immersion.

Through this study, the relevance of self-purpose, major suitability, self-leadership, and lecture involvement was identified. It was confirmed that self-leadership, self-determination, and major suitability were the factors influencing lecture immersion. The most influential factor on course immersion was self-leadership, followed by self-determination and major suitability. The explanatory power of the model was 33.4%.

Self-leadership was the biggest influencing factor on lecture immersion. This supported the previous study [27] in which self-leadership affects learning immersion. Members who exercise self-leadership show a high level of immersion in their tasks, goals, and what a team or organization does during the task.

With COVID-19, university classes have been converted to online lectures. Online classes have the advantage of being able to learn at the time they want without worrying about infection and repeat learning. Learning effects can be reduced due to Internet searches, SNS, and other available technologies and media. These can also be reduced due to learner's inability to concentrate on class contents during learning. Due to the sudden introduction of the online class system due to COVID-19, there are also concerns about gaps or learning effects among learners due to insufficient preparation for content or many explanation-oriented classes.

Prior research [28] said that understanding what students experience and feel in university education can help minimize the difficulties students face in adapting to university education. In order to explore ways to help students learn, it is important to identify and understand the difficulties of students' university education experiences due to COVID-19 based on prior study results.

In the "Post Corona" era, it is inferred that full-fledged remote education will be implemented as the fourth industrial revolution based on the "5G network" accelerates, and real-time non-face-to-face classes will be conducted rather than unilateral video lectures [4]. The university has a task to prepare in preparation for the full-fledged implementation of remote education Redundant.

In prior research [29], the higher the accessibility to participate in real-time online classes, the lower the concentration, the lower the interaction in real-time online classes, and the lower the concentration due to the teaching method of unilateral knowledge transfer. Therefore, professors need to develop a variety of teaching methods rather than knowledge transfer classes in real-time online classes, and to apply a variety of teaching methods to enhance concentration [30].

In addition, for efficient operation of practical classes by major, it is necessary to upgrade classes so that experiences in the offline practice can be obtained in online classes [30]. In practical classes, it is necessary to consider incorporating simulation-based interfaces such as AR and VR to induce learner's engagement in their courses.

In a prior study [31], it was said that the experience of writing good comments can help students recover from self-restraint and adapt to college life. Improving online teaching methods and encouraging them to write good comments during discussion can also help self-directed learners' interest and challenge their consciousness so, this needs to be considered.

4. CONCLUSIONS AND RECOMMENDATIONS

It is necessary to apply a teaching method in which learners take the initiative in presenting and participating in discussions in class to elicit self-leadership, and it is necessary to organize classes so that self-leadership can be strengthened through discussions, exploration, presentations, and team projects, not cramming classes. Therefore, this study that developing and providing learning programs and volunteer programs for students increase educational satisfaction, learning programs and subject-related volunteer programs considering self-determination and major suitability can effectively increase immersion and interests in learning. It fosters better talent in the major field through the major suitability counseling program and self-development (self-determination improvement) program. It is thought that it will be helpful in maintaining and improving the retention rate of universities.

Therefore, based on this study, a plan to increase the immersion in lectures is suggested as follows. First, since self-leadership is confirmed as a meaningful variable in lecture immersion, it is necessary to sufficiently induce self-leadership through discussion and individual assignments during lectures. To lead others effectively, they must first learn to lead themselves. Self-leadership is realizing that we lead ourselves and become our true leaders because the only leader they have is themselves. Second, immersion in the course requires concentration, but attention is also important. In order to successfully accomplish tasks that they do not want to do, they need to concentrate and pay attention to their work and how they should lead themselves, so they need to come up with ways to improve their concentration and attention. Third, the higher the self-determination, the higher the learning immersion, so it is necessary to strengthen intrinsic motivation or internalize external motivation so that learning itself can be effective. Fourth, learners are more immersed in what they are interested in, so it is necessary to give learners choices and provide relevant content and information feedback to create an autonomous learning environment for improving course immersion in the non-face-to-face era.

According to the outcome of this research, it is predictable that college students will be able to use it as basic data to develop course immersion improvement education programs that help develop variation and effort presentation at university or work.

This study was conducted under the special circumstances of social distancing due to the COVID-19 infectious disease and requires careful interpretation and caution. This study was also conducted at one university in one region, so it is difficult to give representativeness of the population, and there are restrictions in expanding and simplifying the research outcome.

The learner's interaction with the professor when immersed in the course may have an impact, which was not considered in this study. Further research is needed on the exploration of professor factors and their impact on course immersion.

In order to strengthen the restrictions of this research, it is proposed that additional research be done with a wide-ranging of people and factors for generalizing the findings.

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