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Analyzing Learner Perception of Online Convergence Courses for Community Regeneration: Effectiveness & Satisfaction Among Digital Natives*

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Abstract

Purpose: Urban regeneration has been supported by the Special Act on Revitalization and Support for Urban Regeneration, enacted in 2013, with projects implemented nationwide. However, education focused on simple understanding and business explanation has limited effectiveness in increasing satisfaction. As educational formats have dualized into online and offline before and after COVID-19, offline education has decreased while online education has increased, necessitating discussions on diverse educational methods. **Research design, data and methodology :** This study investigated the impact of intrinsic and extrinsic factors on learning satisfaction and performance among the digital native generation through descriptive statistics and correlation analysis. Pearson's correlation coefficient was used to analyze relationships between factors to determine how intrinsic and extrinsic factors influence learning satisfaction and performance. **Result:** This study Results showed strong positive correlations between self-efficacy and learning performance ($r=0.71$, $p<0.01$), while system quality significantly impacted satisfaction ($r=0.68$, $p<0.01$). The findings provide specific guidelines for designing effective online content-based courses that accommodate digital natives' learning preferences in community regeneration education. **Conclusions:** Based on these findings, the study draws implications for designing and operating online content-based convergence courses tailored to the characteristics of digital native generation learners.

Keywords : Urban Regeneration, Online Content, Digital Native, Online Learning, Social Regeneration

JEL Classification Code : I20, I23, I28, R10, R19

1. Introduction

1.1. The Background of the Study

Urban regeneration projects are still underway nationwide in accordance with the 「Special Act on Promotion and Support of Urban Regeneration enacted in 2013. Since the enactment of the special law, an active program called Urban Regeneration University has been operated in a way that collects opinions from residents from the early stages of the project, and six universities (Korea University, Inha University, Chungbuk University, Gyeongbuk University, Gwangju University, and Gyeongseong University) have been selected nationwide through the urban regeneration professional manpower training project and have been training human resources

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so far. These education programs are increasing the participation rate of local residents and professionals through urban regeneration university programs and manpower training programs to understand and participate in local community regeneration, and to cultivate the capacity of consensus.

However, such education has limitations in increasing satisfaction due to simple understanding and project explanations, and is fragmented and one-time education rather than a systematic education method of specialized educational institutions. In recent years, local Governments are also less interested in regeneration projects due to the same way and willingness to promote urban regeneration under government policy.

Meanwhile, as the form of education began to be dualized online and offline before and after COVID-19, the frequency of offline education decreased, while online education showed an increasing trend, but recently, it is time to discuss various educational methods in the future considering the quality of education.

In particular, with the rapid development of digital technology, the educational environment is also rapidly changing. As the importance of online education becomes more prominent, it is necessary to take a more active attitude toward the introduction and operation of online and offline education methods.

Educational innovation based on digital technology has been newly presented in the use of online platforms, resulting in several advantages and disadvantages. In particular, it is very useful in that it connects students with others with similar interests and questions, increases access to information, documents, and art around the world, and provides opportunities to present creative ideas to the world. The characteristics of these online platforms also provide the flexibility to effectively integrate and deliver knowledge from various academic fields. This has great potential in cultivating convergent thinking skills that can solve problems in various complex modern society and regional regeneration problems, and as a result, it shows that the advantages of digital technology are closely related to the goals of convergence education.

Understanding the digital native generation at the center of this change is essential for establishing effective online education strategies, as such advances in digital technology and the resulting changes in the educational environment provide new learning experiences to current educational consumers called the digital native generation and at the same time give educators concerns about effective online education methods. This is because the educational method that takes into account their unique learning characteristics and preferences can greatly increase the effectiveness of online education.

Therefore, in order to maximize the effectiveness of education using online content and increase learner satisfaction, it is necessary to accurately grasp the perceptions and needs of learners, a digital native generation, and establish an instructional design strategy based on this.

Therefore, this study aims to analyze the learning effect and satisfaction of online content-based convergence subjects in a new educational environment for the digital native generation born in a digital environment and living in the digital environment as a habit. In particular, the factors that learners choose online content-based convergence subjects are divided into intrinsic and extrinsic factors, and the difference in perception of learning effect and satisfaction is examined.

To this end, a survey was conducted on students in the 1st to 4th grades enrolled in A University in Korea, and based on the collected data, the frequency of intrinsic and external factors, technical statistics for each questionnaire, and correlation analysis between each question are used to identify differences in learners' perception of learning effectiveness and satisfaction. Through this, we intend to derive major factors that learners perceive in online subjects and propose practical strategies to increase learner satisfaction in the design and operation of subjects to provide necessary implications for improving the design and operation strategy of online content-based convergence subjects. To this end, the research problems of this study are as follows. First, what are the learning effects and satisfaction of online content-based convergence courses recognized by the digital native generation of learners?

Second, do learners' perception of learning effects and satisfaction for online content-based convergence subjects differ according to the learner's characteristics?

Third, what are the main factors affecting learning satisfaction and learning outcomes?

2. Theoretical Background and Previous Studies

2.1. Urban Regeneration Education

As urban regeneration projects based on legal grounds were promoted, interest in various projects increased, and urban regeneration was carried out with limited education even though efforts were made to share information and knowledge necessary in various fields such as participation, operation, planning, and management of local government projects to meet these expectations. Urban regeneration education has been continuously

promoted, except when collective education was difficult due to social disasters such as COVID-19.

Most of the education was centered on the field support center, and empirical and fragmentary education was conducted centering on local residents and officials. However, most of the studies are mainly on the satisfaction of students with education, the quality of education services, and the importance felt by residents. In the method and method of the study, offline was the focus, but it was weak during the period of Korna-19, but some of it was conducted online, but digital native education has not been realized overall..

2.2. Digital Natives and Education

2.2.1. Concepts and Characteristics of Digital

Digital Native is a concept first proposed by Prensky (2001) and refers to a generation born and grown in an environment where digital technology has become commonplace. Prensky (2001) argued that they behave differently and think differently from older generations because they were born and grew up in the reality where digital technology has become commonplace. The main characteristics of the digital native generation are proficient in multitasking, preferring immediate feedback, and requiring fast access to information. In addition, they prefer graphics over text and value connectivity through networks (Prensky, 2001). These characteristics also have a great influence on the learning style of the digital native generation, which prefers a learning environment rich in interaction to traditional lecture-style classes, and not only show higher interest in learning using digital tools, but also tend to naturally utilize information search and collaboration through the Internet in the problem-solving process (Thompson, 2013). Meanwhile, Bennett et al. (2008) argued that we should be wary of excessive generalization of digital natives, emphasizing that not all younger generations have the same level of digital literacy and that individual differences exist, suggesting that effective technology utilization measures tailored to educational goals and learners' characteristics should be sought beyond simply introducing technology.

2.2.2. Educational Strategies based on the Learning Preferences and Characteristics of the Digital Native Generation

The learning preferences and characteristics of the digital native generation show a unique pattern by reflecting the characteristics of the digital environment in which they have grown. First, Prensky (2001) argued that they use digital technology naturally and draw learning efficiently in the process of interacting with digital devices. Lai & Hong (2015) argued that they prefer multitasking, fast information processing, and interaction-oriented learning environments, and that these learning characteristics have a great influence on the education method (Kim, 2019).

In other words, the main learning characteristics of the digital native generation can be summarized as technical proficiency, high preference for social interaction, and immediate feedback needs. (Jeong-Im, 2023). They are always online, perform learning using various devices, and conduct learning by quickly searching multiple sources and integrating information when solving complex problems. Tapscott (2009) named them the four generations, and pointed out that their learning methods rely heavily on discovery learning and experience-based learning.

These preceding studies provide important implications for establishing educational strategies for the digital native generation. Integration of digital technology, structured self-directed learning, use of multimedia, immediate feedback and interaction, provision of personalized learning experiences, and digital literacy education can be effective strategies.

2.3. Online Content-Based Learning

2.3.1. Benefits and Challenges of Online Learning

Online learning has become a new form of education with the development of digital technology, especially after the COVID-19 pandemic, the importance and necessity of online education are more prominent, and discussions about its pros and cons are being actively conducted.

The biggest advantage of online learning is its flexibility and accessibility regardless of time and place. Heo Young-joo (2020) explained that the quality of the system, the quality of information, and the quality of the service play an important role in enhancing learning commitment and learning satisfaction in online classes. In particular, the stability and ease of the system determine the quality of online learning, and the digital native generation has come to prefer a free environment that can access classes anytime, anywhere (Heo, 2020). This has the advantage of promoting autonomy and self-directed learning in that it can learn at one's own speed without being constrained by time (Shin & Kim, 2021). In addition, online learning can increase learners' interest in learning through various multimedia materials such as text, video, and image rather than traditional lecture-style classes. Shin So-young and Kim Min-jung (2021) argued that online content enables learning in connection with real life, and that learners can use it self-directedly as needed, and this characteristic has an even more important advantage in that it can be used as

an informal learning. In addition, learners can find and learn the content they want on their own without instructions from the instructor, which strengthens learning motivation and enables personalized learning experiences

2.3.2. Online Content-Based Convergence Course

Convergence education refers to an educational method that breaks down the boundaries between traditional disciplines and integrates knowledge from various fields to solve problems from a new perspective and expand thinking. This convergence education is a very important approach to solving the complex problems faced in modern society, and its potential is particularly demonstrated in learning using online content. Online content greatly expands the potential of convergence education. According to UNESCO (2021), digital technology can support various forms of teaching-learning activities, connect students with others with similar interests and questions, and increase access to information, documents, and art around the world. These characteristics are closely related to the goals of convergence education. Online content-based convergence courses have the advantage of maximizing educational flexibility. In traditional offline courses, it is difficult for learners to easily access various academic fields due to limited time, whereas online content-based courses allow learners to access the content they want at any time without time and space constraints (Shin & Kim, 2021). Through this, students can easily acquire knowledge about various fields other than their major, and through this process, they can develop integrated thinking and convergence problem-solving skills.

Heo Young-joo (2020) argued that learning commitment and satisfaction have an important effect on the continuity and depth of learning in online content-based classes, and explained that content and interaction opportunities should be provided for learners to actively participate. Online content-based convergence courses can include various multimedia content and interactive elements to induce immersion and participation, providing an environment in which learners can take the initiative and immerse themselves in learning.

2.4. Factors Affecting Learner Satisfaction

2.4.1. Intrinsic and Extrinsic Factors

Learner satisfaction is an important factor that determines the success of online education and is influenced by various intrinsic and external factors. Intrinsic factors refer to factors related to individual learner characteristics, and extrinsic factors refer to factors related to the learning environment or education system. Intrinsic factors stem from inner motives such as interest, self-realization, and a sense of accomplishment that learners feel in learning itself. According to Ahn Jung-Im (2023), these intrinsic factors work when learners voluntarily satisfy intellectual curiosity and want to explore new knowledge. This means that learners feel intrinsic satisfaction in the learning process, and as a result, their immersion in learning increases, and their satisfaction increases. Among the intrinsic factors, the most important are the learner's self-efficacy and learning motivation. Self-efficacy means the belief that a learner can successfully perform a particular task, which is closely related to learning satisfaction (Bandura, 1997). According to a study by So-young Shin and Min-Jung Kim (2021), learners with high self-efficacy tend to show higher satisfaction even in an online learning environment. In addition, learning motivation is also an important intrinsic factor, and learners with high intrinsic motivation show a more positive attitude toward online learning and high satisfaction (Ryan & Deci, 2000). On the other hand, extrinsic factors are motivations arising from rewards or environmental factors provided outside learning. Tapscott (2009) explains that external factors such as earning credits, saving time, or learning motivation to get a good job stimulate learners' willingness to learn. Extrinsic factors can have a positive effect on learners' achievement of short-term goals, but according to a study by Lai and Hong (2015), long-term learning satisfaction or performance may be somewhat limited when compared to intrinsic motivation. The main extrinsic factors include the role of the instructor, the quality of learning contents, and the learning support system. In a study by Heo Young-joo (2020), it was reported that the feedback and interaction of instructors in online education had a great influence on learner satisfaction. In particular, the immediate and individualized feedback provided by instructors plays an important role in promoting learner participation and increasing satisfaction. These intrinsic and extrinsic factors interact with each other and complexly affect learner satisfaction. The analysis of intrinsic and extrinsic factors divided in this way can be said to be an important criterion that contributes to the concrete and factual understanding of what motivational background learners have in the subject selection process.

3. Research Design

3.1. A Subject of Study

The subject of this study is undergraduate students from 1st to 4th grades attending A University in Korea, and it is

limited to students who have taken online content-based convergence courses that can proceed with social regeneration A total of 324 students participated in the survey of this study, and students from various majors were included, not limited to a specific major. Taking the digital native generation as the main subject of research, this study aims to analyze the learning characteristics and motivations of that generation and to evaluate the learning effect and satisfaction for online content-based classes.

3.2. Research Variable

This study attempted to analyze the relationship between intrinsic and extrinsic factors of online content for community regeneration on learning satisfaction and learning effectiveness. The intrinsic factor was composed of items related to the learner's interest and self-directed learning motivation, and the extrinsic factor was composed of external factors such as temporal flexibility and convenience of the learning environment. Intrinsic factors mean the learner's motivation to voluntarily choose learning activities based on self-directed motivation and intellectual curiosity, and extrinsic factors mean the motivation to select subjects for the learner's convenience. The questionnaire items corresponding to intrinsic and extrinsic factors are shown in Table 1.

Table 1: Questionnaire(Factors)

	Intrinsic Factor	External Factor
Division	Repeated Learning is Possible.	You can use your time reely.
	It's a topic I want to learn.	
	Self-directed learning is possible.	You can use your time freely.

Through this, we want to analyze how intrinsic and extrinsic factors affect learning satisfaction and learning effects felt by learners and present implications for online content-based convergence subject instructional design.

3.3. A Questionnaire

In this study, to analyze the effect on learners' subject selection motivation and learning satisfaction, it is intrinsic. The questionnaire was composed of items that measure the learner's reason for choosing a subject, learning satisfaction, quality of teaching feedback, and learning outcomes. The questionnaire received responses on a 5-point Likert scale, and each item was asked to respond online from 1 point (not at all) to 5 points (very much so). Table 2 below shows the main questionnaire items used in this study.

Table 2: Questionnaire Contents

Division	Contents
Learning Satisfaction	Generally satisfied with the online liberal arts course. The content was suitable for understanding the content of the class topic Online content adequately covered one semester's worth of learning content
Teaching Feedback	Satisfied with the instructor's feedback regarding the content of the class. (feedback method, feedback speed, etc.) In the overall situation of online classes, there were difficulties in interaction between instructors and learners. (Notice, attendance confirmation, etc.)
Learning outcomes	The amount of learning of the content according to the credits was appropriate. This class motivated me to learn. Supplementary tasks for class activities along with class were appropriate.
Self-Directed Learning	Online liberal arts classes have developed self-directed learning habits. The contents of the online content class were enough for me to follow.

3.4. Method of Analysis

Descriptive statistics and correlation analysis were used in this study to analyze the effects of intrinsic and extrinsic factors of online content for community regeneration education on learning satisfaction and learning outcomes of digital native generations.

First, a descriptive statistical analysis was conducted to understand the overall trend of learners' subject selection motivation and learning satisfaction based on the questionnaire data. Through this, the average value, standard deviation, and median value of each variable were calculated to confirm the distribution of learners' intrinsic and extrinsic factors.

Next, a correlation analysis was performed to analyze how intrinsic and extrinsic factors are related to learning satisfaction and learning outcomes. The correlation between each factor was analyzed using Pearson correlation coefficient, and through this, the effects of intrinsic and extrinsic factors on learning satisfaction and performance were confirmed. This analysis identified how

intrinsic and extrinsic factors of online content for community regeneration education affect learning satisfaction and learning outcomes, respectively, and based on this, we intend to derive implications for designing and operating online content-based convergence courses according to the characteristics of digital native generation learners.

4. Results of the study

4.1. Data Analysis Results

4.1.1. Survey Question Data Analysis Results

Data analysis was conducted in this study to analyze the perception of the learning effect and satisfaction of online content-based convergence subjects for the digital native generation, and data analysis was conducted on questionnaire items to evaluate learners' learning satisfaction (A), self-directed learning (B), learning outcome (C), and quality of teaching feedback (D) for online content-based convergence subjects. Learners' response trends were analyzed through mean (M), median (Mdn), and standard deviation (SD) for each question.

Table 3: Data Analysis

Variables		Survey Questions	*N*	*M*	*Mdn*	*SD*
Learning Satisfaction (A)	1	overall satisfied with online-based convergence subjects.	324	3.38	4.00	1.28
	2	The content was suitable for understanding the content of the class topic.	324	3.53	4.00	1.22
	3	Online content adequately covered one semester's worth of learning content.	324	3.58	4.00	1.19
Self-Directed Learning (B)	1	Online-based convergence course classes have created self-directed learning habits.	324	3.50	4.00	1.19
	2	The contents of the online content class were enough for me to follow.	324	3.56	4.00	1.22
Learning outcomes (C)	1	The amount of learning of the content according to the credits was appropriate.	324	3.37	4.00	1.27
	2	This class motivated me to learn.	324	3.32	3.00	1.26
	3	Supplementary tasks for class activities along with class were appropriate.	324	3.22	3.00	1.37
Quality of teaching feedback (D)	1	In the overall situation of online classes, there were difficulties in interaction between instructors and learners. (Notice, attendance confirmation, etc.)	324	3.25	3.00	1.24
	2	Satisfied with the instructor's feedback regarding the content of the class. (feedback method, feedback speed, etc.)	324	3.24	3.00	1.23

The data analysis results are described by the factors of the question as follows.

First, in the question of 'I am generally satisfied with online-based convergence subjects' related to learning satisfaction (A), the average value was 3.38, but the median value was 4.00. This can be said to be the result of the fact that the average value was lower than the median value due to the low score of some respondents, although the majority of respondents showed positive satisfaction. This means that some learners had a neutral or unsatisfactory experience with the class through the standard deviation (SD = 1.28) value representing the diversity of the response distribution. Likewise, 'the content was suitable for understanding the content of the class topic.' The average value of the question was 3.53 and the median value was 4.00, suggesting that most respondents are giving positive evaluations to the class content.

Second, in the question of 'I have developed a self-directed learning habit through online liberal arts course classes' related to self-directed learning (B), the average value was 3.50 and the median value was 4.00. This means that although many learners experienced improving their self-directed learning ability, the standard deviation (SD = 1.19) is high, some learners are still having difficulty in self-directed learning. On the other hand, in the question of 'the content of the online content class was sufficient for me to follow.' the average value was 3.56 and the median value was 4.00, indicating that many learners were able to fully understand and follow the class content.

Third, regarding learning outcome (C), in the item of 'the amount of learning of content according to credit was appropriate', most of the respondents positively evaluated the amount of learning with an average value of 3.37 and a median value of 4.00, but some learners responded negatively. The standard deviation (SD = 1.27) was also somewhat high, indicating that there was a difference between the respondents.

Fourth, regarding the quality of teaching feedback (D), the average value and median value of the question 'There

was difficulty in interacting between instructors and learners' were 3.25, and the median value was 3.00, indicating that some learners felt difficulty in interacting. In the question 'I am satisfied with the instructor's feedback related to the class content', the average value was 3.24, and the median value was 3.00, indicating that a neutral evaluation of the instructor's feedback also prevailed.

4.1.2. Descriptive Statistical Analysis of Intrinsic and Extrinsic Factors

In this study, intrinsic and extrinsic factors responded by digital native generation learners were analyzed separately in the selection of online content-based convergence subjects. Through this, we tried to understand what motives played an important role when learners chose subjects.

First, the item that showed the highest response rate in the item classified as an intrinsic factor was 'the topic that I want to learn.', and 16.7% (54 people) of all respondents selected the item.

This suggests that learners tend to choose subjects based on their own learning interests and interests. In addition, 4.6% (15 people) of the respondents said 'repeated learning is possible' and 4.0% (13 people) said 'self-directed learning is possible.'

Table 1: Questionnaire(Factors)

Variables	Survey Questions	Counts	% of Total	Cumulative %
Intrinsic Factor	Repeated learning is possible.	15	4.6%	4.6%
	It's a topic I want to learn.	54	16.7%	21.4%
	Self-directed learning is possible.	13	4.0%	25.4%
External Factor	You can use your time freely.	112	34.7%	60.1%
	You can listen comfortably at home.	129	39.9%	100.0 %

This result shows that a relatively small number of learners chose subjects based on intrinsic motivation.

Next, the item that showed the most responses in external factors was 'I can listen comfortably at home', which was selected by 39.9% (129 people) of all respondents. This shows that the physical convenience of online subjects had a great influence on subject selection. In addition, 34.7% (112) answered that 'I can use my time freely', indicating that flexibility in time management is also an important selection factor. Both items showed higher response rates than intrinsic factors, suggesting that learners tend to value convenience and flexibility of time.

4.1.3. Analysis of the factors of each questionnaire according to intrinsic and extrinsic factors

In this study, intrinsic and extrinsic factors responded by digital native generation learners were analyzed.

Table 5: Code Description

Code	Description
A1	overall satisfied with online-based convergence subjects.
A2	The content was suitable for understanding the content of the class topic.
A3	Online content adequately covered one semester's worth of learning content.
B1	Online-based convergence course classes have created self-directed learning habits
B2	The contents of the online content class were enough for me to follow
C1	The amount of learning of the content according to the credits was appropriate.
C2	This class motivated me to learn. .
C3	Supplementary tasks for class activities along with class were appropriate.
D1	In the overall situation of online classes, there were difficulties in interaction between instructors and learners. (Notice, attendance confirmation, etc.)

Table 6 summarizes the data analysis results for each questionnaire corresponding to each factor by dividing the intrinsic and extrinsic factors that digital native generation learners responded to in the selection of online content-based convergence subjects. Items corresponding to intrinsic factors include 'repeated learning is possible', 'it is a topic I want to learn', and 'self-directed learning is possible', and external factors included items such as 'free use of time' and 'you can listen comfortably at home'. Looking closely at the sub-factors of intrinsic factors, first, 'it is a topic I want to learn'e was found to be the highest response rate among intrinsic factors with 16.7% of all respondents. This is due to the characteristics that the digital native generation places great importance on personal interests and interests, and in particular, online content-based classes provide an opportunity for learners to demonstrate their self-direction in that they can choose a variety of topics, and it is presumed that many learners cited this factor as an important reason for their subject selection. Next, the reason why the item was low with a

4.6% response rate of 'repeated learning is possible' may be that many learners feel that repetitive learning is not essential in online content-based learning. Since the digital native generation has high access to information, it is possible to find new content whenever necessary, so we cannot help but rule out the possibility that repetitive learning is not considered an important factor. Lastly, in the case of 'self-directed learning is possible', the lowest response rate was 4.0%, which may be because not all learners feel the importance of self-directed learning the same. This is because some learners need external structural support or clear feedback,

while students who do not prefer the degree of freedom of learning in a self-directed learning environment can also be found in the digital native generation.

Table 6: Code Description

Variables		Survey Questions	*N*	*M*	*Mdn*	*SD*
A1	Intrinsic	Repeated learning is possible.	15	3.93	4.00	1.163
		It's a topic I want to learn.	54	3.46	4.00	1.313
		Self-directed learning is possible.	13	3.46	4.00	1.450
	External	You can use your time freely.	112	3.28	4.00	1.337
		You can listen comfortably at home.	129	3.36	4.00	1.217
A2	Intrinsic	Repeated learning is possible.	15	4.20	4.00	0.862
		It's a topic I want to learn.	54	3.69	4.00	1.301
		Self-directed learning is possible.	13	3.38	3.00	1.193
	External	You can use your time freely.	112	3.40	4.00	1.262
		You can listen comfortably at home.	129	3.50	4.00	1.167
A3	Intrinsic	Repeated learning is possible.	15	4.20	4.00	0.862
		It's a topic I want to learn.	54	3.65	4.00	1.320
		Self-directed learning is possible.	13	3.62	4.00	1.502
	External	You can use your time freely.	112	3.52	4.00	1.200
		You can listen comfortably at home.	129	3.52	4.00	1.133
B1	Intrinsic	Repeated learning is possible.	15	4.33	5.00	0.816
		It's a topic I want to learn.	54	3.37	3.50	1.307
		Self-directed learning is possible.	13	4.00	5.00	1.354
	External	You can use your time freely.	112	3.46	4.00	1.162
		You can listen comfortably at home.	129	3.43	4.00	1.096
B2	Intrinsic	Repeated learning is possible.	15	4.27	5.00	0.884
		It's a topic I want to learn.	54	3.65	4.00	1.320
		Self-directed learning is possible.	13	3.62	4.00	1.387
	External	You can use your time freely.	112	3.44	4.00	1.272
		You can listen comfortably at home.	129	3.54	4.00	1.139
C1	Intrinsic	Repeated learning is possible.	15	3.87	4.00	1.187
		It's a topic I want to learn.	54	3.41	4.00	1.281
		Self-directed learning is possible.	13	3.46	4.00	1.391
	External	You can use your time freely.	112	3.29	3.50	1.311
		You can listen comfortably at home.	129	3.35	4.00	1.242
C2	Intrinsic	Repeated learning is possible.	15	3.93	4.00	1.280
		It's a topic I want to learn.	54	3.46	4.00	1.284
		Self-directed learning is possible.	13	3.62	4.00	1.609

	External	You can use your time freely.	112	3.13	3.00	1.270
		You can listen comfortably at home.	129	3.32	3.00	1.179
C3	Intrinsic	Repeated learning is possible.	15	3.93	4.00	1.163
		It's a topic I want to learn.	54	3.30	4.00	1.369
		Self-directed learning is possible.	13	3.08	3.00	1.706
	External	You can use your time freely.	112	3.19	3.00	1.298
		You can listen comfortably at home.	129	3.15	3.00	1.232
D1	Intrinsic	Repeated learning is possible.	15	3.40	3.00	1.242
		It's a topic I want to learn.	54	3.31	3.00	1.241
		Self-directed learning is possible.	13	3.38	4.00	1.387
	External	You can use your time freely.	112	3.13	3.00	1.248
		You can listen comfortably at home.	129	3.29	3.00	1.227
D2	Intrinsic	Repeated learning is possible.	15	4.07	4.00	1.033
		It's a topic I want to learn.	54	3.20	3.00	1.337
		Self-directed learning is possible.	13	3.00	3.00	1.472
	External	You can use your time freely.	112	3.21	3.00	1.224
		You can listen comfortably at home.	129	3.22	3.00	1.179

In terms of external factors, 39.9% of the items "I can listen comfortably at home" received the highest response, which is presumed to be because it reflects the preference for the physical environment of learning. In particular, after the COVID-19 pandemic, students have become accustomed to the convenience of learning at home, and it is highly likely that they felt the advantages of physical distance and time saving greater than face-to-face learning in the classroom. This can be said to be an important factor reflecting the continuous demand for online classes. Next, with a response rate of 34.7%, the high response rate of this item shows that the flexibility of online learning is a very important factor for students. Since the digital native generation tends to perform various activities at the same time in addition to studying, the tendency to prefer an environment in which they can learn flexibly in time management is highlighted as an important advantage of online learning in line with the characteristics of college life.

These results show that temporal flexibility and convenience act as important reasons for learners to choose subjects. On the other hand, the fact that self-directed or repetitive learning is possible as an intrinsic factor occupies a rather low percentage, but it also suggests that personal motivation for learning has played an important role in certain learners. Therefore, even if intrinsic factors account for a relatively low percentage, it shows that various learning motives suitable for each learner's learning characteristics should be considered. In particular, since flexibility and convenience have been revealed as important selection factors in external factors, it is judged that it is important to reinforce these factors when designing online content-based convergence subjects in the future. .

4.1.4. Correlation Analysis Results

In this study, a correlation analysis between each variable was conducted to identify the factors affecting learning effectiveness and satisfaction in online content-based convergence subjects of the digital native generation. The following is a table of correlation analysis results, and the contents of each variable are applied to the contents of Table 7.

Correlation analysis evaluates the relationship between variables through Pearson correlation coefficient, indicating that the closer the correlation coefficient.

Table 7: Analysis Results(I)

		A1	C1	A2	C3	A3
A1	Pearson's	-				
	df	-				
	p-value	-				
C1	Pearson's	0.810*	-			
	df	322	-			
	p-value	< .001	-			
A2	Pearson's	0.742*	0.781*	-		
	df	322	322	-		

	p-value	< .001	< .001	-		
C2	Pearson's	0.745***	0.797***	0.723***	-	
	df	322	322	322	-	
	p-value	< .001	< .001	< .001	-	
A3	Pearson's	0.768***	0.807***	0.784***	0.776***	-
	df	322	322	322	322	-
	p-value	< .001	< .001	< .001	< .001	-
B1	Pearson's	0.756***	0.739***	0.759***	0.686***	0.778***
	df	322	322	322	322	322
	p-value	< .001	< .001	< .001	< .001	< .001
B2	Pearson's	0.686***	0.695***	0.799***	0.675***	0.740***
	df	322	322	322	322	322
	p-value	< .001	< .001	< .001	< .001	< .001
C2	Pearson's	0.800***	0.806***	0.785***	0.749***	0.820***
	df	322	322	322	322	322
	p-value	< .001	< .001	< .001	< .001	< .001
D1	Pearson's	0.063	0.101	0.075	0.041	0.149**
	df	322	322	322	322	322
	p-value	0.256	0.069	0.180	0.463	0.007
D2	Pearson's	0.613***	0.581***	0.594***	0.646***	0.689***
	df	322	322	322	322	322
	p-value	< .001	< .001	< .001	< .001	< .001

value is to 0, the no correlation, and the closer to 1, the stronger the correlation. As a result of the analysis, significant correlations were found in most variables, suggesting that there is a close relationship between learners' satis faction with online content-based convergence subjects, learning outcomes, self-directed learning ability, and the quality of teaching feedback.

Table 7: Analysis Results(ii)

		B1	B2	C1	B1	B2
A1	Pearson's					
	df					
	p-value					
C1	Pearson's					
	df					
	p-value					
A2	Pearson's					
	df					
	p-value					
C2	Pearson's					
	df					
	p-value					
A3	Pearson's					
	df					
	p-value					
B1	Pearson's	-				
	df	-				
	p-value	-				
B2	Pearson's	0.747***	-			
	df	322	-			
	p-value	< .001	-			
C2	Pearson's	0.827***	0.767***	-		
	df	322	322	-		
	p-value	< .001	< .001	-		
D1	Pearson's	0.066	0.106	0.058	-	
	df	322	322	322	-	
	p-value	0.235	0.057	0.297	-	
D2	Pearson's	0.600***	0.585***	0.681***	-0.139*	-
	df	322	322	322	322	-
	p-value	< .001	< .001	< .001	0.012	-

First, as a result of analyzing the correlation between learning satisfaction (A) and learning outcome (C), the correlation coefficient between A1 and C1 was 0.810, showing a very strong correlation. This means that the higher the overall satisfaction with the online content-based convergence subject, the higher the learning outcome. Likewise, the correlation coefficient between A1 and C2 is 0.742, indicating that the higher the learning satisfaction, the better the learning motivation.

Next, as a result of the correlation analysis between self-directed learning (B) and learning outcome (C), the correlation coefficient between B1 and C1 was 0.756, indicating that learners with self-directed learning habits tend to feel the amount of learning appropriately. In addition, the correlation coefficient between B2 and C2 was 0.800, and it was analyzed that the more learners felt that they could sufficiently follow the content on their own, the higher the learning motivation.

In the correlation between the quality of teaching feedback (D) and learning satisfaction (A), the correlation coefficient of D2 A1 was found to be 0.613, which means that satisfaction with the instructor's feedback has a positive effect on learning satisfaction. In addition, the correlation coefficient between D2 and B2 is 0.681 which shows that the instructor's feedback plays a role in helping learners to sufficiently follow the content. The only negative correlation in the correlation analysis was D1 and B2, and the correlation coefficient was -0.139, showing a relatively low negative correlation. This suggests that learners who feel that interaction with the instructor is not smooth are more likely to find it difficult to follow the content. Through this correlation analysis, it was confirmed that there is a significant correlation between learners' learning satisfaction (A), self-directed learning (B), learning outcome (C), and quality of teaching feedback (D) in online content-based convergence subjects. In particular, the higher the learning satisfaction, the better the self-directed learning and learning outcome, and the feedback from the instructor was also found to have an important influence on the learner's learning process. The correlation analysis confirmed a significant relationship between learning satisfaction (A), self-

directed learning (B), learning outcomes (C), and the quality of teaching feedback (D) in online content-based convergence courses. The strongest correlations were observed between learning satisfaction and learning outcomes (r=0.810, *p<.001*), indicating that higher overall satisfaction strongly predicts better learning outcomes.

When comparing intrinsic and extrinsic factors, intrinsic factors showed stronger correlations with learning outcomes. Specifically, self-directed learning habits (B1) and learning motivation (C2) demonstrated a particularly strong correlation (r=0.827, p<.001), suggesting that learners with higher intrinsic motivation achieve better learning results. Among extrinsic factors, the convenience of studying at home correlated with learning satisfaction (r=0.613, p<.001), but the correlation was relatively weaker than that of intrinsic factors.

These findings demonstrate that both intrinsic and extrinsic factors play crucial roles in shaping learners' experiences and outcomes, with intrinsic motivation having a particularly strong influence on learning effectiveness.

This suggests that the digital native generation reacts sensitively to the learning environment and teaching feedback in online content-based learning, which can increase the effectiveness of learning.

However, the lack of interaction between instructors and learners is having a negative impact on some learners, which seems to be an important factor to be improved in the online learning environment. Therefore, it can be confirmed that it is essential to provide sufficient opportunities to interact with professors and to establish an environment in which learners can strengthen their self-directed learning skills when designing online content-based fusion courses.

Intrinsic and extrinsic factors play a crucial role in shaping learners' experiences and academic outcomes. Among intrinsic factors, the most influential was "interest in the subject" (16.7%), reflecting the digital native generation’s preference for self-directed learning and personal engagement. Extrinsic factors such as "convenience of learning from home" (39.9%) and "flexible time management" (34.7%) were identified as key determinants, emphasizing the importance of accessibility and scheduling flexibility in course selection.

Furthermore, higher learning satisfaction was positively correlated with improved learning outcomes, while instructor feedback and interaction significantly contributed to learner engagement and academic performance. Students with stronger self-directed learning abilities exhibited higher achievement levels, and the availability of repeated learning opportunities was also beneficial for certain learners.

In conclusion, temporal flexibility and convenience emerged as primary factors influencing course selection, while enhancing instructor feedback and fostering self-directed learning opportunities are critical strategies for increasing learner satisfaction and academic success.

5. Conclusions and Suggestions

5.1. Conclusions and Implications

5.1.1. Conclusion

This study analyzed the perception of the learning effect and satisfaction of online content-based convergence subjects for community regeneration education for the digital native generation. Based on the research results, the following conclusions were drawn.

First, learners' overall satisfaction with online content-based convergence courses for community regeneration education is positive, but there are differences in satisfaction according to individual learners' characteristics.

Second, it was confirmed that extrinsic factors (convenience, time flexibility) had a greater influence than intrinsic factors (interest in learning topics, self-directed learning possibility) in subject selection factors. In particular, extrinsic factors such as 'I can listen comfortably at home' were selected high.

Third, a significant correlation was found between satisfaction, self-directed learning, learning outcomes, and the quality of teaching feedback, and in particular, a strong correlation was found between learning satisfaction and learning outcomes. It can be interpreted that the higher the learning satisfaction, the better the learning outcome.

Fourth, it was confirmed that the instructor's feedback and interaction had an important effect on the learner's satisfaction and learning outcome. For learners, the higher the quality of feedback, the higher the learning satisfaction, which means that the instructor's role is more important in the online learning environment.

Finally, it was found that self-directed learning ability is closely related to learning outcome. In particular, it was found that higher performance was shown to learners who prefer an environment in which self-directed learning is possible.In this study, a correlation analysis between each variable was conducted to identify the main conclusions of the study may be presented in a short Conclusions section, which may stand alone.

5.1.2. Implications

The implications of this study are as follows. First, it

is necessary to establish a learning environment that considers learners' convenience and time flexibility when designing online content-based convergence courses because it has been revealed that a flexible learning structure that allows learners to learn regardless of time and place has a positive effect on learning satisfaction.

Second, it is required to prepare various online communication channels that can reinforce the interaction between instructors and learners. As the quality of feedback has had a great influence on learning satisfaction and performance, instructors need to provide real-time communication with regular feedback.

Third, it is necessary to develop a learning strategy and support system that can improve learners' self-directed learning ability. Considering that self-directed learning is a factor that brings high results, it is necessary to provide an environment in which learners can make and implement their own learning plans.

Fourth, it is important to provide interesting learning topics and contents that can induce intrinsic motivation of learners. Since intrinsic motivation affects learning outcomes, it is necessary to develop various learning contents that learners can be interested in.

5.2. Limitations of Research and the Direction of Future Research

This study has the following limitations, and based on this, I would like to suggest future research directions.

First, this study is conducted for students of a single university for community regeneration education, so there is a limit to the generalization of the results. In future research, it is necessary to conduct research on a larger sample including students from various universities.

Next, this study was conducted as a cross-sectional study, so it did not observe changes over time. It is necessary to understand the changes in learners' perceptions and the persistence of learning effects through longitudinal studies in the future. Through this, it is possible to study in-depth how learning satisfaction and outcomes change over time, how specific factors affect learning effects in the long term, and the characteristics of digital native generations. In particular, a more in-depth analysis is needed for digital native generations with non-uniform characteristics by parallel qualitative research methods. For example, there is a need for research that can reflect practical experiences in an online learning environment by exploring learners' individual experiences or perceptions in more depth.

Finally, further research is needed on the relationship between subject selection factors and learning outcomes according to learner characteristics. In future studies, more specific factors may be revealed by comprehensively analyzing the effects of learners' demographic characteristics, learning environment, and learning style on learning outcomes. In particular, research is needed to examine the relative influence of specific factors on learning outcomes, and through this, measures to improve educational programs may be derived.

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