

Public Value

Vol. 10 No. 0

1. **A Study on Virtual Exhibition Planning and Teaching Methods using the Metaverse Platform**
/ Seohyun Song
2. **The Impact of the Acceptance Motivation of Beauty Short-Form Content on Consumer Attitudes and Usage Satisfaction**
/ Youngho Kim, Soyeon Lee, Sunmi Lim, Eunjoo Choi
3. **A Study on the Effects of Retraining on Job Satisfaction among Beauty Professionals**
/ Jungmin Choi, Eunjoo Choi
4. **Utilizing Play-Based Learning in Higher Education: A Focus Group Study of University Students' Learning Experiences**
/ Soyoung Lee
5. **A Study on the Sculptural Aesthetics and Cultural Value of the Barigongju Gache: A Craft-Based Analysis of an Outstanding Skilled Artisan's Work in Korea**
/ Youngjoo Lee
6. **Wireless Power of Smart Society: Public Value Challenges and Governance Solutions**
/ Tae-Woong Kim, Hyunsoo Kim
7. **The Impacts of ADHD Tendencies on Mental Health in Elementary School Students: Mediating Effects of Optimism**
/ Jino Choi
8. **An Ecological Process Model of International Student Settlement -Linking Affective and Structural Dimensions of Settlement**
/ Yunju Lee

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A Study on Virtual Exhibition Planning and Teaching Methods using the Metaverse Platform

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Abstract

Purpose: The educational significance of this study lies in the fact that through the exhibition planning course for the digital beauty curriculum utilizing the metaverse platform developed herein, students can independently explore media technology and virtual spaces, communicate with each other, experience new methods and meaningful experiences, and acquire and master various digital technologies while enhancing their creativity through process-centered activities.

Method: An experiment was conducted with 40 second-year beauty majors to select a digital beauty course suitable for exhibition-based project learning using the ZEPETO metaverse platform, chosen through case studies related to the research topic. The experiment aimed to explore efficient teaching methods for virtual exhibition planning courses and verify student satisfaction. Pre- and post-course satisfaction surveys were administered, and comparative analysis was performed using a paired t-test.

Results: First, we selected ZEPETO among metaverse platforms to develop a new form of exhibition class free from temporal and spatial constraints. Second, a paired t-test was conducted to analyze the difference in class satisfaction between existing digital beauty education and digital education utilizing the ZEPETO metaverse. The results showed a significant improvement in post-satisfaction compared to pre-satisfaction. Third, during the metaverse experience, recreational experiences, relational experiences, and escapist experiences were found to have a significant positive (+) effect on satisfaction. Therefore, metaverse experience factors suggest they act as key elements that go beyond simply stimulating learning interest. They promote learners' social interaction, emotional connection, and autonomous participation, ultimately enhancing class satisfaction and learning outcomes.

Conclusion: Therefore, future metaverse-based education requires cognitive design elements that induce educational immersion and the establishment of creative experiential environments where learners can autonomously create aesthetic value. If educational content development utilizing diverse media for new major courses continues in step with this, educational effectiveness can also be enhanced. While this study involved 40 beauty major university students and thus faces limitations in generalizing its findings to broader educational contexts, its positive results from the virtual exhibition class using a metaverse platform suggest the need for follow-up research on education utilizing diverse metaverse platforms.

Keywords: Metaverse Platform, Virtual Exhibition, Teaching Methods, Experiential Factors, Satisfaction Level

1. Introduction

The unexpected pandemic known as COVID-19 has made changes to daily life inevitable [1], and as social distancing continues, it has brought about a major shift toward non-face-to-face educational environments [2][3]. With non-face-to-face classes becoming the new standard in education [4], much educational content and teaching materials are now being implemented using remote technology. Various online programs and platforms designed to create interactive learning environments are gaining attention as new educational media [5].

Among these, the Metaverse is a platform enabling users to freely manipulate avatars within a three-dimensional virtual space realized through virtual reality[6][7]. Its defining feature is the ability to experience educational environments distinct from reality[8], diverse experiences, communication, and an expanded sense of reality through avatars. This enhances participants' immersion and sense of presence, thereby aiding learning[9][10].

Moreover, the metaverse, applicable across diverse fields, has naturally begun to be applied to artistic activities. Metaverse exhibition halls, where viewing is possible without constraints of time or space within virtual environments, are rapidly proliferating[11]. Art has become accessible for daily enjoyment, and individuals can now actively engage as subjects in appreciating works. Creators and audiences are proactively embracing new changes in a more autonomous manner, thereby generating diverse artworks and novel exhibition spaces[12].

Therefore, it is necessary to prepare educational settings enhanced with edutech to align with the rapidly changing times. Learning about and directly experiencing the media technologies permeating our lives, and enabling teachers and learners to interact within a digital environment rather than relying on one-way knowledge transmission, will lead to more effective learning[13].

Amid the recent pandemic, the integration of university education and the metaverse has grown significantly, currently in a phase of verifying effectiveness and practicality[14]. While educational cases on new teaching-learning strategies using metaverse platforms are being researched[15][16]. Existing metaverse-related studies have primarily utilized 'meeting-type/discussion-type platforms such as Gather Town and ifland to verify interactive classroom effects. In contrast, this study differentiates itself by applying a 3D space-based creative/exhibition-type platform to education. Concrete instructional design and learning outcome analysis for 'virtual exhibition-type project-based classes' which integrate planning, production, and exhibition remain scarce in university major education. This study explored previously unexplored instructional strategic possibilities by extending metaverse spaces into learner-centered exhibition planning and content creation learning environments.

The exhibition planning course approach for the digital beauty curriculum developed in this study, utilizing the metaverse platform, enables learners to independently explore media technology and virtual spaces, communicate with each other, and experience new methods and meaningful interactions. Furthermore, it holds educational significance as it allows learners to acquire and master various digital technologies through process-centered activities and enhance their creativity.

2. Theoretical Background

2.1. Metaverse platform

Gather Town, ZEPETO, Ifland, and Spatial.io are primarily utilized as educational platforms for displaying students' work in virtual spaces. Gather town is designed as a 'game-like walking and talking spatial video conferencing' platform. Users move their avatars within the virtual space; approaching another user automatically initiates video and voice communication through spatialized interaction. This offers educational advantages over traditional video conferencing systems (like zoom or google meet), enhancing natural communication, participant immersion, and social presence[17]. Second Life is a representative early metaverse developed by linden lab in 2003. It is a user-generated 3D virtual space where users (avatars) can perform social interactions, economic activities, and creative activities within the virtual world.

ZEPETO is a Korea-based, 3D avatar-centric metaverse platform operated by NAVER Z Corp. Users can create and customize avatars, explore various "worlds," or create and share their own

worlds. It partially supports AR/VR, mobile, and PC environments, with a strong user-generated content (UGC)-centric ecosystem[18]. Ifland is a Korean-style metaverse platform provided by SK Telecom, serving as a mobile-centric, avatar-based virtual communication space. Because it is a mobile-centric environment, it is characterized by high accessibility and low barriers to entry [19], but unfortunately, the service ended in March 2025.

Spatial is a 3D-based XR collaborative metaverse platform developed in 2018 by Spatial Systems Inc., headquartered in New York, USA. Originally launched as a virtual meeting and collaboration tool for global corporations, its application has recently expanded into the arts, design, and education sectors. It is now being actively adopted for immersive classes and exhibition-based project learning in higher education institutions[20].

The metaverse virtual exhibition program in this study aims to maximize the effectiveness of both the metaverse platform's advantages and the strengths of self-directed learning, where exhibition planning students directly select and arrange works. After comparing metaverse platforms, Zepeto was selected for the virtual exhibition program due to its strong avatar customization and user-generated content world creation capabilities< Table 1>.

Table 1. Comparison of metaverse platforms for metaverse exhibition planning activities.

Platform	Developer	Features	Educational Advantages	Limit
Gather town	Gather Presence, Inc. (USA, 2020)	2D pixel graphics-based virtual space platform Link-based entry	No installation required, high accessibility Ideal for collaborative and discussion-based classes Real-time integration with Google Docs, YouTube, and more	Low immersion Limited avatar customization Restricted graphics
Spatial.io	Spatial Systems Inc. (United States, 2018)	3D immersive metaverse supporting AR/VR, PC, and mobile Utilizing NFTs, exhibitions, and learning spaces	High-quality 3D visual effects Ideal for art and design exhibitions and presentation-style classes Capable of reproducing real spaces	Requires high-performance equipment Difficult for beginners to access
Second Life	Linden Lab (United States, 2003)	Features a representative early-stage metaverse with an avatar-based social and economic system Capable of constructing university campuses	Virtual campus operation, utilized in social sciences, linguistics, and arts education Enhanced realism through its own economic system	Outdated graphics, requires high-spec PC High barrier to entry for beginners
ZEPETO	NAVER Z Corp. (Korea, 2018)	Game-based metaverse centered on user-generated content (UGC) Provides coding education tools (Roblox Studio)	Self-expression through avatar customization Suitable for liberal arts/exhibition-style classes, project-based collaboration, and creative content courses Utilized for metaverse festivals and virtual campus operations	Limited learning management capabilities Low integration of classroom tools (assessments, attendance, etc.)
ifland	SK Telecom (Korea, 2018)	Mobile-centric virtual meeting platform Ideal for presentation/discussion-based classes Real-time avatar communication and presentation capabilities	Highly accessible, with participation possible via mobile devices alone Focused on real-time communication and voice conversations Optimized for educational events such as university seminars, special lectures, and symposiums	Low customization flexibility Limited for experimental and creative learning

2.2. ZEPETO's features

ZEPETO 's most fundamental and core feature is its avatar customization function. Users can create unique avatars by either 3D scanning their own face or manually adjusting features like

eyes, nose, mouth, skin tone, and hairstyle. This process goes beyond simple appearance customization, serving as a tool for self-expression and the formation of digital identity. Educationally, it enhances students' self-esteem, immersion, and sense of social presence based on how they express themselves, showing an effect of increasing motivation for class participation[21].

ZEPETO offers a 'Build It' feature that allows users to design and decorate virtual spaces(Worlds) themselves. Through this, students can create 3D virtual environments like imagined learning spaces, exhibition halls, performance venues, beauty salons, or cafes, which other students can explore and interact within. This space creation feature serves as a medium for project-based learning in design, beauty, and fashion education. Students can train practical industry skills such as spatial design, color coordination, and user flow planning[22].

In ZEPETO, users can create photo or video content by placing their avatars in various backgrounds and poses. Through the photo booth feature, users can create group photos, selfies, and vlog-style videos. Users can also film directly within their own worlds to complete digital storytelling. This feature can be applied in educational settings for tasks like digital portfolios, beauty demonstration videos, and fashion pictorial production. Students demonstrate creative direction and visual expression, sharing their work on social media or in exhibition-style classes.

Additionally, ZEPETO incorporates community features similar to social media, allowing users to post content, add friends, and exchange likes and comments. Furthermore, users can create group communities called Crews to collaborate with others sharing common interests. This feature enables peer feedback and collaborative learning among students, facilitating the creation of learning communities where they evaluate each other's assignments or works and exchange opinions.

2.3. Theory of the metaverse experience economy

Experience Economy Theory is a concept proposed by Pine and Gilmore that explains the phenomenon where economic value expands from simple goods or services to 'experiences'. They categorized experiences into Entertainment, Educational, Escapist, and Esthetic dimensions, viewing them as creating memorable value through active user participation and immersion[23][24].

This experience-centered value creation aligns with the core concept of participatory and immersive learning and exhibition activities realized in metaverse spaces[25]. The metaverse is defined not merely as a technological medium but as a space where users directly exist, interact, and experience. Therefore, experiences within the metaverse should be understood not as 'technological experiences' but as immersive experiences combining sensory, emotional, and cognitive elements[26].

In metaverse virtual exhibition classes, learners are not mere observers but experiencers. They explore the virtual space, manipulate content, and construct their own learning experiences. This participatory structure of sensory and emotional experiences aligns with the core concepts of experience economy theory. That is, metaverse experiences presuppose value creation centered on the experience itself, not technology, and experience economy theory serves as the key theoretical framework explaining this.

In metaverse virtual exhibition classes, learners are not mere observers but experiencers who navigate virtual spaces, manipulate content, and construct their own learning experiences. This participatory structure of sensory and emotional experiences aligns with the core concepts of experience economy theory. That is, metaverse experiential engagement presupposes value creation centered on "experience" rather than "technology," and experience economy theory functions as the key theoretical framework explaining this.

Recent domestic and international studies classify metaverse experiential experiences into categories such as immersive sensation, emotional satisfaction, social interaction, and learning

engagement. Based on experiential economy theory, empirical analyses indicate that the aesthetic and escapist elements of metaverse exhibition experiences significantly influence user satisfaction[27], and that immersive experiences directly impact learners' satisfaction and intention for continued use[28]. Thus, metaverse experiences are establishing themselves as a new paradigm for learning and cultural experiences across diverse fields such as education, art, exhibitions, and tourism.

3. Research Method

3.1. Research subject

Through case studies related to the research topic, we selected a digital beauty course suitable for exhibition-based project learning using the ZEPETO metaverse platform. We conducted an experiment with 40 second-year beauty majors to examine efficient teaching methods for virtual exhibition planning courses and verify their satisfaction levels.

3.2. Course satisfaction measurement tool

The measurement tool for class satisfaction was reconstructed by modifying and supplementing the questionnaire used by Bae Eun-ji (2022) to suit the objectives of this study[29], based on Pine and Gilmore's Experience Theory (1998) and Schmitt's (1999) relational experience [30].

The measurement items per factor comprised 21 questions designed to assess the sub-elements of metaverse experience: recreational experience, educational experience, aesthetic experience, escapist experience, relational experience, satisfaction, and behavioral intention. A 5-point Likert scale ranging from '1: Not at all' to '5: Very much so' was employed.

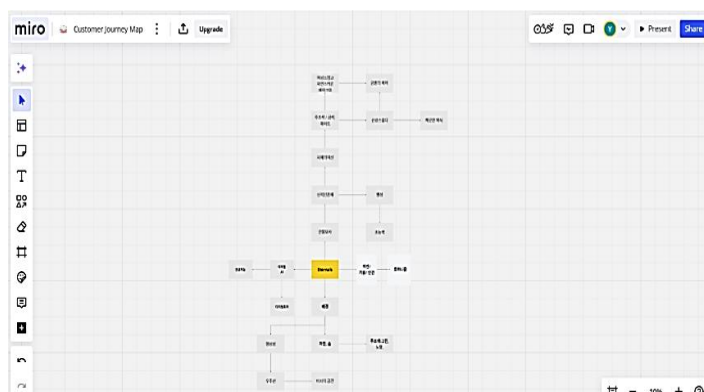
The first survey data collection gathered a total of 40 questionnaires to assess satisfaction with the existing digital beauty class, collected from October 14 to October 21, 2024. The second survey data collection gathered the same questionnaire from December 9 to December 16, 2024, after conducting classes utilizing the metaverse platform. To assess the differences between the two surveys, factor analysis, reliability analysis, and paired-sample t-tests were conducted using the SPSS statistical program to verify the validity and reliability of each variable.

3.3. Curriculum design curriculum design

The curriculum design for this study is as follows.

The metaverse virtual exhibition planning course spans five weeks from week 10 to week 14. In week 10, the theme setting process involved creating a mind map activity sheet in miro mind map. Students brainstormed potential themes with their team members and identified elements that best represent their team's theme identity <Figure 1>.

Figure 1. Idea generation using the miro mind map technique.



In week 11, students were instructed to create a video tutorial demonstrating how to freely scrap and insert images using Photoshop, an image editing tool, aligned with their project theme and purpose <Figure 2>. This video was to be watched for pre-learning before class participation. week 12 involved experiencing the ZEPETO metaverse platform, creating avatars for map production, planning videos and images, deriving the overall project concept, and planning the entire exhibition <Figure 3>.

Figure 2. Learn photoshop image editing.

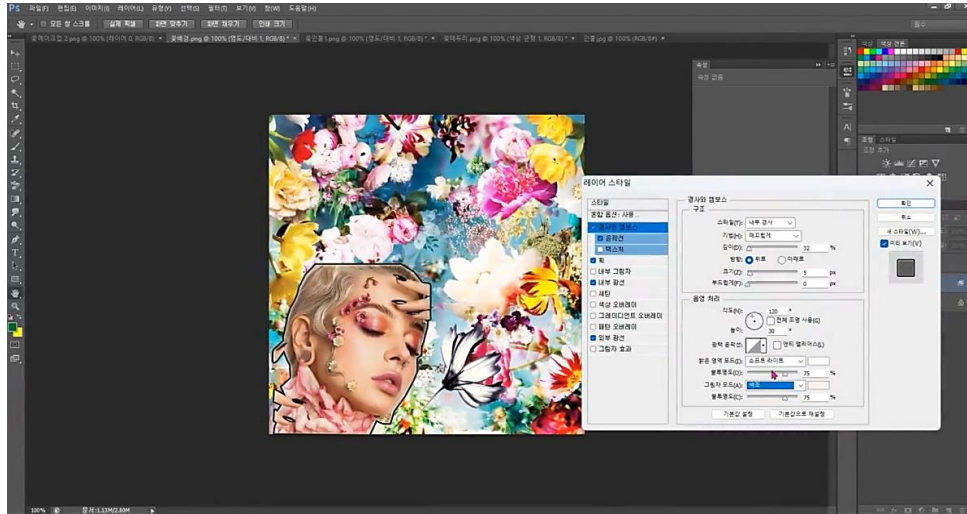
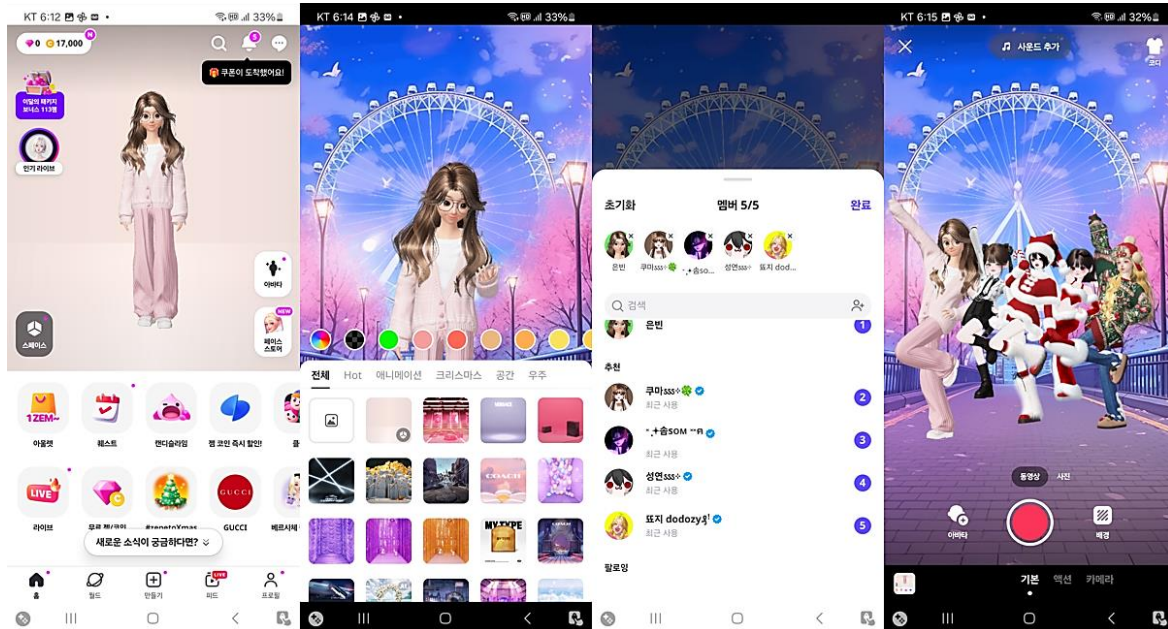


Figure 3. ZEPETO world experience exhibition planning.



During Week 13, students learned about the ZEPETO Build It program. They discussed how to arrange individually created works within the exhibition spaces planned by each team and tested how they would appear in the actual map through previews <Figure 4>. In Week 14, students entered the various exhibition maps planned by each team, freely communicated, took photos, and enjoyed the exhibition within the virtual space <Figure 5>. Additionally, they shared their results through a free discussion time about other teams' exhibition planning skills and individual works.

Figure 4. ZEPETO build It program learning.

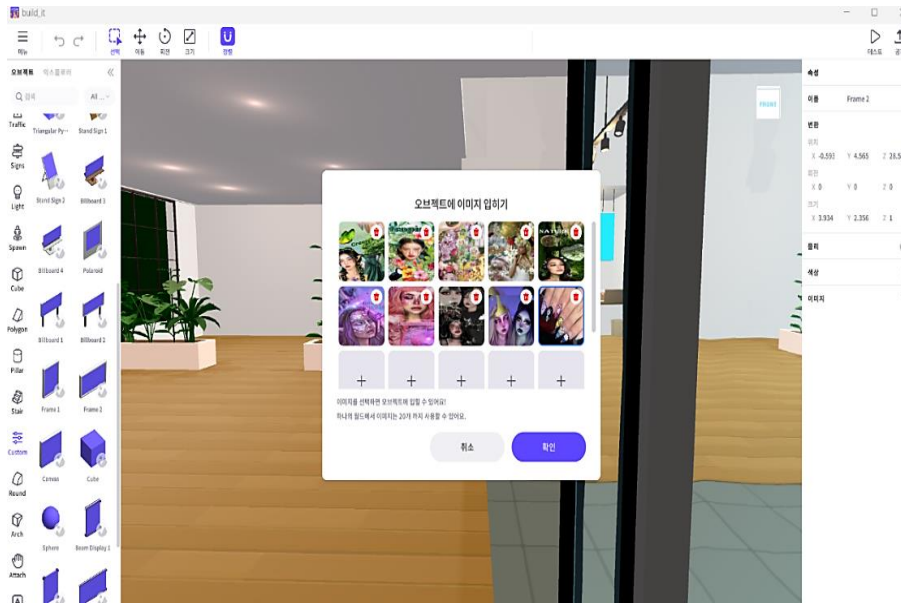
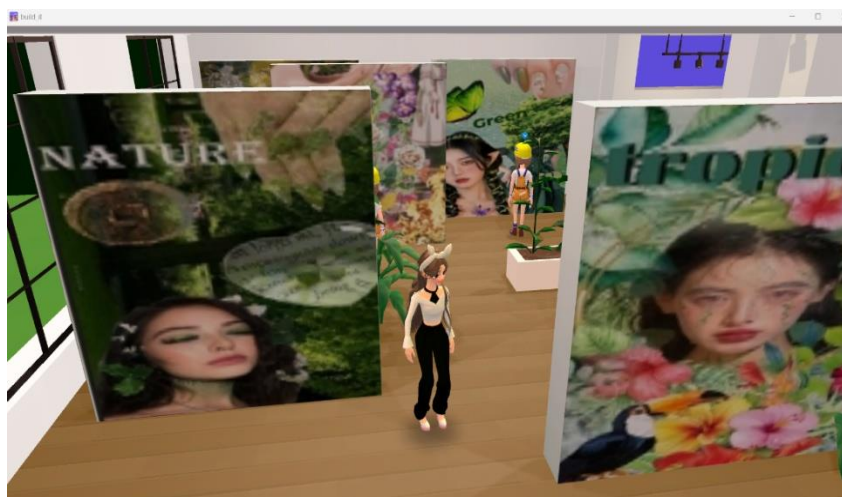


Figure 5. ZEPETO virtual exhibition tour.



4. Research Results

4.1. Factor analysis and reliability analysis

To validate the validity of the metaverse virtual space exhibition planning course scale, the KMO goodness-of-fit test and reliability test were conducted. The KMO measure was .619, indicating a high correlation between factors. Furthermore, bartlett's sphericity test yielded a p-value of .000, satisfying the $p < .05$ criterion for significance. The factor reliability coefficient (Cronbach's α) was .824, indicating high reliability.

Factor 1, termed 'Escapist Experience,' consists of items regarding the degree of immersion in a new world. Factor 2, termed 'Relational Experience,' consists of items regarding the degree to which an individual connects with their ideal self, others, or culture. Factor 3, termed 'Educational Experience,' consists of items regarding the degree to which knowledge is experienced

through the metaverse. Factor 4, based on attitudes of satisfaction toward metaverse experiences, asks about future behavioral intent and is named 'Behavioral Intent'. Factor 5, regarding the overall fulfillment or satisfaction felt from using metaverse experiences, is named 'Satisfaction'. Additionally, Factor 6 was named 'Aesthetic Experience' for items measuring the degree of appreciating aesthetic elements through the metaverse, and Factor 7 was named 'Recreational Experience' for items concerning the enjoyment, positive feelings, or happiness experienced through the metaverse <Table 2>.

Table 2. Results of factor analysis and reliability analysis.

Factors Influencing Metaverse Experience		Factor							Commonality
		1	2	3	4	5	6	7	
Deviant Experience	During the metaverse experience, there were elements that provided a refreshing change of pace.	.853	.021	.062	.128	.113	-.152	.058	.800
	Simply viewing the screen during the metaverse experience was highly enjoyable.	.833	-.011	-.173	.138	.283	.204	-.063	.532
	During the metaverse experience, I felt detached from reality.	.817	-.264	-.223	-.072	.013	-.074	.016	.673
	I appreciate the diverse experiential elements within the metaverse.	.644	.264	-.263	.032	.012	.087	.384	.741
	I feel a sense of kinship with other users of this metaverse.	.625	-.251	-.066	.476	.144	-.200	.109	.800
Interactional Experience	I will actively recommend the metaverse experience to my acquaintances.	-.037	.896	-.059	.068	-.086	-.027	-.168	.889
	I am willing to share information about the metaverse content I experienced with others.	-.201	.800	.138	.140	-.138	.259	-.048	.869
	I feel happiness in the metaverse.	-.438	.677	.274	.049	-.011	-.184	.082	.688
Educational Experience	I was able to gain insights into others' experiences and knowledge through the metaverse's chat windows and voice features.	.028	.005	.893	-.030	.038	-.030	.217	.648
	The metaverse experience had educational elements.	-.091	.179	.774	-.086	.216	.121	-.182	.797
	The metaverse experience provided rich emotional experiences.	-.305	.032	.537	.232	-.231	.381	.114	.787
Intent of Action	The metaverse experience stimulates curiosity to learn new things.	.052	.077	.204	.841	.354	.003	-.073	.843
	The metaverse experience was interesting.	.219	.228	-.214	.734	-.192	.259	.104	.848
Satisfaction	I had fun during the metaverse experience.	.114	-.217	.047	.019	.766	.106	-.110	.683
	The metaverse experience had elements that fostered creativity.	.147	-.118	.147	.229	.730	.221	.331	.757
	I am generally satisfied with my use of the metaverse.	.320	.360	-.008	.008	.523	-.267	.270	.769
Aesthetic Experience	I could share and exchange opinions with other users about my interests within the metaverse.	.163	-.079	-.103	.115	-.294	.712	.183	.709
	I will continue to use the metaverse I have been using.	-.165	.049	.270	.103	.133	.624	.296	.649
	My mood shifted during the metaverse experience.	.377	-.069	-.220	.140	-.171	.532	-.066	.608

Entertainment Experience	The metaverse experience helped relieve stress.	.065	.092	-.034	-.051	-.094	.096	.899	.849
	The atmosphere of the metaverse experience was appealing.	.019	-.173	.189	-.493	-.021	.262	.558	.807
Eigenvalue		3.619	2.437	2.218	1.945	1.940	1.835	1.754	
Distribution (%)		17.23	11.61	10.53	9.26	9.239	8.737	8.351	
Cumulative (%)		17.23	28.84	39.40	48.67	57.89	66.64	74.99	
Reliability (Cronbach's α)		.809	.788	.893	.901	.844	.798	.891	
Overall Reliability		.824							
KMO and Bartlett's Test		KMO=.619, X ² =423.202 p<.000							

Regarding metaverse experience factors, satisfaction factors were found to have a positive correlation with escapist experience factors ($r=.394$, $p=.021^*$). This suggests that higher escapist experience factor responses may lead to increased satisfaction <Table 3>.

Table 3. Correlation analysis results.

Factor	Deviant Experience	Relational Experience	Educational Experience	Intent of Action	Satisfaction	Aesthetic Experience	Entertainment
Deviant Experience	1						
Relational Experience	-.221	1					
Educational Experience	-.080	.260	1				
Intent of Action	.121	.266	.254	1			
Satisfaction	.394*	-.009	-.072	.300	1		
Aesthetic Experience	-.161	-.035	.112	.000	.040	1	
Entertainment Experience	-.106	.283	-.135	.000	.051	.036	1

Note: * $p<.05$, ** $p<.01$, *** $p<.001$.

4.2. Analysis of differences in class satisfaction

A paired-sample t-test was conducted to analyze the difference in class satisfaction between existing digital beauty education and digital education utilizing the metaverse platform Zepeto. The results showed a significant improvement in post-test satisfaction compared to pre-test satisfaction ($t=6.093$, $p=.000^{***}$), confirming statistical significance. Furthermore, significant changes in experiential factors were observed in recreational experience ($t=6.533$, $p=.000^{***}$), relational experience ($t=5.169$, $p=.000^{***}$), and escapist experience ($t=3.447$, $p=.002^{**}$), indicating these factors can be expected to contribute to class outcomes <Table 4>.

Specifically, the experiential factors of class satisfaction (entertainment experience, relational experience, escapist experience) showed higher average values after education using the metaverse platform ZEPETO, indicating higher student class satisfaction compared to conventional digital beauty education. Reviewing prior research, it has been reported that learners'

recreational and relational experiences in metaverse-based classes positively influence learning motivation and satisfaction[31], and that beauty education experiences using ZEPETO showed higher immersion and emotional satisfaction compared to learning from existing online content [32]. Furthermore, studies revealed that escapist experiences within metaverse platforms enhance learners' psychological immersion and self-expression, significantly impacting class satisfaction [27][33], aligning with the present findings.

On the other hand, Educational Experience and Esthetic Experience did not show significant changes in class satisfaction. These results stem from learners' strong tendency to perceive the metaverse environment as a Playful Space rather than an Educational Space. Learners find greater interest and satisfaction in experiences centered on interaction, entertainment, and self-expression than in the information delivery or knowledge acquisition provided in classes[31][32]. This is because the metaverse learning environment has characteristics that enhance emotional and relational experiences rather than knowledge transmission[27].

Additionally, regarding the aesthetic experience factor, it is judged that the visual design and avatar expression provided within the ZEPETO platform's standardized system limited learners' opportunities to independently construct aesthetic sensibilities or express themselves creatively. Similar results were observed in the study by Kim & Jang (2023), who reported that in metaverse exhibition experiences, the influence of visual completeness or graphic quality on satisfaction actually decreases once it exceeds a certain level[25]. In other words, within metaverse learning environments, interactivity and immersion exert a stronger influence on satisfaction than visual aesthetics alone. Learners tend to derive greater satisfaction from 'doing & interacting' experiences than from 'seeing' experiences[34].

Table 4. Results of the paired t-test analysis.

Factors Influencing Metaverse Experience	D			t	DF	p
	Mean (M)	Standard deviation(SD)	Standard error of the mean (SE)			
Deviant Experience	.353	.597	.102	3.447	33	.002
Relational Experience	.500	.564	.097	5.169	33	.000
Educational Experience	.147	.436	.075	1.968	33	.058
Intent of Action	.029	.460	.079	.373	33	.711
Satisfaction	.529	.507	.087	6.093	33	.000
Aesthetic Experience	.118	.409	.070	1.676	33	.103
Entertainment Experience	.618	.551	.095	6.533	33	.000

Note: *p<.05, **p<.01, ***p<.001.

5. Conclusion and Discussion

The research findings on planning virtual exhibitions using a metaverse platform are as follows.

First, ZEPETO was selected among metaverse platforms to develop a new form of exhibition class free from temporal and spatial constraints. Exhibitions utilizing virtual spaces enable

unique forms of display without physical limitations and beyond reality. Students actively cultivated creative, convergent abilities, and communication skills throughout the process from planning to production.

Second, this study conducted a paired-sample t-test to analyze the difference in class satisfaction between existing digital beauty education and digital education using the metaverse platform ZEPETO. The results showed a significant improvement in post-satisfaction compared to pre-satisfaction ($t=6.093$, $p=.000^{***}$).

Third, recreational experiences, relational experiences, and escapist experiences within the metaverse were found to have a significant positive (+) effect on satisfaction. Therefore, metaverse experience factors suggest they act as key elements that go beyond simply stimulating learning interest, promoting learners' social interaction, emotional connection, and autonomous participation, ultimately enhancing class satisfaction and learning outcomes. Conversely, educational experience and aesthetic experience did not show significant changes in class satisfaction. This is interpreted as learners perceiving the metaverse environment more as a playful and participatory space than a learning venue, forming satisfaction primarily around interactivity and entertainment rather than visual aesthetics.

Furthermore, Given that expressions of color, texture, lighting, and emotion are core educational elements inherent to beauty studies, subsequent research requires qualitative inquiry exploring how affective and sensory experience elements within metaverse spaces influence learners' aesthetic immersion and creative thinking, alongside establishing creative experiential environments enabling learners to autonomously generate aesthetic value [26][35]. Through such research, metaverse-based virtual exhibition planning courses can evolve beyond mere technology utilization into a new form of beauty education model that integrates affective aesthetics and creative expression learning.

While this study involved 40 beauty major university students and thus faces limitations in generalizing its findings broadly, the positive results from the virtual exhibition class using this platform suggest the need for follow-up research on education utilizing various metaverse platforms.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Author	SS	<ul style="list-style-type: none"> -Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/> -Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/> -Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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The Impact of the Acceptance Motivation of Beauty Short-Form Content on Consumer Attitudes and Usage Satisfaction

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Abstract

Purpose: The purpose of this study is to analyze how user motivations for adopting short-form beauty content, which is rapidly spreading, influence consumer attitudes and user satisfaction. Specifically, by examining whether consumer attitudes play a mediating role in the process of adoption motivations leading to positive attitude formation and satisfaction, we aim to provide practical implications for developing digital content strategies in the beauty industry.

Method: This study conducted an online survey of 199 adults aged 20-60 who had experience using short-form beauty content. The collected data were analyzed for reliability, validity, correlation, and simple regression using SPSS 26.0. The mediating effect of consumer attitudes was verified using the procedures outlined by Baron & Kenny (1986).

Results: The summary of this study is as follows. First, user motivation to adopt a product significantly influenced consumer attitudes. Second, consumer attitudes also significantly influenced user satisfaction. Finally, consumer attitudes were found to have a full mediating effect on the relationship between motivation to adopt and user satisfaction. In other words, motivation to adopt alone did not directly increase satisfaction, and the formation of a positive attitude was found to be a key pathway leading to satisfaction.

Conclusion: In summary, the results of this study demonstrate that content composition that meets users' interests and informational expectations in short-form beauty content fosters positive attitudes, which in turn leads to user satisfaction. Therefore, it is crucial to implement a content strategy focused on attitude improvement by going beyond simple exposure and strengthening elements such as trustworthiness, entertainment, and empathy. Furthermore, this study holds academic and practical significance by highlighting the mediating role of attitude in short-form content-based beauty marketing.

Keywords: Beauty Short-Form Content, Motivation for Acceptance, Consumer Attitude, Definition, Digital Marketing

1. Introduction

With the advancement of mobile technology, short-form content such as TikTok, YouTube, and Shorts is rapidly growing, and is having a significant impact on the younger generation and the beauty industry in particular. The global success of K-beauty has also been largely driven by social media and short-form beauty content[1][2].

While previous research has primarily focused on long-form content, short-form content possesses new media characteristics that provide not only 'information acquisition' but also 'enjoyment' and 'communication'. Therefore, it is very important to analyze the impact of the acceptance motivation and experiential value of beauty short-form content on consumer attitudes

and satisfaction[3].

Beauty short-form content is defined as digital video content produced and distributed by creators on social network services (SNS), mainly focusing on areas such as hair, makeup, skin care, and nail art[4].

Motivation for acceptance refers to an individual's willingness and psychological attitude to actively and voluntarily accept and utilize new technologies, services, content, etc. This is understood as a behavioral motivation that goes beyond simple interest and leads to actual application[5].

Consumer attitude refers to an individual's beliefs and evaluations of a specific behavior or object[6]. This is a psychological attitude formed through learning, which is a favorable or unfavorable, positive or negative reaction tendency that an individual shows toward a specific object.

User satisfaction refers to the overall level of satisfaction that consumers feel with the products or services they have purchased. This is a comprehensive concept that includes not only product quality but also various factors such as service and after-sales service.

Previous research has focused on marketing research related to short-form beauty, such as Choi HJ(2024) study on the impact of short-form beauty video acceptance motivation and experiential value on consumer attitudes, and Son JS(2023) study on the impact of short-form beauty content viewing motivation on brand awareness, satisfaction, and behavioral intention. However, research on the impact of short-form beauty content acceptance motivations on consumer attitudes and user satisfaction remains limited.

This study aims to provide theoretical and practical implications for understanding and predicting consumer behavior amid the proliferation of short-form beauty content.

Therefore, this study aims to contribute to establishing an efficient marketing method suitable for the short-form content era by analyzing the acceptance motivations of users of beauty short-form content and identifying the influence of these on consumer attitudes and user satisfaction.

2. Theoretical Background

2.1. The concept of beauty short-form content

Content is information produced and distributed digitally, and includes various formats such as text, audio, and video. Beauty content is defined as digital video content produced and distributed by creators on social network services (SNS), mainly focusing on areas such as hair, makeup, skin care, and nail art[4].

Short-form content generally refers to short video formats, typically 15 seconds to 10 minutes long. It refers to content created based on complete planning and storytelling, rather than simple editing[7]. This type of content offers high information delivery and entertainment value in a short period of time, and has the characteristic of being quickly spread to users through real-time interaction and recommendation algorithms.

Beauty short-form content is easily consumed during leisure time, providing consumers with information, entertainment, and opportunities for self-expression through short, intense video formats. The term "short-form content" is a relatively new concept, and is used interchangeably with various terms such as clip video and shorts video. It is establishing itself as a new digital content format that is distinct from existing long-form content [8][9].

2.2. Preliminary research on short-form beauty content

According to prior research, beauty short-form content is structured based on various factors such as information delivery, entertainment, and user engagement, and its function varies depending on the content format and the audience's response.

Hwang SH(2019) analyzed that beauty channels on YouTube are composed of types such as cuts, perms, dyeing, styling, product introductions, blogs, Q&A, and entertainment, reflecting users' tastes and preferences. This demonstrates that beauty short-form content offers consumers a range of choices across a variety of content types and topics.

Yoo HG(2019) classified the characteristics of beauty content into three sub-factors: interest, clarity, and diversity, and revealed that these factors significantly affect information reliability and satisfaction with information. This suggests that the quality and composition of short-form content are directly linked to user satisfaction.

2.3. Motivation for acceptance

2.3.1. Definition

Motivation for acceptance refers to an individual's willingness and psychological attitude to actively and voluntarily accept and utilize new technologies, services, content, etc. This is understood as a behavioral motivation that goes beyond simple interest and leads to actual application.

According to Deci and Ryan's(2000) self-determination theory, motivation is divided into intrinsic motivation (the enjoyment of the action itself) and extrinsic motivation (motivation driven by external factors such as rewards and recognition). This distinction also applies to content acceptance[10].

McLeod and Becker(1974) viewed media acceptance motivation as a behavior based on the conscious choice and psychological state of the recipient, and emphasized that the recipient is not a simple consumer but an active being who makes judgments and choices to satisfy his or her needs[11].

Additionally, Katz et al(1973) explained that acceptance is influenced not only by individual desires but also by social and cultural environments, and that in the modern multimedia era, users actively select media according to their needs[12].

Therefore, acceptance motivation is a complex concept formed within psychological, social, and cultural contexts, and is an important explanatory variable for understanding the consumption of digital content, such as beauty short-form content.

2.3.2. Previous research

In a previous study on the motivation for adoption, it was found that the high level of perceived ease of use, especially the utilization of spare time, entertainment, and usefulness factors had a strong influence on the user's positive motivation for using smartphone applications and their intention to use, and therefore, the production of applications with more convenient usability was emphasized[13].

2.4. Consumer attitude

2.4.1. Definition

Consumer attitude refers to an individual's beliefs and evaluations of a specific behavior or object[6]. It is a psychological attitude formed through learning, representing an individual's favorable or unfavorable, positive or negative reaction tendency toward a specific object.

Consumer attitudes emerge through the process of recognizing and evaluating the attributes of innovative products or services. In other words, they encompass an individual's feelings, preferences, evaluations, and behavioral tendencies toward specific objects or ideas, and these vary depending on the target. Furthermore, attitudes can be changed through learning and experience, ultimately significantly influencing consumer behavior.

In particular, for innovative services like information technology, consumers perceive their usefulness and convenience and evaluate them based on their perceived value, which in turn influences their attitude formation. From a pragmatic perspective, such as expected utility theory, this perception of value is explained as a key factor in consumer attitudes and behavioral decisions[5].

2.4.2. Previous research

According to a previous study, the results of analyzing the factors influencing the intention to continue using beauty content as perceived by short-form viewers showed that all factors, including playfulness, interactivity, content diversity, customized system, and convenience, influenced the intention to continue using. It was also expected that the user attitude toward media in the beauty industry would be helpful in studying future marketing effects [14].

This study aimed to understand the situation of the one-person media market represented by YouTube and explore the relationships and ecology between each entity and component that constitutes the media market. In the relationship between the characteristics of YouTube creators and consumer attitudes, professionalism was not significant, while playfulness and trustworthiness were significant, and the relationship between content involvement and consumer attitudes was significant[15].

2.5. User satisfaction

2.5.1. Definition

User satisfaction refers to a consumer's overall satisfaction with a purchased product or service. It is a comprehensive concept that encompasses not only product quality but also various factors such as service and after-sales service.

Tse & Wilton(1988) defined user satisfaction as the discrepancy between perceived actual performance after purchase and pre-purchase expectations, while D Halstead et al(1994) explained it as a positive reaction that occurs when a customer compares product performance to pre-purchase expectations. Both of these authors explain the process of satisfaction formation based on the dis-confirmation of expectations theory[16][17].

Oliver (1997) defined satisfaction as a consumer's response to achieving a specific outcome, and argued that it is evaluated based on the degree to which a product or service satisfies the consumer's needs and provides pleasure[18]. Kotler & Keller(2007) also defined satisfaction as the pleasure or disappointment resulting from the discrepancy between expectations and perceived performance[19].

Asker & Day(1978) emphasized that customer satisfaction is not simply dependent on product quality, but rather a holistic evaluation based on customer expectations and the overall purchasing experience.

Thus, user satisfaction is a core concept directly linked to customer behavior and corporate performance, occupying a significant position in marketing strategy and consumer behavior research[20]. In the case of short-form beauty content, user satisfaction is also expected to be a key variable in driving repurchase and positive attitudes among consumers.

2.5.2. Previous research

According to previous studies, content satisfaction is defined as the pleasure or disappointment resulting from the difference between expectations and actual results based on the consumption experience[21].

Lee KY & Seong DG(2018) found that the entertainment value of content significantly influences viewers' satisfaction and re-watching intentions[22]. Kim SH(2022) found that among the motivations for using short-form content platforms, time-passing positively influenced satisfaction with relaxation and ease of use, while core brevity positively influenced satisfaction with information acquisition. Furthermore, while satisfaction with interpersonal relationships is a key motivation for using social media platforms, the analysis found that the impact is minimal when simply viewing short-form content.

Park SC et al(2015) found that the motivations for using web dramas included convenience, empathy, enjoyment, cast preference, and time-passing, while Park TG(2020) reported that alternative, informative, entertaining, convenient, and communicative aspects were the main factors that increased overall satisfaction among political and current affairs YouTube users. In contrast, simple daily life motivation did not significantly affect satisfaction.

Lee SR(2021) found that among YouTube content attributes, playfulness, expertise, and rency have a positive effect on viewer satisfaction, and in particular, playfulness and expertise play a partial mediating role in the immersion (flow) effect on viewer satisfaction.

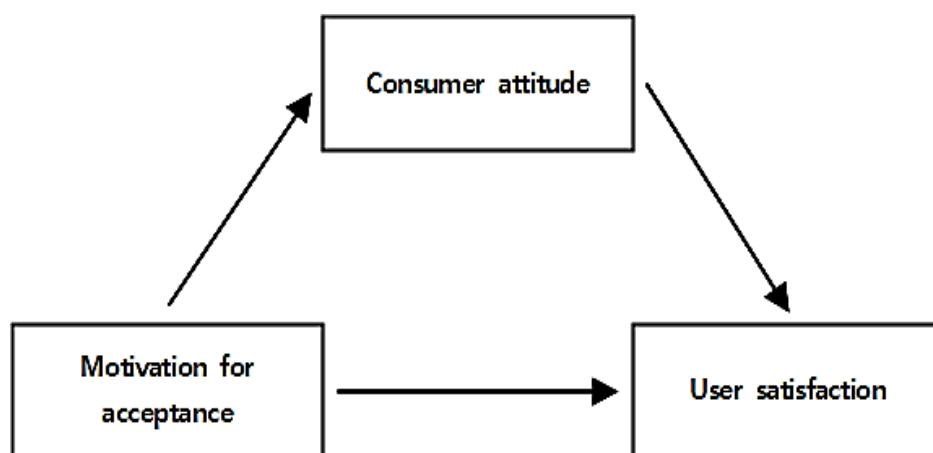
These studies demonstrate that usage motivation and content characteristics are closely linked to user satisfaction, and these factors are expected to have a significant impact on consumer satisfaction and attitudes in research on short-form beauty content.

3. Research Method

3.1. Research subjects

This study examined the influence of the acceptance motivation of beauty short-form content on consumer attitude and satisfaction with use among those in their 20s to 60s who have experience viewing beauty short-form content, and examined the mediating effect of consumer attitude in the relationship between acceptance motivation and satisfaction with use.

Figure 1. Research model.



3.2. Hypothesis

[Hypothesis 1] The acceptance motivation for beauty short-form content will have a positive effect on consumer attitude.

[Hypothesis 2] Consumer attitudes toward beauty short-form content will have a positive effect on user satisfaction.

[Hypothesis 3] Consumer attitude will have a mediating effect on the relationship between acceptance motivation and satisfaction with beauty short-form content.

3.3. Composition of the scale

The acceptance motivation was modified to suit the purpose of this study by referring to Choi HJ(2024). study on the influence of acceptance motivation and experiential value of beauty short-form videos on consumer attitudes.

Consumer attitude was modified and structured to suit the purpose of this study, referring to Park SM(2024). study on the characteristics of short-form beauty content by generation and the influence of viewing motivation on purchase intention.

The satisfaction of use was modified and structured to suit the purpose of this study, referring to the study of Son JS(2023). on the influence of motivation for viewing short-form beauty content on brand awareness, satisfaction, and behavioral intention.

3.4. Data processing method

The data collected in this study were statistically analyzed using the Statistical Package for the Social Sciences (SPSS) WIN 26.0 program. The statistical methods used for specific data analysis are as follows.

First, reliability analysis was conducted to measure the reliability and validity between the items of the measurement tools used in this study, and validity analysis was conducted.

Second, to understand the demographic characteristics of respondents and their usage of short-form beauty content, frequency analysis was conducted to calculate frequencies and percentages.

Third, we conducted a descriptive statistical analysis to examine the acceptance motivation and experiential value of beauty short-form content, consumer attitudes, and the mean, standard deviation, kurtosis, and skewness of user satisfaction.

Fourth, a correlation analysis was conducted to examine the correlation between the acceptance motivation of beauty short-form content, consumer attitude, and user satisfaction.

Fifth, a simple regression analysis was conducted to examine the influence of the acceptance motivation of beauty short-form content on consumer attitudes.

Sixth, a simple regression analysis was conducted to examine the impact of consumer attitudes toward beauty short-form content on user satisfaction.

By analyzing the content of these research hypotheses, this study aims to provide beauty brands and marketers with practical insights necessary to develop effective marketing strategies leveraging short-form content. Furthermore, it will expand academic discussion on short-form content and suggest new directions for consumer behavior research in response to changing media consumption patterns[23].

4. Research Results

4.1. General characteristics or demographics

The results of an analysis of the demographic characteristics of the 199 sample responses to this survey are as follows. There were 42 males (21.1%) and 157 females (78.9%), with females accounting for a larger proportion. The age group with the largest number of respondents was those in their 50s (71 people, 35.7%), followed by those in their 40s (56 people, 28.1%), those in their 30s (33 people, 16.6%), those in their 20s (29 people, 14.6%), and those in their 60s (10 people, 5.0%).

Regarding educational background, 68 respondents (34.2%) had graduated from high school, followed by 55 (27.6%) who were enrolled or graduated from a university, 47 (23.6%) who were enrolled or graduated from graduate school, and 29 (14.6%) who were enrolled or graduated from a junior college.

Self-employment was the most common occupation at 83 people (41.7%), followed by company employees or civil servants at 59 people (29.6%), others at 34 people (17.1%), students at 13 people (6.5%), and housewives at 10 people (5.0%).

4.2. Validity and reliability of the scale

4.2.1. Validity analysis

To verify the validity of the measurement tool for the main variables of this study, such as motivation for accepting beauty short-form content, consumer attitude, and satisfaction with use, exploratory factor analysis was conducted.

As a result of conducting exploratory factor analysis, 4 items with factor loadings less than .50, which did not meet the standard, were removed (Satisfaction with Use 3, Motivation for Acceptance 1, 2, 3), and 3 factors were extracted from a total of 11 items. The eigenvalues of the extracted factors were all 1 or higher, the KMO measure was confirmed to be 0.913, and the result of Bartlett's test of sphericity was significant ($\chi^2=2091.095$, $p<.001$), confirming the suitability for conducting factor analysis. And the cumulative variance was 70.038 in total, indicating that the explanatory power of factor analysis was 70.038%.

4.2.2. Reliability verification

To determine whether respondents consistently responded to the scale in this study, a reliability analysis was conducted. Reliability refers to the internal consistency between measurement items, and in this study, reliability was measured using Cronbach's alpha coefficient, which is used in scales consisting of multiple items for one concept, to measure the reliability of accuracy or precision of measurement tools[24].

The reliability condition is based on a Cronbach's alpha value of 0.7, and the following <Table 1> shows the reliability coefficients for each variable.

Table 1. Reliability coefficients by variable.

Variable	Cronbach's alpha	Number of items
Motivation for acceptance	0.759	3
Consumer attitude	0.859	6
User satisfaction	0.814	2

<Table 1> Examining the reliability analysis of the measurement tool, the reliability coefficient for acceptance motivation was 0.759, for consumer attitude 0.859, and for usage satisfaction 0.814. This indicates that Cronbach's α coefficient was .7 or higher in all areas, indicating that the internal consistency between each item was reliable.

4.3. Descriptive statistics

In this study, descriptive statistical analysis was conducted to confirm the characteristics of the main variables, and the results are shown in the <Table 2> below.

All variables were measured on a scale of 1 to 5, with the average of acceptance motivation being 3.37 points, experience value being 3.86 points, consumer attitude being 3.72 points, satisfaction being 3.14 points, and continued use being 3.24 points. And to determine whether the data meets the normality assumption, skewness and kurtosis were checked. If the skewness is less than 2 in absolute value and the kurtosis is less than 7 in absolute value, the data is considered to meet the normality assumption. The skewness of all variables was less than ± 2 , and the kurtosis was less than ± 7 . In other words, the data can be seen to satisfy the assumption of normality, and the distribution of the data can be judged to be without problems when conducting parametric statistics such as regression analysis.

Table 2. Descriptive statistics for each subfactor.

	N	Minimum value	Maximum value	Medium	Standard deviation	Skewness	Kurtosis
Motivation for acceptance	199	1.00	5.00	3.37	0.86	-0.64	0.48
Consumer attitude	199	2.00	5.00	3.72	0.59	0.01	-0.12
User satisfaction	199	1.00	5.00	3.14	0.99	-0.07	-0.68

4.4. Correlation analysis

To determine the correlation between variables in this study, Pearson's correlation analysis was conducted.

The correlation coefficient of correlation analysis has a value between -1 and +1, and the closer it is to 0, the less linear the relationship between the two variables is. If there is a (-) in front of the correlation coefficient, it means a negative correlation, meaning the direction of the two variables is opposite, and (+; no indication) means a positive correlation, indicating a linear relationship in the same direction.

As a result of examining the correlation between the acceptance motivation of beauty short-form content and consumer attitude and satisfaction with use, the acceptance motivation and consumer attitude showed a positive correlation, and the correlation coefficient was $r=.428$, $p<.01$, which was statistically significant. This shows that the higher the acceptance motivation, the more positive the consumer's attitude tends to be.

Acceptance motivation and user satisfaction showed a positive correlation, and the correlation coefficient was $r=.223$, $p<.01$, which was statistically significant. This shows that the higher the acceptance motivation, the higher the user satisfaction.

Meanwhile, consumer attitude showed a significant positive correlation with user satisfaction ($r=.555$, $p<.01$). This shows that the more positive a consumer's attitude is, the higher their satisfaction with content use and the stronger their intention to continue using the content.

Table 3. Correlation between variables.

	Motivation for acceptance	Consumer attitude	Usersatisfaction
Motivation for acceptance	1		
Consumer attitude	.428**	1	
Usersatisfaction	.223**	.555**	1

Note: **p<01.

4.5. Hypothesis verification

[Hypothesis 1] The acceptance motivation for beauty short-form content will have a positive effect on consumer attitude.

To test our research hypotheses, we conducted a simple regression analysis to examine the impact of motivations for adopting short-form beauty content on consumer attitudes. The results are presented in <Table 4> . To examine the independence of the residuals, the Durbin-Watson index was checked, and it was 1.876, which is close to 2, indicating that there is no autocorrelation between the residuals and that independence has been secured.

As a result of the regression analysis, the regression model was found to be suitable with $F=44.277$ ($p<.001$), and the explanatory power was confirmed to be 18.4% ($\text{adj } R^2=.184$).

The acceptance motivation for beauty short-form content ($\beta=.428$, $p<.001$) was found to have a positive effect on consumer attitude. In other words, higher motivation to accept short-form beauty content leads to more positive consumer attitudes. Therefore, [Hypothesis 1]: Motivation to accept short-form beauty content will have a positive effect on consumer attitudes has been accepted.

Table 4. The impact of motivations for accepting short-form beauty content on consumer attitudes.

Independent variable	Consumer attitude				
	B	SE	β	t	p
(Constant)	2.729	0.153		17.824	0.000
Motivation for acceptance	0.293	0.044	0.428	6.654***	0.000

$F=44.277***$, $p<.001$, $R^2=0.184$

Note: ***p<.001, Durbin-Watson=1.876.

[Hypothesis 2] Consumer attitudes toward beauty short-form content will have a positive effect on user satisfaction.

To verify the research hypothesis, a simple regression analysis was conducted to examine the effect of consumer attitudes toward beauty short-form content on user satisfaction.

The analysis results are shown in the <Table 5>.

To examine the independence of the residuals, the Durbin-Watson index was checked, and it was 2.075, which is close to 2, confirming that there is no autocorrelation between the residuals and independence is secured.

The regression analysis results showed that the regression model was appropriate with $F=87.823$ ($p<.001$), and the explanatory power was confirmed to be 30.8% ($\text{adj } R^2=.308$).

Consumer attitudes toward short-form beauty content ($\beta=.555$, $p<.001$) were found to have a positive effect on user satisfaction. In other words, more positive consumer attitudes tend to lead to higher user satisfaction.

Therefore, it can be seen that [Hypothesis 2] that consumer attitude toward beauty short-form content will have a positive (+) effect on user satisfaction has been accepted.

Table 5. The impact of consumer attitudes toward short-form beauty content on user satisfaction.

independent variable	consumer attitude				
	B	SE	β	t	p
(constant)	-0.330	0.374		-0.882	0.379
consumer attitude	0.933	0.100	0.555	9.371***	0.000

$F=87.823^{***}$, $p<.001$, $R^2=0.308$

Note: *** $p<.001$, Durbin-Watson=2.075.

[Hypothesis 3] Consumer attitude will have a mediating effect on the relationship between motivation to accept beauty short content and satisfaction.

To test our research hypotheses, we conducted a hierarchical regression analysis proposed by Baron and Kenny (1986) to determine whether consumer attitudes mediate the relationship between acceptance motivation and satisfaction with beauty short stories.

In the first step, we tested whether the independent variable, acceptance motivation, had a significant effect on the mediating variable, consumer attitude, and in the second step, we examined whether the independent variable, acceptance motivation, had a significant effect on the dependent variable, user satisfaction [25].

Finally, in the third step, the influence of the independent variable, acceptance motivation, and the mediating variable, consumer attitude, on the dependent variable, user satisfaction, was confirmed to determine whether there was a mediating effect. (Baron & Kenny, 1986).

To recognize a mediating effect, both steps 1 and 2 must be significant, and in step 3, there must be significance between the mediating variable and the dependent variable.

<Table 6> As a result of the analysis, the explanatory power (R^2) was 18.4% in the first stage of the model, 5.0% in the second stage, and 30.9% in the third stage, and the F values were all statistically significant in the first stage ($F=44.277$, $p<.001$), the second stage ($F=10.307$, $p=.002$), and the third stage ($F=43.744$, $p<.001$).

In Model 1, the independent variable, acceptance motivation ($\beta=0.428$, $p<.001$), had a significant positive effect on the mediating variable, consumer attitude. This satisfied the first condition for testing the mediation effect. In Model 2, the independent variable, acceptance motivation ($\beta=0.223$, $p=.002$), had a significant positive effect on user satisfaction, satisfying the second condition for testing the mediation effect.

Finally, in Step 3 of the model, the mediating variable, consumer attitude ($\beta=0.563$, $p<.001$), had a significant positive effect on user satisfaction, but the independent variable, adoption

motivation ($\beta=-0.018$, $p=.782$), was no longer statistically significant. This suggests that consumer attitude fully mediates the effect of adoption motivation on user satisfaction.

Therefore, in this study, it was determined that consumer attitude had a complete mediating effect in the relationship between acceptance motivation and user satisfaction, and [Hypothesis 3] was accepted[26].

Table 6. Mediating effect of consumer attitude on the relationship between acceptance motivation and satisfaction with beauty short content.

model	Dependent variable	independent variable	B	SE	β	t	p	R ²	F(p)
1	consumer attitude	(constant)	2.729	0.153		17.824	0.000	0.184	44.277***
		Acceptance motivation	0.293	0.044	0.428	6.654***	0.000		
2	User Satisfaction	(constant)	2.273	0.277		8.192	0.000	0.050	10.307**
		Acceptance motivation	0.256	0.080	0.223	3.210**	0.002		
3	User Satisfaction	(constant)	-0.308	0.383		-0.804	0.422	0.309	43.744***
		Acceptance motivation	-0.021	0.076	-0.018	-0.278	0.782		
		consumer attitude	0.946	0.110	0.563	8.567***	0.000		

Note: *** $p<.001$, Durbin-Watson=2.803.

5. Conclusion

This study aimed to examine the influence of the acceptance motivation of beauty short-form content on consumer attitudes and satisfaction with use, and reached the following conclusions.

First, the motivation to accept short-form beauty content was found to have a positive effect on consumer attitudes. In other words, the higher the motivation to accept short-form beauty content, the more positively consumers' attitudes were. Specifically, in the case of innovative services such as information technology, consumers perceive their usefulness and convenience and evaluate them based on their perceived value, and this evaluation can influence attitude formation[27][28].

Second, consumer attitudes toward short-form beauty content were found to have a positive impact on user satisfaction. In other words, more positive consumer attitudes tend to lead to higher user satisfaction.

Customer satisfaction refers to the overall level of satisfaction a consumer feels with a purchased product or service. As such, customer satisfaction is a core concept directly linked to customer behavior and corporate performance, occupying a prominent position in marketing strategy and consumer behavior research (Anderson et al., 1994) [29]. In the case of short-form beauty content, customer satisfaction is expected to be a key variable in driving repurchase and forming positive attitudes[30][31].

Third, we examined the influence of the independent variable, acceptance motivation, and the mediator, consumer attitude, on the dependent variable, usage satisfaction, to determine whether there was a mediating effect (Baron & Kenny, 1986). For a mediating effect to be recognized, both steps 1 and 2 must be significant, and there must be significance between the mediator and dependent variable in step 3.

In Model 1, the independent variable, acceptance motivation, had a significant positive effect on the mediating variable, consumer attitude. This met the first condition for testing the mediation effect. In Model 2, the independent variable, acceptance motivation, had a significant positive effect on user satisfaction, meeting the second condition for testing the mediation effect.

Finally, in Model Step 3, the mediating variable, consumer attitude, had a significant positive effect on user satisfaction, but the independent variable, acceptance motivation, was no longer statistically significant. This indicates that consumer attitude fully mediates the effect of acceptance motivation on user satisfaction.

In summary, the impact of motivation for accepting short-form beauty content on user satisfaction is conveyed solely through the mediating variable of consumer attitude. Without this mediating role, short-form beauty content would not have a significant impact on user satisfaction. In other words, because motivation alone does not increase consumer satisfaction with short-form beauty content, it is crucial to incorporate factors that positively influence consumer attitudes.

Looking at these factors, First, what makes short-form beauty content interesting and engaging? Second, what makes it useful and appealing to consumers? Third, how does the content feel comfortable to use and easy to share with others? Fourth, how does beauty short-form content generate sustained engagement and generate interest that makes viewers lose track of time? These are all crucial factors.

The results of this study are expected to contribute to the advancement of beauty short-form content and to the quantitative and qualitative development of the beauty industry.

However, some limitations of this study include the inability to determine whether the difference in interest in each beauty field is due to the lack of beauty short-form content channels or to a lack of interest in each beauty field. Therefore, we suggest the need for future research comparing beauty short-form content by beauty interest field.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Lead Author	YK	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/>
Corresponding Author*	EC	-Make a significant contribution to collection <input checked="" type="checkbox"/> -Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	SL SL	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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A Study on the Effects of Retraining on Job Satisfaction among Beauty Professionals

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Abstract

Purpose: Modern people are increasingly concerned about their appearance, leading to a continued interest in beauty. To adapt to these social changes, beauty professionals must continue to receive systematic retraining, and beauty businesses must secure a stable human resource base. Furthermore, beauty professionals' job satisfaction directly impacts their performance. Higher job satisfaction leads to better customer service, fostering organizational loyalty and reducing turnover, all of which are crucial for management.

This study aims to contribute to the management of the beauty industry by examining the correlation between the need for retraining and job satisfaction among beauty professionals based on their preferences, based on the characteristics of modern society and the service landscape.

Method: To support the purpose of this study, an online survey was conducted targeting hair and skin care professionals. A total of 307 questionnaires were collected and used as the final data for analysis. Using SPSS 26.0 as the statistical software, frequency analysis, factor analysis, correlation analysis, multiple regression analysis, and simple regression analysis were performed. The results are presented below.

Results: First, examining the general characteristics of the survey respondents, the majority were in their 40s (118 respondents), and the majority had graduated from a four-year university (90 respondents). Their job title was director (177 respondents), their monthly income was over 5 million won (101 respondents), and their experience was 10 to 20 years (79 respondents). The number of retraining sessions ranged from 1 to 3 (211 respondents), and the most common purpose was skill improvement (172 respondents). The most common form of retraining was beauty school internship (108 respondents), and the most common content of retraining was specialized technical training (162 respondents). Second, the need for and preference for retraining showed a significant positive correlation with job satisfaction.

Conclusion: These results demonstrate that retraining for beauty professionals is closely related to job satisfaction. Based on the results of this study, retraining should be considered an essential element for improving management performance in the beauty industry.

Keywords: Beauty Experts, Retraining, Job Satisfaction, Hair Care, Skin Care

1. Introduction

1.2. The need for research

The beauty industry is no exception to the competition of modern society, as its size has grown and competition has intensified[1]. The beauty industry is rapidly evolving and undergoing corresponding changes[2]. We are currently in the midst of the Fourth Industrial Revolution, an industry highly dependent on and critical to data, to the point where it can be called a data industry[3]. This Fourth Industrial Revolution is continuously accelerating disruptive changes in the beauty market[4].

As modern people's standards of living improve, their interest in their appearance has increased, leading to a continued interest in beauty[5]. The consumer base that desires to cultivate a beautiful appearance is growing, and as consumers seek out the beauty industry to discover their individuality and natural beauty, the number of beauty shops has increased[6]. However, despite this increase in the number of beauty shops, institutional limitations and high turnover rates have led to a breakdown in trust between beauty shop owners and employees, resulting in an increase in shops run and managed by one person[7]. To adapt to these social changes, beauty workers must continuously receive intensive and systematic retraining, and beauty shops must secure a stable human resource[8].

When we consider that the most important part of service is the employees who satisfy the customers, depending on how the service is provided, it can be a blessing or a curse for the company. As the saying goes, if there is no job satisfaction of the employees, there will be no customer satisfaction either, and employee dissatisfaction with their jobs can lead to insincere service to customers[9]. Since such service leads to customer movement, it can cause great losses to the company. For this reason, employee job satisfaction is positioned as an important part of service quality[10].

The beauty industry, structurally characterized by its technology and services, relies heavily on human resources. Because both technology and services are delivered face-to-face between customers and beauty professionals, it is considered a labor-intensive industry with a high dependence on human resources[11]. To secure a competitive edge in this industry, efforts should be made to enhance job satisfaction among beauty professionals through efficient and systematic human resource management, fostering the development of highly qualified professionals, and improving the work environment[12]. Furthermore, even when recruiting highly qualified individuals, continuous training in new skills and knowledge is essential to develop their professional capabilities[13].

In order to keep pace with the ever-changing technological and economic environment, systematic training should be provided to align organizational goals with individual goals, while improving individual qualities and work attitudes so that individuals can focus on their work[14]. To this end, it is necessary to recognize the fundamental attitudes and qualities of beauty professionals and provide accurate training to cultivate excellent beauty professionals. In addition, by learning new skills, the turnover rate of beauty professionals should be reduced, and stable growth plans should be sought from a beauty management perspective[15].

In order to survive in this beauty industry, re-education of workers is necessary, and it is necessary to acquire the latest education that is changing with the times. Since re-education is an important part of satisfying the needs of beauty workers in a competitive society and providing a sense of accomplishment, each beauty worker needs to approach re-education with a developmental mindset[7].

Therefore, based on these circumstances, this study aims to investigate whether there is a positive effect on the management aspect of the beauty industry by examining the correlation between the need for retraining and job satisfaction based on preference of beauty professionals.

2. Theoretical Background

2.1. Re-education

A. Definition of Retraining

The etymology of the word "retraining" originates from the French word "L'education Permanente," which in turn derives from the English terms "Permanent Education" or "Continuing Education." Retraining can be defined as providing necessary training to employees already employed in their current positions[16].

The beauty industry views retraining as a means of enhancing the effectiveness of job training through technical training and skill development, thereby systematically improving job skills and enhancing self-development in a competitive society. Participants in retraining often focus on learning to solve problems within their field or to improve their skills. They also utilize retraining as a means to address individual weaknesses. This retraining in the beauty industry can be seen as a foundation for creative artistic expression, fostering individual technical skills and customer satisfaction, ensuring a consistent and on-the-job experience in a competitive society[17].

B. Retraining by Beauty Industry

The goal of retraining is for hairdressers to acquire knowledge and skills, fostering creative abilities in performing their jobs[18]. Representative training programs in Korea's beauty franchises are categorized into step-by-step courses, such as beauty management courses, trainer courses, manager courses, and designer courses, as well as entry-level, intermediate, and skill-focused continuing education[19]. Furthermore, assigning new tasks to existing experienced employees requires additional training, necessitating new retraining programs tailored to each job[20].

The range of theoretical and practical skills required of estheticians is extensive, and the rapid accumulation of knowledge in related disciplines makes effective management difficult without periodic retraining to enhance skills. Because estheticians work with the human body, they must acquire knowledge of human anatomy, muscle science, and physiology, as well as the structure, function, and characteristics of each skin type[21].

In the makeup field, training is crucial to strengthening skills and ensuring smooth communication with clients. Furthermore, the ability to understand a client's needs and perfectly complete the image in makeup is not simply a matter of experience; it requires ongoing, repetitive training and extensive experience in client management[22]. Makeup, a specialized field, requires extensive practice and experience to master the techniques, even if one possesses a keen aesthetic sense, to perfectly express skin expressions, color makeup, and other aspects using various tools[23].

Nail art training aims to enhance knowledge and practical skills related to nail art, equipping individuals with the attitude and skills necessary to perform fundamental tasks in the nail industry. Systematic training in nail art is essential to ensure fundamental knowledge and skills, and to equip individuals with the attitude and skills to adapt to changing nail products and equipment, as well as to address potential problems that may arise in the field. Nail art training is conducted in on-site settings where one-on-one instruction is possible, maximizing the effectiveness of job performance through hands-on, natural learning experiences[24].

2.2. Job satisfaction

A. The concept of job satisfaction

Job satisfaction refers to a positive emotion one has about one's job, that is, a positive or pleasant state obtained from the harmony of physiological, environmental, psychological, and situational factors, and the results of an individual's job experience and job evaluation[25]. Job satisfaction refers to the overall satisfaction with one's job, which is perceived as a result of an individual's attitude and values regarding beliefs and confidence in one's job, linked to the external work environment, as a factor that can affect members internally in an organization[26].

Job satisfaction can be seen as the degree of personal satisfaction that an individual perceives and feels while performing the job he or she is responsible for within an organization. The degree of job satisfaction is absolutely related to the individual's ability, qualifications, adaptability to the work being performed, and various organizational environments within the organization, and is an important criterion for predicting performance [27].

Job satisfaction has a significant impact on work performance, and employees who are satisfied with their jobs consider their own goals to be identical to the organization's goals, so they act voluntarily to achieve those goals and are loyal to their superiors and the organization. This can be seen as a positive role of job satisfaction from a management perspective. However, job satisfaction is a complex subjective phenomenon and internal emotional state of humans, making it difficult to measure, and scholars' concepts of it vary [28]. Representative scholars who have defined job satisfaction are summarized in <Table 1>.

Table 1. Scholars' definition of job satisfaction.

Scholar	Details
Smith (1955)	It refers to the degree to which an individual feels that his or her needs and desires are met. Job satisfaction and dissatisfaction are defined as attitudes resulting from the balance of all emotions or feelings that an individual experiences in relation to his or her job.
McCormick (1974)	Defined as a function of satisfaction of needs, such as a sense of accomplishment that a job performer can obtain through experience or performance results during the job process.
Locke (1976)	It is a study that is accepted as the most universal concept by most scholars and refers to a positive and pleasant emotional state that determines job evaluation.
Beatty (1981)	Locke's definition is cited, and job satisfaction is defined as a pleasant emotional state that can be obtained from individual job evaluations that achieves and promotes the employee's job.
Reitz (1981)	Job satisfaction is said to be composed of three elements: information, behavior, and emotion, and its intensity varies and its source is formed by many functions.

Note: Reconstruction based on previous research[1][9].

A synthesis of scholarly perspectives suggests that job satisfaction can be defined as a person's satisfaction with their job-related attitudes[1]. Given that job satisfaction is a largely subjective concept and that people spend most of their time at work, it can be said that job satisfaction is becoming an increasingly important aspect of life [9].

B. The Importance of Job Satisfaction

The importance of job satisfaction stems from the fact that, from a personal perspective, people spend the majority of their daily lives at work, and thus desire a more fulfilling life [29]. Job satisfaction fosters happiness among organizational members, encouraging them to be creative, efficient, and loyal to the organization. Therefore, job satisfaction, which satisfies individual needs, contributes to organizational development, and the level of job satisfaction among organizational members serves as a crucial criterion for evaluating the organization's efficient operation[30].

One of the most important factors in organizational life is job satisfaction, which reflects the degree of interest in one's job. Therefore, job satisfaction, depending on the degree of satisfaction or dissatisfaction with one's job, will contribute to organizational loyalty and, in turn, become a significant factor influencing organizational performance [31].

Also, the reason why job satisfaction of organizational members is important in the workplace is because everyone wants self-actualization, and psychological maturity can be achieved through job satisfaction, and if they are dissatisfied with their job, they become dissatisfied with their needs and cannot feel happiness at work. Therefore, an environment that can satisfy the basic psychological needs of organizational members can induce internal motivation, and the resulting positive results can lead to job satisfaction or subjective well-being[12].

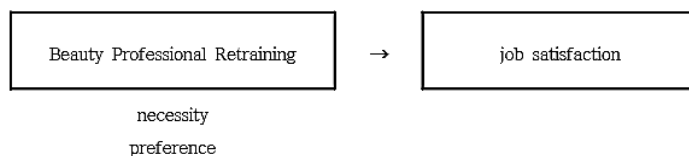
Job satisfaction has a significant impact on organizational performance and can have positive or negative effects on the organization. In addition, from the perspective of the organization, job satisfaction leads to performance, and it is expected that it will have the effect of increasing productivity by maintaining smooth human relationships within the organization and reducing turnover rates[27].

This job satisfaction is a concept that emphasizes the non-material aspects that ultimately improve the performance of the organization by actively discovering and satisfying elements that can satisfy the needs of members, and is one of the important factors in measuring organizational effectiveness[28].

3. Research Methods

3.1. Research model

Figure 1. Research model.



In this study, the following research hypotheses were established to investigate the impact of retraining on job satisfaction among beauty professionals.

1. Retraining for beauty professionals will affect job satisfaction.
 - 1-1. The need for retraining will have a positive impact on job satisfaction.
 - 1-2. The preference for retraining will have a positive impact on job satisfaction.

3.2. Research subjects and methods

This study used a purposive sampling method to conduct a survey of hair and skincare professionals aged 20 years or older who had received retraining. To assess retraining and job satisfaction, the questionnaire was adapted to the purpose of this study, based on previous research. The survey was conducted online from March 20, 2023, to April 25, 2023. A total of 326 questionnaires were received, of which 19 remained unanswered. The remaining 307 were used for statistical analysis.

3.3. Operational definition of variables

A. Beauty Professional Retraining

In this study, retraining refers to new employee retraining, which includes orientation and practical training on general information, job requirements, job attitudes, and expected tasks.

Middle manager retraining aims to improve performance through training in various areas related to beauty services, such as trends and technologies, sales management, and marketing. Manager retraining encompasses training in various management techniques and fostering insight into social changes. In this study, beauty professional retraining is operationally defined as a single retraining element.

B. Job satisfaction

In this study, job satisfaction was operationally defined as satisfaction with one's job after receiving retraining, and was found to contribute to improved efficiency, smoother relationships among members, and reduced turnover intention.

3.4. Measuring tools

The questionnaire for this study consisted of demographic characteristics, retraining status, retraining, job satisfaction, and service quality.

First, for the sub-variables of reeducation, necessity, and preference, nine items were constructed on a 5-point Likert scale by referring to the existing paper of [32].

Second, job satisfaction was measured using a 5-point Likert scale consisting of 7 items, referring to the existing paper of [33].

3.5. Statistical analysis methods

SPSS 26.0 was used for the empirical analysis of this study, and the specific statistical techniques used in the empirical analysis are as follows.

First, we conducted a frequency analysis to examine the demographic characteristics of the sample.

Second, to confirm whether the questionnaire items were valid in measuring the measured variables, factor analysis was conducted using the Varimax rotation method, and the reliability of the variables was confirmed using Cronbach's α coefficient.

Third, multiple regression analysis was conducted to examine the relationship between retraining and job satisfaction.

4. Research Results

4.1. Demographic characteristics

The sample for this study consisted of 307 people, and their demographic characteristics are as follows: 63 people (20.5%) were in their 20s, 81 people (26.4%) were in their 30s, 118 people (38.4%) were in their 40s, and 45 people (14.7%) were in their 50s or older, with the 40s being the most numerous. Marital status was 115 people (37.5%) single, 177 people (57.7%) married, and 15 people (4.9%) other, with married people being the most numerous. By educational background, 77 people (25.1%) had graduated from high school or lower, 85 people (27.7%) had graduated from a technical college, 90 people (29.3%) had graduated from a four-year university, and 55 people (17.9%) had graduated from a graduate school, with the majority having a four-year degree. In the beauty industry, hair salons were the most common with 163 people (53.1%), followed by skincare salons with 144 people (46.9%). By occupation, interns were 26 people (8.5%), designers 45 people (14.7%), managers 15 people (4.9%), directors/team leaders 32 people (10.4%), vice presidents 12 people (3.9%), and directors were the most common with 177 people (57.7%). Looking at average monthly income, 6 people (2.0%) earned between 500,000 won and 1 million won, 38 people (12.4%) earned between 1 million won and 2 million won, 75 people (24.4%) earned between 2 million won and 3 million won, 87 people (28.3%) earned between 3 million won and 4 million won, and 101 people (32.9%) earned over 5 million

won, with the majority earning over 5 million won. Looking at the overall work experience, 57 people (18.6%) had 1 to 4 years of experience, 45 people (14.7%) had 4 to 7 years of experience, 59 people (19.2%) had 7 to 10 years of experience, 79 people (25.7%) had 10 to 20 years of experience, and 67 people (21.8%) had 20 years of experience, with 10 to 20 years of experience being the most common.

The status of retraining is shown in <Table 2> Within a year, 211 employees (68.8%) received retraining 1-3 times, 57 (18.6%) 4-6 times, 17 (5.5%) 7-10 times, and 22 (7.2%) 10 or more times, with 1-3 times being the most common. The most common purpose of retraining was technical improvement (172 employees, 56.0%), followed by customer service enhancement (44 employees, 14.3%), Satland's request (82 employees, 26.7%), and raises and dismissals (9 employees, 2.9%). By type of retraining, 66 people (21.5%) received in-house training, 76 (24.8%) received training at product companies, 108 (35.2%) received training at distance learning institutions, and 57 (18.6%) received training at universities and lifelong learning institutions. Returning to closed-loop training was the most common form of retraining. By retraining content, marketing and specialized technical training was the most common (49 people, 15.9%), followed by specialized technical training (162 people, 52.8%), new product and equipment training (78 people, 25.4%), and liberal arts training (18 people, 5.9%).

Table 2. Status of beauty retraining.

Division		Frequency	Percent
Number of retraining sessions per year	1~3 times	211	68.8
	4-6 times	57	18.6
	7-10 times	17	5.5
	10 times or more	22	7.2
Purpose of reeducation	Technology improvement	172	56.0
	For better customer service	44	14.3
	I learn new skills	82	26.7
	For salary increase and promotion	9	2.9
Reeducation form	Company's own internal training	66	21.5
	Product company training	76	24.8
	Beauty Academy Practical Training	108	35.2
	University and lifelong education institution education	57	18.6
Re-education content	Marketing and management consulting training	49	15.9
	Major education	162	52.8
	Training on new products and new equipment	78	25.4
	Liberal arts education	18	5.9

4.2. Validity and reliability analysis of the scale

A. Factor analysis and reliability analysis of reeducation

The results of factor analysis and reliability testing for independent variables are shown in Table 3. Factors extracted with eigenvalues greater than 1.0 as a result of factor analysis were divided into two factors, Each factor was labeled "Essentiality" and "Preference." The measurement items were deemed sufficiently valid. Reliability analysis results showed that the

Cronbach's α coefficient for each factor exceeded 0.6, demonstrating internal consistency and allowing for smooth analysis.

Table 3. Independent variable factor analysis and reliability analysis.

Division	Constituent	
	1	2
The need for reeducation1	0.345	0.645
The need for reeducation3	0.166	0.856
The need for reeducation4	0.206	0.879
Preference for reeducation1	0.844	0.212
Preference for reeducation3	0.686	0.380
Preference for reeducation4	0.896	0.161
Entire	2.175	2.136
Dispersion %	36.252	35.603
Cumulative %	36.252	71.855
Cronbach's α	0.773	0.808

B. Job satisfaction factor analysis and reliability analysis

The results of factor analysis and reliability testing for job satisfaction are shown in <Table 4> Factors with eigenvalues exceeding 1.0 were identified as a single factor, named "Job Satisfaction." The measurement items were deemed sufficiently valid. Reliability analysis revealed that all Cronbach's α coefficients exceeded 0.6, demonstrating internal consistency and allowing for the analysis.

Table 4. Parameters factor analysis and reliability analysis.

Division	Constituent	
	1	
Job satisfaction1	0.742	
Job satisfaction2	0.782	
Job satisfaction3	0.816	
Job satisfaction4	0.856	
Job satisfaction5	0.789	
Job satisfaction6	0.743	
Job satisfaction7	0.807	
Entire	4.387	
Dispersion %	62.674	
Cumulative %	62.674	
Cronbach's α	0.898	

4.3. Analysis results

A. Correlation Analysis

The correlation between retraining and job satisfaction among beauty professionals is presented in <Table 5> Before examining the influence of variables, correlation analysis is a preliminary step to determine statistical significance. This study used Pearson's product-moment correlation analysis, and all variables showed a significant positive correlation.

The sub-variables of retraining, necessity ($r=.550$, $p<.001$) and preference ($r=.446$, $p<.001$), were found to have a positive correlation with job satisfaction.

Table 5. Correlation analysis results.

-	The need for reeducation	Preference for reeducation	Job satisfaction
The need for reeducation	1		
Preference for reeducation	.545***	1	
Job satisfaction	.550***	.466***	1

Note: ** $p<.001$.

B. Beauty professional retraining affects job

To analyze the impact of retraining for beauty professionals on job satisfaction, a multiple regression analysis was conducted. The results are shown in <Table 6> To conduct the regression analysis, autocorrelation of the dependent variable and multicollinearity among the independent variables were examined. The Durbin-Watson index was used to assess autocorrelation between the dependent variables. The Durbin-Watson index was 1.802, indicating no autocorrelation and independence. The VIF (variance inflation factor) index was used to assess multicollinearity among the independent variables. All VIF indices were less than 10, indicating no multicollinearity. Therefore, this data is suitable for regression analysis.

The multiple regression analysis results ($F=77.314$, $p<.001$) showed that the need for retraining ($p<.001$) and preference for retraining ($p<.001$) had a significant positive effect on job satisfaction. These variables accounted for 34.2% of the dependent variable's explanatory power.

Table 6. Regression analysis results on the impact of beauty professional retraining on job satisfaction.

Model	Unstandardized coefficients		Standardized coefficient	t	Significance probability	Collinearity statistics	
	B	Standardization error	Beta			Tolerance	VIF
(constant)	0.810	0.239	-	3.393	0.001	-	-
The need for reeducation	0.454	0.060	0.420	7.516	0.000***	0.707	1.414
Preference for reeducation	0.253	0.059	0.239	4.269	0.000***	0.707	1.414

Note: *** $p<.001$.

5. Conclusion

5.1. Summary and conclusion of the study

This research was conducted to determine whether retraining significantly impacts job satisfaction among hair and skincare professionals. Retraining subvariables were categorized into necessity and preference, and job satisfaction was defined as a single variable.

The purpose of this study was to conduct an online consumer survey targeting people seeking hair and skin care services. A total of 307 consumer surveys were collected and analyzed. The statistical program used was SPSS 26.0, which included factorial analysis using the Varimax rotation method, multiple regression analysis, and regression analysis.

First, Pearson's product-moment correlation analysis was used for correlation analysis, and all variables were found to have a significant positive correlation.

Second, multiple regression analysis results showed that the sub-variables of retraining—need and preference—showed a significant positive correlation with job satisfaction. In other words, higher levels of need and preference for retraining correlated with higher job satisfaction. Therefore, retraining can be considered an essential element in enhancing job satisfaction.

These results confirm that the need for and preference for retraining among beauty professionals are closely related to their job satisfaction. These results demonstrate that retraining is an essential element for beauty professionals, and that workers can improve their job satisfaction by receiving retraining to improve their skills or learn about new trends. To increase participation in retraining among beauty professionals, diverse training programs must be developed. The beauty industry is particularly dynamic, and developing proactive training programs that demonstrate both technical improvements and increased sales will drive employee engagement in retraining. Moreover, as retraining centers become more diverse and active, those seeking retraining can access them more easily and quickly. Retraining should be viewed not as a simple learning tool, but as an opportunity for growth. Furthermore, by developing valuable training programs that require a time investment, rather than as a chore to be done when the time comes, we should recognize retraining as a valuable investment and expand participation in education.

5.2. Limitations and suggestions of the study

This study investigated the impact of retraining on job satisfaction among hair and skincare professionals. However, several limitations exist, and recommendations for future research are as follows.

First, this study targeted hair and skincare professionals. Therefore, the results are expected to differ from those of makeup and nail salon professionals. Therefore, to generalize these findings, further research is needed that collects data from professionals in various fields, including hair and skincare, makeup, and nail salon professionals, and compares and analyzes the differences between these fields.

Second, the demographic characteristics of survey respondents were not evenly distributed across job titles, which could limit the sample to certain occupations. Therefore, future research should explore various sampling methods and strive to obtain balanced responses.

Third, future research should develop various measurement tools and variables for retraining to determine what types of retraining can contribute to the future development of the beauty industry.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Lead Author	JC	<ul style="list-style-type: none">-Set of concepts <input checked="" type="checkbox"/>-Design <input checked="" type="checkbox"/>-Getting results <input checked="" type="checkbox"/>-Analysis <input checked="" type="checkbox"/>-Make a significant contribution to collection <input checked="" type="checkbox"/>-Final approval of the paper <input checked="" type="checkbox"/>-Corresponding <input checked="" type="checkbox"/>
Corresponding Author*	EC	<ul style="list-style-type: none">-Play a decisive role in modification <input checked="" type="checkbox"/>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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Utilizing Play-Based Learning in Higher Education: A Focus Group Study of University Students' Learning Experiences

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Abstract

Purpose: This study examines the effects of play-based learning in university education, specifically how it influences students' participation, emotional experiences, creative thinking, and collaborative skills. Recognizing the lack of practical research on the application of play in higher education, the study frames play-based activities as a tool for deeper understanding and internalization of course content, aiming to propose educational strategies that foster student engagement and self-directed learning.

Method: The research was conducted in a university service leadership course during the 2024 academic year, applying diverse play-based activities adapted from integrated arts play models. Focus Group Interviews (FGI) were held with two groups (six students each). Interviews were transcribed, coded, and analyzed for recurring patterns relating to cognitive, emotional, social, and personal learning domains. All ethical standards were strictly followed, and students participated voluntarily.

Results: Both FGIs revealed that play-based activities substantially increased students' immersion and active participation compared to traditional lectures. Students reported a deeper, embodied understanding of theoretical concepts, enhanced enjoyment, motivation, and collaborative communication skills. While many identified improvements in self-reflection and self-directed learning, some students noted discomfort with team-based or highly active formats—highlighting the need for flexible instructional design.

Conclusion: Play-based learning in university courses effectively integrates cognitive, emotional, social, and personal growth, supporting key competencies such as leadership, communication, and self-motivation. The results recommend proactive adoption of Play-Based Learning in higher education, with careful consideration of students' needs, individual learning styles, and balanced activity design for maximal educational impact.

Keywords: Play-Based Learning, Higher Education, University Education, Learning Engagement, Self-Directed Learning

1. Introduction

Modern society is entering a rapidly changing knowledge and information era, necessitating innovation in educational methodologies[1]. University education is crucial not only for equipping students with theoretical knowledge but also for providing practical experience that helps them understand and apply what they learn. It plays a pivotal role in nurturing the creative and collaborative individuals needed in today's society[2]. In aviation service management, such competencies are directly tied to frontline performance, where cabin crew and ground staff must communicate clearly, manage emotions under pressure, and coordinate safely with team members in real time[3][4][5].

Recent studies on play and the right to play regard play not merely as an activity for early childhood but as a right that should be guaranteed across all developmental stages and as a key

factor influencing quality of life, emphasizing the need to create play-friendly environments at the community level[6][7]. Despite these discussions, play and the right to play are still often perceived as secondary activities in contrast to academic work, and especially at the stage of adulthood and higher education, play has tended to be treated as something separate from formal learning[6][8]. Creativity and collaboration develop through social interactions such as effective communication and critical thinking, which are closely linked to the processes of voluntary participation and open-ended exploration that play provides[6][9][10]. For students majoring in aviation service management, play-based activities that simulate interpersonal and high-stress service situations can provide a low-risk space to practice communication, empathy, and rapid decision making before entering actual cabin and airport contexts[4].

Play-based learning has emerged as an educational method capable of effectively cultivating such abilities by fostering environments where learners can participate actively and voluntarily, directly supporting future competencies such as self-directed learning, collaboration, and social-emotional skills [1][2][11]. Prior work has highlighted the role of playful learning in supporting happiness and socio-emotional, cognitive, and even physical development, and it has also shown that, for adult learners, playful approaches can enhance problem solving and cooperative learning[12][13][14]. More recent research suggests that play-based learning environments, by allowing learners to experience failure safely[15], encourage challenging attempts and significantly enhance emotional competencies such as resilience and perseverance [11][16]. These findings indicate that play is not confined to any single age group but should be recognized as an educational experience connected to the right to learn across the lifespan, including higher education, thereby supporting the need for play-friendly environments and instructional designs at the university level[7][8][17].

Nevertheless, research that applies play-based approaches specifically to university education remains relatively limited, and there is still a lack of empirical discussion on how to integrate play's spontaneity, enjoyment, and freedom with structured university-level learning objectives[9][10][11]. In particular, there is a notable gap in research on how play-based pedagogy can support the development of service leadership, communication, and emotional labor management skills in aviation service management programs, despite the fact that these soft skills are considered core competencies in the aviation industry[4][5]. Therefore, this study views play not as an educational objective in itself but as a practical means to facilitate a deeper understanding and embodiment of learning content, and aims to analyze the effects of integrating play-based learning into university education on learners' class engagement, emotional experiences, creative thinking, and cooperation[2][11].

2. Theoretical Background

2.1. Key characteristics of play-based learning

Play-based learning is an instructional and learning method that fosters learners' interest and autonomous participation. It offers numerous advantages, including enhanced immersion, provision of authentic experiences, promotion of collaboration and teamwork, encouragement of creative problem-solving, generation of positive emotional experiences, reduction of cognitive load, and expansion of opportunities for self-reflection.

2.2. Relevant theories

The effectiveness of play-based learning can be explained from the perspective of various learning theories.

Firstly, according to Piaget's constructivist learning theory, learners actively construct knowledge through direct experience rather than passively receiving it. From this viewpoint,

play activities provide meaningful learning experiences that help learners independently explore and construct new concepts[18][19].

Secondly, Vygotsky's sociocultural theory posits that learning occurs within a social context, rather than being solely an internal process. Interaction through play promotes collaboration and dialogue among learners, thereby enabling the development of higher-order thinking skills and problem-solving abilities[20].

Thirdly, Kolb's experiential learning theory describes learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. Play activities serve as the starting point for this learning cycle, providing experiences through which learners can internalize abstract knowledge within practical contexts[21].

Fourthly, Goleman's emotional learning theory argues that positive emotions influence learning motivation, attention, and information processing abilities. The feelings of joy and immersion naturally generated during play act as facilitating factors that strengthen learners' intrinsic motivation and enhance learning efficiency[22].

Fifthly, Sweller's cognitive load theory reports that reducing unnecessary cognitive burden during the learning process is key to increasing learning efficiency. Play-based learning mitigates cognitive load through interest and immersion, thereby creating an environment where learners can concentrate on core concepts[23].

As such, these various learning theories demonstrate that play-based learning is not merely a recreational activity but an educational tool that comprehensively promotes intellectual, social, emotional, and cognitive development. Therefore, play-based learning is validly applicable not only to early childhood and primary education but also to adult learners. It presents a highly compelling teaching and learning approach, especially in modern university education settings where internalizing knowledge through practical experience is crucial.

Furthermore, Johan Huizinga's *Homo Ludens* proposes that play is an essential human activity and a driving force for cultural development[24]. He viewed play not as simple entertainment but as a cultural act through which social values and norms are transmitted. This perspective suggests that play can also be utilized in university education as an educational device to foster participation in learning and creative thinking.

3. Research Methodology

This study applied play-based learning to the 'Service Leadership Practice' major course, offered in the second semester of the 2024 academic year, and evaluated its effectiveness. This course aims for experience-centered learning, fostering holistic personal growth through emotional and moral education[25].

3.1. Research participants and design

The participants of this study were second and third-year students majoring in Airline Service Management, who voluntarily participated in the course. A total of 12 students were divided into two groups of six for the Focus Group Interview. The researcher designed and implemented play-based learning activities appropriate for each topic, conducting them either before or after class sessions. The activities were developed with reference to the 'Integrated Art Play Leader Training Program' and Lee's 'Integrated Art Play for Communication and Empathy'[26]. The instructor flexibly applied these play activities to align with learning objectives and created an environment that encouraged active learner participation.

3.2. Play-based learning program design

The play-based activities in this study were systematically designed by week to enhance aviation service management students' emotional development, leadership, communication, and stress-management competencies in an integrated way. The following table provides an overview of the key topics, specific activities, and instructional objectives for Weeks 5 to 13 in the course.

Table 1. Overview of play-based activities by week.

Week	Topic	Activity Title	Main Procedures	Key Learning / Experience Points
Week 5	Self-Esteem	"You are Amazing!" Compliment Game	Each student receives an A4 sheet with their name on it. Within a set time, students play rock-paper-scissors; the winner writes a sincere compliment on the loser's sheet, excluding appearance or possessions. After the activity, students carefully read all compliments about themselves and reflect on their feelings. They then select the sentence that best represents them or that they like most and summarize it at the bottom of the page. The instructor collects all sheets, reads the compliments aloud one sheet at a time, and the class guesses whose sheet it is.	Helps students recognize their strengths from others' perspectives and restore self-esteem and self-efficacy through repeated positive feedback.
Week 9	Traditional Leadership	Cup Stacking Game	In each team, one student is assigned as leader; other members are not allowed to speak except to say "It's okay." Each member holds one string attached to a rubber band, and the team must move and stack 10 cups together, starting from a base of 4 cups. The team that successfully moves the final cup with candy on top wins.	Provides an embodied experience of top-down leadership and followership, highlighting how clear direction and coordinated compliance operate under strong leader control.
Week 10	Modern Leadership	Relationship Tower Game	Students are divided into teams. First round: within 3 minutes, the team that builds the highest paper-cup tower wins, emphasizing speed and outcome. Second round: before stacking cups, teams draw a mission card (e.g., encouraging or caring behaviors), complete the mission, then stack cups; if the tower falls, they restart until it is completed. Afterward, students compare and discuss their experiences in the two rounds.	By contrasting competition focused solely on winning with cooperation based on care and encouragement, students experience the value of relationship-oriented, growth-focused modern leadership.
Week 11	Communication	Picture Description & Drawing (1st and 2nd Rounds)	Students work in groups of three with one speaker and two listeners. In the first round, they sit back-to-back; the speaker describes a picture, listeners must not ask questions or speak and draw what they hear for three minutes. In the second round, the speaker describes the same picture again; this time listeners may ask questions when they do not understand, then draw for six minutes. Finally, they compare the original picture with both drawings.	Students experience how clarity of explanation and the presence or absence of questions and feedback dramatically change understanding, reinforcing the importance of clear communication and active listening in service work.

Week 12	Nonviolent Communication	Finding Feeling & Finding Needs	Round Robin–Finding Feeling: a player draws one feeling card and shows it to the group; each member takes turns sharing a situation in which they felt that emotion. Finding Needs: a player secretly chooses one need word and does not reveal it; instead, the player describes related observations, feelings, and thoughts, and group members guess which need the player is describing.	Trains students to identify and express their own emotions and the underlying needs in words, practicing a nonviolent communication style based on observation, feeling, and need rather than judgment or blame.
Week 13	Stress Management	Stress Management with VAK & Yoga	Students complete a VAK questionnaire and form pairs or small groups according to visual, auditory, or kinesthetic preference. Each group identifies stress-relief strategies that fit its style and presents them to the class. Then the class practices simple yoga poses that combine breathing and stretching while being guided to notice heart rate and bodily tension.	Encourages students to explore stress-management strategies tailored to their perceptual and learning styles and to strengthen emotional regulation and self-care through focused breathing and body awareness.

3.3. Data collection and analysis

Data collection was conducted through Focus Group Interviews (FGIs) at the end of the semester (Weeks 14–15). The focus group questions in this study were structured into opening, introductory, transition, key, and ending phases following established facilitation frameworks. Opening questions built rapport by inviting participants to share basic background and initial impressions; introductory prompts eased into topic familiarity; transition questions bridged surface-level responses to deeper insights; key questions probed core experiences with playful learning activities, outcomes, and dynamics; and ending prompts encouraged summaries, reflections, or additional thoughts to ensure comprehensive coverage [6][27][28][29].

Firstly, Greetings and Explanation of Research Purpose: The interviewer introduced the research purpose: to explore 'the impact of play-based learning on learners in university education,' emphasizing that there are no right answers and all opinions are valuable.

Secondly, Ethical Procedures and Consent Confirmation: After explaining the ethical procedures and ensuring anonymity and confidentiality of personal information, verbal consent was obtained from all participants before recording began.

Thirdly, Explanation of Interview Method: The interviewer described their role as facilitating the discussion and encouraged participants to share their experiences freely, with specific examples if needed.

The main questioning phase (approximately 60 minutes) explored six key areas:

Firstly, Experience and Immersion in Play-Based Learning (Learner Participation Focus)

Q1-1: "When you participated in classes that included play-based activities, what felt most different compared to traditional lecture-based classes?"

Follow-up Question: "Could you provide specific examples of moments when you felt particularly interested or immersed?"

Q1-2: "How do you think play activities helped you understand or remember learning content?"

Follow-up Question: "Conversely, if there were any difficulties, what were they, and why?"

Secondly, Emotional Experiences and Learning Motivation (Emotion and Attitude Focus)

Q2-1: "What emotions (e.g., joy, sense of accomplishment, tension) did you experience while engaging in play activities?"

Q2-2: "How do you think these emotions influenced your class participation or motivation to learn?"

Follow-up Question: "Did you feel more active or confident in your learning than before?"

Thirdly, Collaboration and Communication Experiences (Social Interaction Focus)

Q3-1: "Did you have many opportunities to collaborate or communicate with other students in play-based classes?"

Q3-2: "Do you recall any memorable collaboration instances or challenging situations during group activities?"

Follow-up Question: "If so, what did you learn or feel from that situation?"

Fourthly, Creative Thinking and Problem-Solving Experiences (Cognitive and Creative Domain Focus)

Q4-1: "Were there any spontaneous or unexpected problem situations during play activities? How did you respond, and how do you think it affected your learning?"

Q4-2: "Did play activities help you generate creative ideas or think of new solutions?"

Fifthly, Self-Directed Learning and Reflection Experiences (Self-Determination Focus)

Q5-1: "After participating in play-based learning, did you independently search for or further study any learning topics or content?"

Q5-2: "What changes do you perceive in your learning attitude or methods through this experience?"

Follow-up Question: "What aspects do you think should be improved for this teaching method to be more effectively implemented in the future?"

Sixthly, Overall Opinion

Q6: "What do you consider to be the greatest advantages and limitations of play-based learning?"

Follow-up Question: "If you were to participate again, are there any aspects you would like to see improved?"

The concluding and wrap-up phase (approximately 10 minutes) involved thanking participants and informing them that their opinions would serve as valuable data for future teaching methodology and curriculum improvements. A final opportunity for additional questions was provided, followed by concluding remarks to end the interview.

The collected interview data were transcribed and subsequently coded thematically to analyze recurring patterns and meanings.

3.4. Ethical considerations

All participants received a thorough explanation of the research purpose and procedures and participated voluntarily. The researchers ensured the protection of personal information and anonymity, using the collected data exclusively for research purposes.

Based on this methodology, this study aims to explore the cognitive, emotional, social, and personal effects of play-based learning in university education, thereby providing foundational data for improving teaching methods and developing curricula.

4. Research Findings

The analysis of the FGI data was conducted systematically in accordance with qualitative research procedures. A qualitative coding matrix was applied, and the data were organized into four components: themes, sub-codes, representative quotes, and analytical memos. The focus group interviews were recorded with the participants' consent, and the recorded files were transcribed and used for analysis. For analyzing the transcribed data, the constant comparative method, a common qualitative data analysis technique, was employed [30][31]. First, the interview transcripts were reviewed repeatedly to ensure familiarity with the content, after which open coding was carried out by segmenting the data into meaningful units. Primary codes were generated by identifying key concepts, actions, emotions, and recurring ideas in participants' statements. Similar or related codes were then grouped to construct a coherent coding framework.

Through ongoing comparison and analysis of the coded data, recurring themes and sub themes were identified. As a result, six major themes emerged, learning participation/engagement, emotional experience/learning motivation, collaboration and communication, creative problem-solving, self-directedness/reflection, and limitations and areas for improvement.

More specifically, the theme of learning participation and engagement encompassed the sub themes of active participation, action-oriented behavior, immersive experience, and concentration. The theme of emotional experience and learning motivation was derived from the sub-themes of enjoyment, sense of achievement, tension, confidence, and motivation. Collaboration and communication included subthemes such as cooperation, teamwork, communication, role sharing, feedback, and trust. Creative problem-solving integrated diverse ideas, flexibility, spontaneity, and novel attempts as subthemes. Self-directedness and reflection were represented by subthemes including self-understanding, reflection, goal setting, and self-directed change. Lastly, the theme of limitations and improvements captured concepts such as team-based fatigue, lack of time, ambiguity of purpose, and the need to consider individual characteristics.

4.1. FGI Group 1: main results

An examination of the major content and representative quotations from Team 1 across the six themes is presented below.

First, learning participation and engagement were markedly strengthened as the play-based activities transformed students from passive listeners into "active experiencers," thereby maximizing immersion. Even introverted students naturally integrated into the team-based tasks. Representative student comments include:

"Unlike traditional passive listening, the play-based class allowed me to experience and feel the learning with my body, which increased my immersion." (Student 1)

"It was refreshing because we had to move our bodies and carry out tasks directly." (Student 2)

Second, emotional experience and motivation were characterized by students' repeated descriptions of enjoyment, a sense of achievement, anticipation for growth, and increased confidence. These positive emotions were identified as core drivers of sustained engagement and motivational development. Serious reflection and heightened self-awareness also accompanied these experiences. Representative comments include:

"I felt the most joy and a strong sense of achievement. My motivation for the class increased significantly."(Student 1)

"I was genuinely happy and excited. Solving problems with my teammates gave me a great sense of accomplishment."(Student 4)

Third, collaboration and communication were significantly enhanced through continuous team-based activities, which fostered authentic experiences of cooperation, communication, feedback, role distribution, and trust building. These communicative experiences extended beyond the classroom into everyday conversations and problem-solving. Representative comments include:

"Because we worked in teams every week, there were many opportunities for collaboration and communication."(Student 1)

"Through the communication tasks, I realized how important the method of delivering information is."(Student 2)

Fourth, creative problem-solving was facilitated by activities without predetermined answers, unpredictable situations, and new roles or scenarios. These elements created opportunities for cognitive flexibility and collective creativity. Idea sharing and challenge-oriented participation appeared to strengthen students' creative problem-solving abilities. Representative comments include:

"I had many opportunities to think beyond fixed frameworks and generate ideas from various perspectives."(Student 1)

"Through sharing ideas with teammates and trying different approaches, we were able to find creative solutions."(Student 3)

Fifth, self-directedness and reflection were demonstrated through increased self-understanding, reflection, vision-setting, and exploration of additional learning opportunities. Students exhibited autonomous goal-setting and growth-oriented attitudes, with evidence of strengthened agency and internalized motivation. Representative comments include:

"Through the process of clarifying my vision and reaffirming my self-esteem, I felt like I was becoming the owner of my life."(Student 1)

"After realizing the importance of self-esteem, I began searching for related books."(Student 4)

Sixth, limitations and areas for improvement included fatigue from continuous team activities, ambiguity of activity goals, insufficient consideration of individual differences, time constraints, and the need for a balanced structure between individual and team tasks. Representative comments include:

"It is not easy for all students to be equally immersed in the activities."(Student 1)

"It would be better if team and individual activities were adjusted to reflect individual characteristics."(Student 5)

4.1.1. Implications of the findings

The analysis indicates that play-based learning encourages students to engage actively in the learning process, in contrast to traditional lecture-centered instruction, and enables them to experience positive emotions and a strong sense of achievement. Team-based activities were found to meaningfully enhance collaborative communication, trust building, problem-solving abilities, and creativity. In addition, opportunities for self-reflection and vision-setting supported students' self-directed growth.

However, not all students reported uniformly positive experiences. Several limitations emerged, including the burden of continuous team-oriented work, insufficient time, and ambiguity in the purpose of certain activities. Students with introverted or individualistic tendencies emphasized the need for personalized instructional design, noting the importance of individual activities, clearer preparation and explanation, and theoretical reinforcement following experiential tasks.

4.1.2. Discussion

The qualitative analysis revealed that students in FGI Team 1 reported positive changes and high levels of satisfaction in multiple areas during the play-based class, compared with traditional lecture-centered instruction. Improvements were observed in immersion and active participation, emotional satisfaction, team-based collaboration and social interaction, creative problem-solving, and self-directedness and reflection. The students' statements align with Kolb's experiential learning theory, Vygotsky's social interaction theory, Goleman's emotional theory, and Lieberman's self-directed learning framework, suggesting that lived experiences can facilitate meaningful qualitative transformation in learning.

However, not all students experienced the activities positively to the same degree. Some students with introverted or individualistic tendencies expressed concerns regarding the burden of team-based structures, the need for personal time, the necessity of clear activity purposes and prior guidance, and the importance of balancing team and individual tasks. They also emphasized the need for careful consideration in sharing outcomes and evaluating group work.

These findings highlight several essential considerations for designing and implementing play-based pedagogy at the university level, including.

First, clarifying learning objectives and theoretical foundations.

Second, strengthening feedback and reflection after activities. Third, accommodating individual characteristics and ensuring a balanced structure between team and individual tasks.

Fourth, providing opportunities for sharing outcomes and offering sufficient feedback.

Fifth, enhancing learner motivation for participation.

In sum, this case analysis reaffirms that play-based learning can serve as an effective instructional model in higher education by fostering engagement, dynamism, and the development of core future competencies such as collaboration, creativity, and self-directed learning. Furthermore, differentiated strategies that consider learner dispositions, combined with systematic feedback design, can further maximize the educational impact of such pedagogical approaches[32].

4.1.3. FGI team 1 (students 1–6) interview results summary

First, Cognitive Effects (Kolb, 1984 Experiential Learning Theory) [21].

All six students (1-6) stated that their immersion significantly increased during play activities centered on 'direct experience,' and that theoretical concepts were embodied physically and psychologically, a distinct departure from traditional lectures. Consistent feedback highlighted that, particularly in practical, task-oriented activities such as leadership and communication, "theories did not just reside in the mind but were felt in the body." Some initially expressed feelings of burden due to introverted characteristics, but they demonstrated progressive immersion as they became accustomed to the activities. These findings confirm the active operation of Kolb's four-stage experiential learning cycle (concrete experience – reflective observation – abstract conceptualization – active experimentation) and illustrate a virtuous cycle of reflection and internal feedback.

Second, Emotional Effects (Goleman, 1995; Gwak et al., 2022)[15][22].

The majority of students reported experiencing positive emotions such as "joy, a sense of achievement, anticipation, and confidence during play." They indicated that self-motivation, often accompanied by excitement or slight tension, occurred in contexts involving leadership, vision building, and self-reflection. While some students (particularly introverted or individually oriented) experienced psychological tension or burden, numerous cases showed an increase in psychological stability and self-confidence through repeated participation. This aligns with Goleman's emotion-centered learning theory and Gwak et al.'s (2022) emphasis on emotion-based immersion and the effect of mitigating the fear of failure. Positive emotions were directly linked to increased motivation for learning, improved interpersonal relationships, and enhanced self-confidence.

Third, Social Effects (Vygotsky, 1934 Sociocultural Theory)[20].

All students emphasized a significant increase in social interaction through teamwork, communication, role distribution, and feedback in the play-based classes. Repeated instances demonstrated how trust was built among students who were previously unacquainted and how they cultivated an attitude of acknowledging differences for shared goals, particularly in speaker/listener roles and collaborative situations for achieving team objectives. Even introverted students noted that they "could naturally participate thanks to small group activities." This aligns with Vygotsky's concepts of the Zone of Proximal Development (ZPD) and interaction-based growth mechanisms, confirming that actual team activities facilitate collaboration and empathetic communication, effectively enhancing social competence.

Fourth, Personal Effects (Lieberman, 1977 Self-Directed Learning Theory)[14].

Clear positive effects were observed in self-directedness, encompassing self-understanding, self-reflection, and proactive challenges. Several students, including participants 1, 3, and 6, stated that "vision building and self-esteem activities allowed them to assess their strengths and weaknesses, leading to self-directed change and further learning (e.g., through books or videos)." Some reported that their self-reliance and reflective attitudes matured through this process. However, limitations were also noted; for instance, student 5, exhibiting a highly individualistic tendency, expressed feeling burdened by team activities, thereby limiting the self-directed expansion effect. This suggests that Lieberman's mechanism of "play – strengthening self-directedness – intrinsic motivation" functioned effectively for the majority of students, indicating that self-recording, vision planning, and feedback within team activities enhanced intrinsic motivation and self-responsibility.

The interviews with FGI Team 1 students (1-6) collectively demonstrated that the theories of Kolb (experience), Goleman (emotion), Vygotsky (social interaction), and Lieberman (self-directedness) were concurrently effective in the play-based learning context. Consistent positive effects were observed in immersion, interest, collaboration, and reflection. These findings also underscored the importance of balancing team and individual activities, providing tailored feedback, and accommodating diverse personality types.

4.2. FGI group 2: main results

An examination of the major content and representative quotations from Team 2 across the six themes is presented below.

First, learning participation and engagement were enhanced as the play-based class offered a more dynamic and experiential format than traditional lectures. Students noted that direct physical activity and team-based problem-solving naturally facilitated immersion. Representative comments include:

“What made the play-based class different was that we had to work in teams and actually create something ourselves. It was much more dynamic than simply listening.”(Student 7)
“I had no time to feel sleepy because I was constantly moving and talking with my teammates. It felt like learning through fun and play.”(Student 8)

“The class was truly enjoyable, and I was most immersed when we planned, divided roles, and collaborated.”(Student 10)

Second, emotional experience and motivation were characterized by positive emotions such as enjoyment, a sense of achievement, tension, and excitement, which were directly connected to learning motivation and enthusiasm. The activities themselves offered elements of fun and anticipation, and these emotional responses strengthened students’ willingness to learn. Representative comments include:

“I felt a sense of achievement when we completed the tasks through teamwork.”(Student 7)

“There was always so much joy and energy! I looked forward to what we would do the following week.”(Student 8)

“I felt great enjoyment and anticipation for each new weekly activity.”(Student 12)

Third, collaboration and communication were significantly supported through team-based play activities, which provided ample opportunities for role sharing, cooperation, diverse feedback, and reciprocal communication. Students repeatedly mentioned developing trust and complementary teamwork experiences. Representative comments include:

“Because the class was centered on team activities, there were plenty of opportunities for collaboration and communication.”(Student 7)

“I learned that true collaboration involves supplementing each other’s weaknesses and making use of each person’s strengths.”(Student 8)

“Sharing ideas each week and working toward a common goal through team activities was a meaningful collaborative experience.”(Student 12)

Fourth, creative problem-solving was fostered through unpredictable scenarios, novel attempts, and diverse team-generated solutions and ideas. These experiences supported creative approaches and flexible thinking. Representative comments include:

“Solving problems in ways I had never considered before made me feel like my creativity was growing.”(Student 8)

“Engaging in activities without predetermined answers allowed me to imagine freely and practice approaching problems from various perspectives.”(Student 9)

Fifth, self-directedness and reflection were strengthened through self-reflection after activities, additional learning exploration, increased self-understanding, and clearer learning goals. Students demonstrated motivation for self-directed growth and positive shifts in attitude. Representative comments include:

“Even after class, I found myself exploring topics I was interested in.”(Student 9)

“Through experience-based activities, I developed a firm belief that I grow through my own efforts.”(Student 12)

Sixth, limitations and areas for improvement included instances where the purpose of activities felt unclear, excessive focus on the activity rather than learning objectives, lack of time, varying levels of participation, and insufficient feedback on performance. Representative comments include:

“There were times when the purpose of the activity wasn’t clear. I also wish there had been more concrete feedback.”(Student 7)

“We often ran out of time, which was disappointing.”(Student 8)

“I think we need more opportunities to share team outcomes with the whole class.”(Student 9)

4.2.1. Implications of the findings

Synthesizing the results from FGI Team 2, the play-based class demonstrated multidimensional learning effects, including enhanced immersion and active participation, stimulation of positive emotions, improved collaborative communication, creative problem-solving, and increased self-directed reflection. Unlike traditional classes, students actively engaged in movement, role distribution, hands-on practice, and team-based idea generation and problem-solving. These processes strengthened their self-efficacy, learning motivation, and sense of achievement, while authentic communication and collaborative experiences within teams contributed to the growth of social competencies.

However, several areas for improvement were simultaneously identified. These included the tendency for some activities to focus excessively on “fun,” insufficient clarity of learning objectives, a lack of evaluation and feedback, time constraints, and burdens arising from differences in members’ dispositions.

4.2.2. Discussion

The analysis of student statements from FGI Team 2 indicates that play-based activities effectively foster learning immersion and participation, enhance motivation and enthusiasm through enjoyment and a sense of achievement, and naturally provide opportunities for collaboration, communication, creative thinking, and self-reflection in team-based practice. These findings align with recent domestic and international studies highlighting the cognitive, emotional, social, and personal developmental benefits of play- and game-based pedagogy, reaffirming that experiential learning facilitates deeper and more sustained internalization of content.

Notably, some students (e.g., Student 7, Student 12) demonstrated reflective attitudes that extended into self-directed learning beyond class—such as reading, watching related materials, and setting new personal goals. Even introverted or initially passive students reported gaining confidence from repeated group work and positive feedback. At the same time, instructors must remain attentive to the need for clear articulation of activity purposes, awareness of individual differences in participation and adaptation, expanded opportunities for feedback and sharing, and effective evaluation and time management.

In conclusion, the findings from FGI Team 2 illustrate that play-based instruction in higher education extends far beyond simple entertainment. It possesses meaningful educational potential by fostering self-directed and experiential learning, collaboration, creativity, and social development. To maximize these effects, systematic instructional design and sustained structural support are required.

4.2.3. FGI team 2 (students 7–12) interview results summary

First, Cognitive Effects (Kolb, 1984 Experiential Learning Theory)[21].

All students in FGI Team 2 (7–12) emphasized their experience of understanding theories and concepts more experientially in play-based classes compared to traditional lectures. Recurring responses indicated that “when directly practicing and engaging in activities, abstract content becomes tangible and is remembered for longer” and “knowledge was acquired in practical contexts through leadership and communication games.” Some students even discovered learning

styles and identified personal strengths through their VAK assessment results. This confirmed that Kolb's experiential learning cycle (experience–reflection–conceptualization–application) was actively at work, and the theory that "learning is meaningfully internalized through experience" aligned with the students' experiences.

Second, Emotional Effects (Goleman, 1995; Gwak et al., 2022)[15][22].

The majority of students reported experiencing joy, excitement, and a sense of accomplishment in play activities. Most stated that "the joy from play and collaboration, along with encouragement from peers, was a great source of strength and boosted self-confidence" (Students 7, 8, 9, 10, 12). While a less active student (Student 11) expressed feeling burdened or annoyed rather than amused, they still maintained class attendance and participation. This aligns with Goleman's emotional learning theory and Gwak et al.'s (2022) emphasis on reducing fear of failure and increasing emotional immersion, confirming that emotions are a key pathway for strengthening learning motivation[15].

Third, Social Effects (Vygotsky, 1934 Sociocultural Theory)[20].

Most students highlighted a significant increase in their collaboration, empathy, and communication skills through the play-based classes, which consistently involved teamwork, role distribution, and feedback. Numerous statements indicated that "mutual respect for roles and trust within the team were built" and "differences were acknowledged, and close collaboration occurred in team tasks" (Students 8, 9, 10, 12). The less active student (Student 11) also experienced opportunities for team communication, common to all participants. While some experienced conflicts or role clashes during group collaborations, generally positive collaborative effects predominated. This confirms that Vygotsky's socio-cultural theory of cognitive development, based on social interaction, was realized through experiential team activities, leading to improved social functions such as communication, empathy, and conflict resolution.

Fourth, Personal Effects (Lieberman, 1977 Self-Directed Learning Theory)[14].

In play-based self-reflection activities (e.g., self-esteem, Johari Window, VAK assessment etc.), many students (Students 7, 8, 9, 10, 12) identified their strengths and weaknesses, future outlook, and learning preferences, and subsequently attempted self-directed development. Many mentioned that "after class, they spontaneously sought out related books and videos or engaged in career exploration, connecting to self-directed behaviors." However, the less active student (Student 11) felt that these effects were minimal or experienced significant burden. This demonstrates that Lieberman's mechanism of play-reflection-enhanced intrinsic motivation operated for several students, indicating that self-directedness and a sense of learning responsibility were promoted through play-based experiences.

The results from FGI Team 2 (Students 7–12) similarly revealed various educational benefits consistent with the theories of Kolb (experiential learning), Goleman (emotional theory), Vygotsky (social interaction), and Lieberman (self-directed learning). Play-based university classes were found to promote multifaceted learning growth—experiential, emotional, social, and self-directed. However, the magnitude of these effects varied depending on individual dispositional differences (activity preference, adaptability to collaboration), suggesting the necessity of tailored designs, including flexible combinations of individual and team activities.

5. Conclusion and Implications

This study explored the impact of play-based activities on university students' learning experiences, competencies, and attitudes by analyzing in-depth interviews from two focus groups

(FGI; total 12 participants) in a service leadership course. The course integrated diverse play-based activities such as compliment-exchange games to foster self-esteem, cup-stacking and relationship-tower games to simulate leadership and teamwork under pressure, communication games using picture description and drawing, and activities for exploring feelings, needs, and stress-management strategies. Through these concrete activities, play-based learning was practically embedded into the university classroom rather than remaining at the level of abstract discussion.

The FGI analysis confirmed that play-based learning is effective in holistically developing university students' immersion, emotional experiences, social skills, and self-directedness. Compared with traditional lecture-based classes, play-based sessions significantly enhanced active participation and immersion, enabling students to solve problems through direct experience, engage in creative thinking and self-expression, and take on various roles within a team. This process not only increased satisfaction and interest in learning but also strengthened core competencies required in contemporary society and the aviation service field, including self-directed learning, leadership, communication, empathy, and collaboration. Some students further reported heightened self-understanding and motivation for personal growth through reflective activities linked to play.

At the same time, the findings made it clear that no educational program, including play-based learning, produces only positive outcomes. Several limitations and challenges emerged. Introverted or strongly individualistic students reported psychological burden and tension in highly dynamic, team-centered activities, and some felt uncomfortable with competitive game elements. In addition, a number of students experienced confusion or fatigue when the learning objectives of an activity were not clearly explained, when evaluation criteria were ambiguous, or when the focus shifted too heavily to "playing the game" rather than connecting outcomes to theoretical content. Time constraints and unequal participation within groups were also identified as issues that reduced the educational effectiveness of certain sessions.

These limitations suggest the need for more finely tuned instructional design. Play-based activities in university courses should balance team and individual work, provide clear explanations of learning goals and links to theory before and after each activity, and include structured debriefing and feedback to help students reconstruct their experiences as academic learning. It is also important to differentiate activity intensity, offer alternative roles for more reserved students, and design assessment methods that recognize diverse participation styles. By systematically addressing these issues, instructors can mitigate potential burdens while maximizing the benefits of play-based learning[33][34].

In conclusion, this study confirms that play-based learning can function as an effective teaching approach in university education, enabling students to move beyond the passive reception of theoretical knowledge toward embodied understanding, collaborative problem-solving, and opportunities for personal growth. When carefully designed and supported, play-based pedagogy not only promotes communication, leadership, and self-directed learning, but also offers meaningful insights for qualitative innovation in higher education. Future research should build on these findings by comparing different play-based designs across disciplines, examining long-term impacts on professional competencies—particularly in aviation service management—and exploring institutional conditions and support systems that allow play-based methods to be sustainably integrated into university curricula[2][32][33][34].

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4. Appendix

4.1. Author's contribution

Initial name		Contribution
Author	SL	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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A Study on the Sculptural Aesthetics and Cultural Value of the Barigongju Gache: A Craft-Based Analysis of an Outstanding Skilled Artisan's Work in Korea

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Abstract

Purpose: This study investigates the sculptural characteristics and cultural significance of the Barigongju gache used in the Seoul Saenamgut ritual through a Craft-Based Research framework. It aims to clarify how the mythological identity and ritual role of Barigongju are materialized through the sculptural form and structural logic of the gache, thereby repositioning shamanic ritual studies toward a form-centered analytical perspective.

Method: This research is grounded in a review of prior studies on Barigongju mythology, Jinogut and Saenamgut rituals, traditional gache, and shamanic head ornaments. A Barigongju gache produced for actual ritual performance is examined through visual analysis of photographic materials, with particular attention to structural organization, spatial composition, symbolic ornamentation, and craft-based sculptural decision-making embedded in the pro-duction process.

Results: The analysis demonstrates that the gache visually articulates the hierarchical status of Barigongju as a princess deity and her mediating role in guiding the soul of the deceased. This is achieved through a stable lower structure, an upward-oriented vertical expansion, and a hierarchical concentration of decorative elements, which collectively interact with bodily movement during ritual performance.

Conclusion: The findings confirm that the Barigongju gache functions not merely as a decorative object but as a ritual sculpture integrating mythological narrative, ritual practice, and skilled craftsmanship. By adopting a Craft-Based Research approach, this study underscores the methodological potential of sculptural analysis for advancing the understanding of shamanic ritual art as a living and continuously practiced cultural tradition. Furthermore, the documentation of specific techniques—such as braiding 108 strands to maintain the arched Yeonhwamun—provides a concrete record of the artisan's symbolic decision-making. This detailed craft data offers a practical framework for the digital archiving of shamanic ritual ornaments as intangible cultural heritage. Ultimately, the study pro-poses a standardized reference model for the development of traditional craft education content and future cultural preservation initiatives.

Keywords: Barigongju Gache, Seoul Saenamgut, Shamanic Ritual Sculpture, Craft-Based Research, Intangible Cultural Heritage

1. Introduction

1.1. Research background

This study positions the Barigongju myth as a core female deity narrative within the Korean shamanic mythological system that explains the afterlife and soul-guiding rituals[1][2]. Barigongju is depicted as a figure who begins as an abandoned being, journeys between the human world and the underworld, acquires the Water of Life, and ultimately restores the dead to life. This narrative progression reveals a stepwise structure of death, rebirth, and salvation, while concisely articulating Korean shamanic conceptions of the afterlife and life itself[3][4].

The Barigongju narrative has not been transmitted solely as a mythological story but has been repeatedly invoked in shamanic ritual contexts, where it functions as a foundational logic for ritual performance. In Seoul-area shamanic rituals, Barigongju is positioned as the deity who guides the soul of the deceased to the underworld, particularly within Jinogigut and Saenamgut rituals[5][6][7]. The malmigeori of Saenamgut represents both the concluding phase of the ritual and the stage at which soul-guiding is realized. In this phase, the Barigongju deity is concretely manifested through song, dance, ritual gestures, costume, and head ornaments. Through this visual and performative process, participating community members are able to perceive the structure of the afterlife and the order of death in a tangible manner.

In shamanic rituals, the hierarchy and roles of deities are not conveyed through verbal narration alone. Costumes and head ornaments function as visual devices that directly materialize the character and function of deities, reinforcing their manifestation during ritual performance[8][9]. The Barigongju head ornament used in the malmigeori of Saenamgut constitutes a central element of this visual system, designed to simultaneously express divine authority and the function of soul-guiding[10][11].

Meanwhile, gache developed after the Joseon Dynasty as a representative head ornament system that visually articulated women's social status and hierarchy, forming distinct sculptural languages across court, folk, and ritual contexts[12][13]. Head ornaments used in shamanic rituals share the structural principles of traditional gache, yet form an independent sculptural domain by visualizing deities rather than human figures[14][15]. Despite this, previous studies have primarily focused on narrative and religious interpretations of the Barigongju myth, while analyses that examine the Barigongju gache used in actual ritual settings from the perspectives of sculptural form and production practice remain limited[1][2][16].

Accordingly, this study examines the Barigongju gache used in the malmigeori of Seoul Saenamgut through a Craft-Based Research approach, analyzing its sculptural characteristics and symbolic system within the contexts of myth and ritual. Through this analysis, the study seeks to reinterpret the Barigongju gache not merely as a ritual ornament, but as a public cultural asset and a form of intangible cultural heritage in which traditional knowledge and skilled craftsmanship are concentrated, and to academically clarify the cultural and public significance of the artisan's production practice.

1.2. Purpose of the study

The purpose of this study is to analyze the sculptural aesthetics and cultural value of the Barigongju gache used in the malmigeori of Seoul Saenamgut from a Craft-Based Research perspective. Although the Barigongju gache functions as a core ritual sculptural object that visually structures divine hierarchy and soul-guiding functions, previous research has not sufficiently addressed its sculptural structure and production logic[1][2][16].

To address this gap, the study examines how the structure, form, and arrangement of decorative elements in the Barigongju gache visually articulate divine hierarchy and function, grounded in the mythological narrative of Barigongju and the ritual contexts of Jinogigut and Saenamgut[10][11][15]. In addition, by selecting a Barigongju gache produced by an Outstanding Skilled Artisan as a case study, the research analyzes how production processes and skilled techniques are reflected in sculptural outcomes through the methodology of Craft-Based Research[14]. Through this approach, the study aims to clarify the value of ritual sculptural objects as public cultural assets and their significance as intangible cultural heritage.

1.3. Research questions

This study analyzes the Barigongju gache used in the malmigeori of Seoul Saenamgut from a Craft-Based Research perspective in order to clarify its sculptural aesthetics, cultural value, and

public significance. The research is guided by the following questions:

1. How does the Barigongju gache used in the malmigeori of Seoul Saenamgut visually realize divine hierarchy and soul-guiding functions through its sculptural structure and formal characteristics?
2. How do the decorative elements and their arrangement in the Barigongju gache reflect the integration of traditional gache sculptural principles with the symbolic system of shamanic ritual?
3. From a Craft-Based Research perspective, how do the production process and skilled techniques of an Outstanding Skilled Artisan influence the sculptural completeness and symbolic formation of the Barigongju gache?
4. What cultural value and public significance does the Barigongju gache hold as a shamanic ritual sculptural object, and how can it be interpreted within the frameworks of public cultural assets and intangible cultural heritage?

Through these research questions, this study seeks to reinterpret the Barigongju gache as a public sculptural object in which traditional knowledge and skilled craftsmanship are integrated, and to propose the academic potential for expanding research on shamanic ritual sculpture and Craft-Based Research.

1.4. Structure of the study

This study consists of six chapters. Chapter 1 presents the research background, purpose, research questions, and overall structure of the study.

Chapter 2 reviews the theoretical background by examining the Barigongju myth and the ritual contexts of Jinogigut and Saenamgut, as well as the ritual structure of Seoul Saenamgut and the functions and hierarchy of head ornaments in the malmigeori. It further systematizes the cultural and sculptural background of the Barigongju gache through a comparative analysis of traditional gache and shamanic ritual head ornaments.

Chapter 3 outlines the research methodology, explaining the concept of Craft-Based Research, the analytical framework, and the selection background and overview of the research object.

Chapter 4 presents the research findings, analyzing the ritual setting of production, sculptural structure, decorative arrangement, and symbolism of the Barigongju gache used in the malmigeori of Seoul Saenamgut.

Chapter 5 discusses the findings in comparison with previous studies, examining the academic significance of Craft-Based Research and the cultural and public value of the Barigongju gache as a public cultural asset and intangible cultural heritage.

Finally, Chapter 6 summarizes the research findings, articulates the academic contributions of the study, and suggests limitations and directions for future research on shamanic ritual sculpture and Craft-Based Research.

2. Main Body

2.1. The Barigongju myth and Jinogigut

The Barigongju myth is widely regarded as one of the clearest narrative representations articulating a deity who governs the afterlife and soul-guiding rituals within Korean shamanic

mythology[1][2]. Beginning with the narrative of an abandoned princess, Barigongju's journey through the underworld, the acquisition of the Water of Life, and the salvation of the dead unfolds through a structure centered on death, rebirth, and redemption, encapsulating Korean shamanic conceptions of the afterlife and life itself[3][4]. This narrative transcends the realm of mythic storytelling and is repeatedly reenacted within shamanic rituals, where it functions to actualize divine roles and hierarchies in the lived world.

In particular, Barigongju appears as a central deity who guides the souls of the deceased to the underworld in Seoul-area shamanic rituals, including Jinogigut and Saenamgut[5][7]. Jinogigut is a ritual intended to purify the soul of the deceased and facilitate its transition to the afterlife, during which Barigongju functions as a guide and mediator along the path to the underworld[3]. Saenamgut likewise serves the purpose of transitioning the soul to the afterlife, and in its final stage, known as the malmigeori, the Barigongju deity appears prominently, symbolizing the completion of the ritual and the fulfillment of soul-guiding[6][10].

In shamanic rituals, the presence and role of deities are not conveyed through narrative language alone. Alongside song, dance, and ritual gestures, costumes and head ornaments serve as visual means through which divine beings are materialized[8][9]. In the case of Barigongju, whose primary function involves guiding souls, divine status is visually articulated through the scale, structure, and arrangement of head ornaments. These visual elements provide ritual participants and the broader community with an important perceptual framework for understanding sacred order and the structure of the afterlife[11].

Accordingly, the Barigongju myth and the rituals of Jinogigut and Saenamgut should be understood as an integrated system in which narrative, ritual performance, divine identity, and sculptural expression are organically interconnected. Barigongju exists simultaneously as a mythic figure and as a deity actualized through ritual practice, with divine authority embodied in material form through costume and head ornaments. Within this context, the Barigongju gache functions not as a simple ritual decoration but as a core sculptural medium that visually manifests divine hierarchy and soul-guiding function, warranting focused analysis in subsequent chapters.

2.2. Ritual structure of seoul saenamgut and head ornaments

Seoul Saenamgut is a representative regional shamanic ritual belonging to the Jinogigut tradition, performed to console the soul of the deceased and guide it to the afterlife[5][4][6]. The ritual's symbolic progression deeply reflects the epic journey of Princess Bari as documented in shamanic narratives[17]. Furthermore, this process embodies the multi-layered spiritual authority and cultural significance of the deity within the ritual context[18]. The ritual is structured in sequential stages: an initial phase in which the soul is welcomed and purified, an intermediate phase in which the path to the underworld is opened and deities are invoked, and a concluding phase known as the malmigeori, during which the deceased is guided to the afterlife and the ritual is completed[6][10]. Among these stages, the malmigeori functions as the symbolic culmination of the ritual and the realization of soul-guiding.

The malmigeori is the phase in which mythological narrative and ritual performance converge most intensely, and it is during this stage that the Barigongju deity emerges as the primary agent of soul-guiding[7][10]. Through the shaman's songs, dances, and ritual gestures, key elements of the Barigongju myth are reenacted, and Barigongju assumes the role of guide and mediator who leads the soul of the deceased into the afterlife. Thus, the malmigeori should not be understood as a mere ritual conclusion, but rather as a symbolic moment in which myth is transformed into embodied ritual action.

Head ornaments used in Saenamgut function as central ritual elements that visually articulate the character and hierarchy of deities[9][15]. Rather than serving as decorative accessories,

head ornaments materialize divine presence and demarcate boundaries between humans and deities, as well as between the living world and the afterlife. In particular, the head ornament worn by Barigongju during the malmigeori tends to be larger in scale and more structurally complex than those associated with other deities. This reflects a sculptural strategy designed to emphasize Barigongju's hierarchical status as a princess deity and as the principal agent of soul-guiding[11].

Furthermore, head ornaments operate as dynamic sculptural elements that interact with the shaman's bodily movements during ritual performance, reinforcing divine manifestation through song, dance, and gesture[6]. Color, material, form, and the arrangement of decorative elements each carry symbolic meaning, enabling ritual participants and the community to intuitively recognize divine identity and function. The Barigongju head ornament forms a symbolic system that integrates the status of a princess deity with the function of soul-guiding, visually expressing divine authority and transcendence through enlarged structure and concentrated ornamentation[11][15].

In this way, the ritual structure of Seoul Saenamgut and the system of head ornaments used in the malmigeori provide essential theoretical foundations for analyzing the sculptural aesthetics and symbolism of the Barigongju gache. The Barigongju head ornament used in the malmigeori, in particular, serves as a sculptural medium that visually materializes the core meanings of the soul-guiding ritual and establishes a critical reference point for the analyses presented in subsequent chapters.

2.3. Sculptural characteristics of Gache and traditional head ornaments

Gache developed after the Joseon Dynasty as a representative head ornament system that visually expressed women's social status, hierarchy, and authority through its structure, scale, materials, and decorative methods[9][10]. As a structural head ornament that artificially constructs volume and form above the head, gache functioned not merely as an aesthetic accessory but as a sculptural device that condensed social status and symbolic meaning.

During the Joseon period, the size and degree of ornamentation of gache varied according to social status and usage context. Large-scale gache emphasizing authority and hierarchy were used in the royal court, while more restrained forms were common in civilian contexts[12][19]. These differences indicate that gache functioned as a sculptural object that visually represented social order and hierarchy. Structurally, gache were formed by expanding the external shape through the addition of hair or artificial materials onto a basic framework, giving rise to the sculptural concept of an "expanded head form"[15].

Head ornaments used in shamanic rituals inherit these structural principles of traditional gache while developing a distinct sculptural character by visualizing deities rather than human figures[11][14]. Unlike traditional gache, which emphasize the personal social identity of the wearer, shamanic head ornaments focus on expressing the character, function, and hierarchy of deities manifested within ritual contexts. As such, they operate not as social adornments but as integral components of a ritual symbolic system.

Shamanic head ornaments tend to emphasize divine hierarchy through enlarged scale and concentrated ornamentation[9][15]. Structural expansion and upward extension function as sculptural strategies that express transcendence and authority, bearing partial formal similarities to the representational logic of court gache. However, shamanic head ornaments differ fundamentally from court and civilian gache in that they generate dynamic visual effects through interaction with the shaman's bodily movements during ritual performance[8].

Thus, while traditional gache and shamanic head ornaments share structural principles and sculptural language, they differ markedly in terms of purpose and symbolic system. Whereas

traditional gache visualized human social status and hierarchy, shamanic head ornaments serve as sculptural devices that articulate divine identity, function, and the boundary between the living world and the afterlife.

Within this context, the Barigongju gache can be understood as a distinctive case in which the sculptural principles of traditional gache are integrated with the symbolic system of shamanic ritual head ornaments. As a sculptural object that must simultaneously visualize the status of a princess deity and the function of soul-guiding, the Barigongju gache is characterized by enlarged structure, concentrated ornamentation, and dynamic sculptural qualities integrated with ritual performance[11][15]. Accordingly, the Barigongju gache occupies a liminal position between court and shamanic head ornament traditions, necessitating focused analysis of its production structure, sculptural aesthetics, and symbolic system in subsequent chapters.

3. Conclusion

3.1. Application of craft-based research

This study adopts a Craft-Based Research approach as its primary methodological framework for analyzing the Barigongju gache used in the *malmigeori* of the Seoul Saenamgut ritual. In this approach, analytical attention is directed toward sculptural judgment, technical decision-making, material logic, and the accumulation of skilled practice embedded in the production process.

This methodology is particularly well suited to the study of traditional crafts and shamanic ritual sculpture, where skilled techniques are inseparably intertwined with ritual contexts. It enables the analysis of tacit knowledge and practical judgment embedded in making processes—dimensions that are difficult to capture through textual or documentary analysis alone. Accordingly, this study treats the Barigongju gache not merely as a finished sculptural object, but as the outcome of operative traditional knowledge and skilled practice activated throughout its production.

Within this framework, the maker is understood not as a passive reproducer of established forms, but as an active agent who evaluates ritual demands and sculptural conditions to determine structure, scale, and ornamentation. The act of making is thus interpreted as a cognitive process in which accumulated knowledge is realized through manual skill and sculptural decision-making. In this study, the maker's decision to braid 108 strands to construct the arched Yeonhwamun serves as a representative example of production logic grounded in skilled practice. This technique was employed to ensure both the structural stability of the arch and the symbolic materialization of the 108 afflictions, demonstrating how ritual meaning is concretely embedded through craft-based sculptural judgment. From this perspective, Craft-Based Research functions as the central methodological foundation of the present study.

3.2. Research procedure and analytical framework

The research was conducted through a stepwise integration of literature review, case analysis, and production-oriented analysis. First, prior studies on the Barigongju myth, the ritual structures of Jinogigut and Saenamgut, and the sculptural characteristics of traditional gache and shamanic head ornaments were reviewed in order to establish the mythological, ritual, and sculptural contexts within which the Barigongju gache is formed.

Next, a Barigongju gache used in the *malmigeori* of the Seoul Saenamgut was selected as the primary case study. The analysis focused on overall scale and form, structural framework, types and arrangements of decorative elements, visual centrality, and the upward concentration of

sculptural emphasis. These criteria were established to examine how the Barigongju gache visually articulates divine hierarchy and the function of guiding the soul to the afterlife.

From a craft-based perspective, the analysis further incorporated sculptural judgments and technical decisions evident in the production process. Rather than merely listing techniques, this study examines why specific structures and ornamental strategies were chosen and how these choices produce particular sculptural effects. In doing so, the analytical framework emphasizes the interrelationship between making processes, sculptural outcomes, and ritual meaning.

The object of analysis is a completed Barigongju gache examined primarily through frontal and rear visual documentation. Craft-Based Research does not require real-time documentation of the entire production process; interpretive analysis of sculptural judgment and skilled practice embedded in finished works is also recognized as a valid methodological approach. Accordingly, this study reconstructs the logic of production by interpreting structural features, ornamental arrangements, and visual focal strategies evident in the completed gache.

3.3. Research object and scope

The research object analyzed in this study is a Barigongju gache produced and used for actual ritual performance in the malmigeori of the Seoul Saenamgut, created by a highly skilled artisan with extensive professional experience in Korea. The gache is particularly suitable as a research subject because it is a ritual sculptural object required to simultaneously visualize the hierarchical status of a princess deity and the functional role of soul-guiding within the ritual context.

While grounded in the structural principles of traditional gache, the research object reflects the symbolic system of shamanic ritual through its enlarged scale and concentrated ornamentation. In particular, its upward-expanding form and multilayered decorative composition can be interpreted as sculptural strategies designed to emphasize the divine hierarchy and transcendence of Barigongju.

The scope of this study is limited to the external form, structural composition, arrangement of decorative elements, and sculptural judgments evident in the production process. Scientific analysis of material properties and statistical comparison among multiple gache types are beyond the scope of this research. Through this focused approach, the study seeks to reinterpret the Barigongju gache as a sculptural object formed through the convergence of myth, ritual, and craft practice, and to demonstrate the academic potential of applying Craft-Based Research to the study of shamanic ritual sculpture.

4. Research Results: Sculptural Analysis of the Barigongju Gache

This chapter examines the Barigongju gache produced for actual ritual performance in the malmigeori of the Seoul Saenamgut, analyzing its sculptural structure and symbolic system from a Craft-Based Research perspective. Rather than limiting the discussion to a descriptive account of the gache's external appearance, the analysis foregrounds visual documentation of the production outcome as its primary source. Through this approach, the chapter interprets how sculptural structure, spatial composition, the arrangement and symbolism of decorative elements, and craft-based judgment and skilled practice are materialized in the completed work. In doing so, it seeks to clarify how the Barigongju gache visually articulates the hierarchical status of the princess deity and the ritual function of guiding the soul to the afterlife.

4.1. Production background and ritual context

The Barigongju gache analyzed in this study was produced specifically for use in the *malmigeori* of the Seoul Saenamgut and was designed to fulfill dual sculptural demands: visualizing the hierarchical status of Barigongju as a princess deity and embodying her role in guiding the soul of the deceased to the afterlife. The *malmigeori* represents the concluding phase of the ritual and the decisive moment in which the soul transitions from the world of the living to the afterlife. At this stage, Barigongju appears as the principal agent of soul-guiding. Accordingly, the gache used in this context functions not as a mere decorative accessory but as a core sculptural medium that materializes divine presence and signifies the completion of the ritual.

These ritual conditions are directly reflected in the overall structure and form of the gache. Image analysis reveals a multilayered compositional strategy in which visual emphasis intensifies progressively from the lower to the upper sections. This vertical organization may be interpreted as a sculptural metaphor for the transition from the human realm to the afterlife. The status of Barigongju as a princess deity is further emphasized through the overall scale of the gache and the density of ornamentation, with decorative elements concentrated in the central and upper zones to visually convey divine authority and transcendence.

During production, the artisan took into account the ritual flow of the *malmigeori*, the spatial configuration of the performance, and the shaman's movements, including dance and bodily gestures. Structural design and weight distribution were therefore determined with the understanding that the gache must function not as a static sculptural object, but as a dynamic form that interacts with bodily movement to intensify divine manifestation. The gache can thus be understood as a sculptural outcome shaped by ritual environment and performance conditions.

4.2. Sculptural structure and spatial composition

Analysis of the visual materials indicates that the Barigongju gache is structurally organized into three primary zones: a lower base section, a central body, and an upper expanded section. The lower base is formed from a thickly braided black gache structure, which provides stability during repeated ritual movements. The wide base and concentration of weight in the lower section function as essential structural elements that support the overall balance of the gache.

The central body constitutes the area of greatest ornamental density, where circular motifs, pearls, and jeweled decorations are arranged in rhythmic repetition. This repetitive structure visually expresses the order and sacred regulation inherent in shamanic ritual while simultaneously articulating divine hierarchy in a gradual and layered manner. Serving as a visual axis, the central section links the lower and upper zones and establishes compositional coherence across the entire form.

The upper expanded section consists of a small tubular framework surmounted by multilayered ornamentation and pronounced chromatic contrast. This configuration directs the viewer's gaze upward, reinforcing verticality as a sculptural principle. Such upward emphasis materializes Barigongju's mythological role as a mediator between the world of the living and the afterlife, while the elevated placement of ornaments symbolically strengthens the directional and transcendent qualities of the soul-guiding ritual.

4.3. Arrangement and symbolism of decorative elements

The circular ornaments, pearls, and multicolored jeweled elements arranged across the frontal surface of the gache function not merely as aesthetic embellishments, but as symbolic devices that visualize divine hierarchy and ritual authority. The repetition of circular motifs evokes notions of completion and cyclical continuity, concepts closely associated with the

transition from death to the afterlife. In addition, the contrast between the black gache base and metallic or brightly colored decorative elements accentuates the manifestation of the sacred realm.

Ornamental elements attached to the arched upper structure enhance the spatial expansion of the gache and are designed to produce visual variation in response to bodily movement during ritual performance. This indicates that the Barigongju gache is not intended for frontal viewing alone, but rather functions as a sculptural form that activates the entire ritual space through movement.

Rear-view images demonstrate that the same sculptural logic applied to the front is maintained on the back of the gache. This compositional consistency ensures that the symbolic presence of the Barigongju deity remains perceptible from all viewing angles throughout the ritual. Such front-back continuity reflects the requirement that divine manifestation be sustained across the entire duration and spatial range of ritual performance.

Notably, the arched upper structure signifies the lotus motif (yeonhwamun), traditionally understood as the gateway of soul-guiding to the afterlife. As a symbolic passage between the world of the living and the realm of the dead, this arched lotus form materializes the function of jeoseung cheondo (guiding the soul to the afterlife) within the sculptural language of the Barigongju gache. As shown in the following <Figure 1>.

Figure 1. Barigongju gache (Seoul Saenamgut). Lotus-shaped arched structure (yeonhwamun) symbolizing the gateway of soul-guiding to the afterlife.



Note: Barigongju gache (Seoul Saenamgut): front and rear views.

4.4. Sculptural judgment from a craft-based perspective

The Barigongju gache represents a production case in which the structural principles of traditional gache are inherited and reconfigured to suit the specific context of shamanic ritual. The formation of a large braided structure, the stepwise concentration of ornamentation, and the stabilization of weight at the lower section are all outcomes of sculptural judgment informed by accumulated experience and ritual understanding.

These acts of making extend beyond simple reproduction or decorative labor. Rather, they demonstrate a cognitive process in which traditional knowledge and ritual requirements are interpreted and translated into sculptural language. This aligns closely with the core principles of Craft-Based Research and provides a basis for understanding the Barigongju gache as a sculptural object in which the practical knowledge of a skilled artisan is materially embedded.

4.5. Summary

In summary, the Barigongju gache can be identified as a complex sculptural object in which mythological narrative, ritual function, and skilled craft practice are organically integrated. Through its enlarged structure, upwardly concentrated form, and symbolically organized ornamentation, the gache visually articulates both the hierarchical status of the princess deity

and the function of guiding the soul to the afterlife. Within the specific ritual context of the *malmigeori* of the Seoul Saenamgut, it operates as a central sculptural medium that completes the manifestation of divine presence.

These sculptural characteristics provide a critical foundation for the discussion in Chapter 5, where the cultural value of the Barigongju gache and the academic significance of Craft-Based Research are further examined. More broadly, this case demonstrates the effectiveness of Craft-Based Research as a methodological approach for analyzing shamanic ritual sculpture.

5. Discussion

This chapter discusses the academic significance of the present study by situating the sculptural analysis of the Barigongju gache presented in Chapter 4 within the context of previous research on shamanic ritual head ornaments and traditional gache. Particular attention is given to the methodological implications of adopting a Craft-Based Research approach centered on sculptural analysis, as well as to the cultural value and public significance of the Barigongju gache in relation to intangible cultural heritage and the role of outstanding skilled artisans.

5.1. Cultural value of the Barigongju Gache

The Barigongju gache analyzed in this study should be understood not merely as a simple ritual ornament, but as a complex cultural artifact in which Korean shamanic mythology, ritual practice, and the sculptural principles of traditional gache are integrally combined. By visually materializing the narrative of death, rebirth, soul-guiding, and salvation embedded in the Barigongju myth, the gache functions as a key medium through which divine hierarchy and ritual authority are made immediately perceptible within the ritual setting[20].

In particular, the Barigongju gache used in the *malmigeori* of the *Seoul Saenamgut* appears at the critical moment of the soul-guiding ritual, demonstrating how mythological narrative and ritual performance are unified as a single cultural practice. In this regard, Barigongju has been interpreted as a representative female deity whose narrative structure embodies both sacrificial suffering and salvational authority within shamanic epics[21]. This indicates that the Barigongju gache does not merely illustrate mythological content, but actively mediates the communal sharing of cosmological order and conceptions of the afterlife. Through its visual presence, the gache enables ritual participants to collectively perceive and internalize the structure of death and transcendence.

Furthermore, while inheriting the structural principles of traditional gache, the Barigongju gache represents a transformation from a device that visualized human social hierarchy to one that articulates divine hierarchy and transcendence. In this respect, it holds significant cultural-historical value, expanding the scope of gache studies beyond courtly and civilian contexts into the domain of shamanic ritual sculpture. Such interpretations further suggest that the Barigongju myth functions as a cultural mechanism through which collective understandings of the afterlife and moral order are transmitted within ritual contexts[22].

5.2. Public significance of the Barigongju Gache from a craft-based research perspective

The Barigongju gache is not the product of an individual maker's aesthetic preference, but rather the result of a production process that synthesizes mythological meaning, ritual requirements, and performance conditions. Because it is produced for use in the public ritual space of the Saenamgut *malmigeori*, the gache should be understood as a public sculptural object created for the community, rather than as a private possession or exhibition artifact. Previous studies on ritual costume and head ornaments have also indicated that such visual

elements play a decisive role in reinforcing ritual authority and symbolic hierarchy within shamanic performances[23].

From a Craft-Based Research perspective, the public character of the Barigongju gache becomes evident in the way skilled craftsmanship contributes to the continuity and transmission of communal culture. Decisions regarding structural design, weight distribution, and the stepwise arrangement of ornamentation are all informed by considerations of ritual stability and symbolic clarity. In particular, the structural arrangement and material composition of ritual costumes have been shown to function as visual signifiers that mediate between the human and sacred realms[24]. These sculptural judgments demonstrate that the maker functions not merely as a technical executor, but as an active participant in ritual realization.

Moreover, by transmitting mythological and ritual meaning through visual form, the Barigongju gache serves as a medium through which cultural knowledge is communicated to subsequent generations. Viewed through the lens of public value, this indicates that the gache plays a role in sustaining social memory and cultural identity beyond its immediate ritual function.

5.3. The Barigongju Gache as intangible cultural heritage and the role of the outstanding skilled artisan

The Barigongju gache occupies a distinctive position within the framework of intangible cultural heritage, as its significance extends beyond its material form to encompass the ritual knowledge, symbolic systems, and skilled practices embedded in its production and use. Although the gache itself is a tangible object, its cultural value is inseparable from the ritual context of the Saenamgut and the accumulated expertise of the artisan who produces it. Through repeated ritual use and transmission, the Barigongju gache becomes institutionalized within the structure of the Saenamgut, functioning as a stabilized visual and symbolic element of the ritual tradition. This process of institutionalization ensures that the gache remains a vital component of the Saenamgut, transcending its role as a mere ritual costume to become a sacred emblem of lineage, continuity, and ritual tradition[25].

Within this institutional and ritual framework, Barigongju emerges not only as a mythological figure but also as a central symbolic axis through which ritual authority and gendered divinity are articulated. Previous studies have demonstrated that Barigongju's narrative structure embodies both sacrificial suffering and salvational power, positioning her as a representative female deity within Korean shamanic epics[10]. This gendered divinity is not expressed solely through narrative content but is materially realized through the sculptural characteristics of the gache itself. In particular, the enlarged scale, vertical emphasis, and concentrated ornamentation of the headpiece visually reinforce the spiritual agency of the female deity, intensifying her presence during the soul-guiding process and clarifying her hierarchical status within ritual cosmology.

Furthermore, the Barigongju gache functions as a cultural mechanism through which communal memory and religious continuity are sustained over time. By repeatedly mediating mythological meaning and ritual authority through visual form, the gache enables participants to collectively perceive and internalize shared conceptions of death, the afterlife, and transcendence. Such symbolic functions further reinforce the role of Barigongju-centered rituals as mechanisms for sustaining communal memory and religious continuity[26]. As long as the ritual remains a living practice, the gache will continue to serve as a bridge connecting the historical past, the sacred present, and the evolving future of Korean intangible cultural heritage.

5.4. Summary

This chapter has discussed the cultural value, public significance, and intangible heritage implications of the Barigongju gache. As a public sculptural object in which mythological narrative, ritual function, and skilled craftsmanship are organically integrated, the Barigongju gache plays a vital role in the continuity and transmission of communal culture. These discussions provide a theoretical and methodological foundation for reinterpreting the Barigongju gache not merely as a ritual ornament, but as a public cultural asset and a form of living heritage shaped through craft-based practice.

6. Conclusion

This study examined the Barigongju gache produced for actual ritual performance in the malmigeori of the Seoul Saenamgut, analyzing its sculptural characteristics and symbolic system through a Craft-Based Research perspective. While previous studies have largely focused on narrative interpretations of the Barigongju myth or functional analyses of shamanic rituals, this research sought to expand the scope of inquiry by centering on the gache used in real ritual contexts and by examining the sculptural structure and the skilled judgment embedded in its production process.

The findings demonstrate that the Barigongju gache constitutes a complex sculptural object in which mythological narrative, ritual function, and skilled craft practice are organically integrated. Its enlarged structure, upwardly concentrated form, and stepwise arrangement of decorative elements function as key sculptural languages that visually articulate both the hierarchical status of the princess deity and her role in guiding the soul of the deceased to the afterlife. In particular, the stable lower base combined with the upward-expanding upper structure interacts with bodily movement during ritual performance, producing a dynamic sculptural effect that intensifies the manifestation of divine presence.

From a Craft-Based Research perspective, these sculptural characteristics should be understood not as the result of aesthetic preference alone, but as outcomes shaped by accumulated skilled knowledge and sculptural judgment that take into account ritual environment, performance conditions, and symbolic systems of the deity. This confirms that the act of making extends beyond the completion of a physical object and constitutes a cognitive process in which traditional knowledge and ritual demands are interpreted and translated into sculptural form. This study suggests that the systematic documentation of *cheondo* symbolism and the production logic of the Yeonhwamun—specifically the technique of braiding 108 strands—can serve as a foundational resource for an *Intangible Cultural Heritage Archiving Project*. Beyond the preservation of physical artifacts, the archiving of such technical data and the artisan's cognitive production process offers a practical framework for the digital restoration of ritual ornaments and the development of educational content for traditional craft practices. Through this approach, the spiritual agency and skilled craftsmanship embedded in shamanic ritual art may be sustained and transmitted as a living cultural practice for future generations[27][28][29].

Moreover, the Barigongju gache holds significant cultural value as a public sculptural object produced and used for communal ritual practice rather than for private ownership or exhibition. By visually mediating mythological meaning and ritual function, the gache operates as a public cultural asset through which communities share and transmit conceptions of death, the afterlife, and cosmological order. Its repeated reproduction and use within ritual contexts further reinforce its public character, positioning the Barigongju gache at the intersection of tangible and intangible cultural heritage.

By applying a Craft-Based Research methodology to the study of shamanic ritual sculpture, this research proposes a methodological framework that incorporates not only sculptural outcomes but also production processes and skilled practice as objects of analysis. In doing so, it demonstrates that traditional ritual sculpture is not a static relic of the past but an ongoing cultural practice, and it highlights the cultural and public significance of skilled artisans as active agents in the transmission and renewal of intangible cultural heritage. As long as the ritual remains a living practice, the gache will continue to serve as a bridge connecting the historical past, the sacred present, and the evolving future of Korean intangible cultural heritage [30].

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8. Appendix

8.1. Author's contribution

	Initial name	Contribution
Author	YL	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/> -Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/> -Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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Wireless Power of Smart Society: Public Value Challenges and Governance Solutions

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Abstract

Purpose: This paper aims to examine how Wireless Power Transfer (WPT), as an emerging foundational infrastructure for smart societies, can simultaneously create and distort public value. While WPT promises efficiency, convenience, and new business opportunities across smart homes, smart cities, and Internet of Things (IoT) eco-systems, it also raises complex public value challenges related to safety, privacy, equity, sustainability, and democratic governance.

Method: The study adopts public value theory and the risk society perspective as its analytical framework. It first outlines the key technological features of WPT and its envisioned role in smart societies. It then conducts a conceptual and literature-based analysis to assess the implications of WPT infrastructures for public value creation and erosion.

Results: The analysis identifies five major public value concerns associated with WPT deployment:

- (1) safety and health uncertainties arising from electromagnetic field exposure;
- (2) privacy and data governance risks in sensor-rich environments;
- (3) issues of energy justice and infrastructural inequality;
- (4) environmental sustainability challenges, including increased electronic waste; and
- (5) platform monopolization and the erosion of public control over critical infra-structures.

To address these challenges, the paper proposes governance solutions such as adaptive regulatory frameworks, privacy-by-design principles, public-value-based infrastructure standards, energy justice mechanisms, accountable public-private partnerships, and international standardization efforts.

Conclusion: The central argument of the paper is that WPT should be governed as a public infrastructure rather than as a purely market-driven or technology-driven innovation. Its design and deployment must be aligned with collectively defined public values. The study concludes by outlining implications for policymakers, industry stake-holders, and future research on the responsible governance of smart-society technologies.

Keywords: Wireless Power Transfer, Smart Society, Public Value, Governance, Energy Justice

1. Introduction

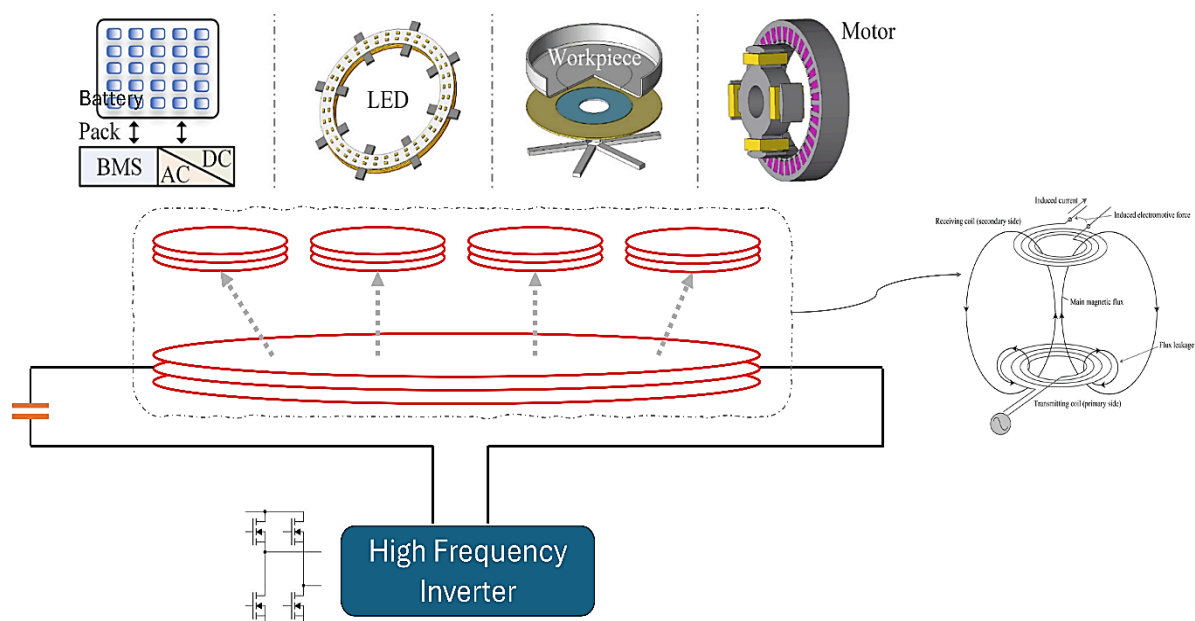
A smart society can be defined as a socio-technical system in which information and communication technologies (ICT), the Internet of Things (IoT), and digitally enhanced power grids are converged to interconnect energy, transportation, and everyday life infrastructures. Within such systems, modes of power delivery are gradually shifting from conventional wire-based electricity networks toward more flexible and ubiquitous forms of wireless energy flow. Wireless Power Transfer (WPT) technologies, which initially emerged in the context of mobile device charging, are now expanding into broader domains, including lighting systems, electric vehicle (EV) charging, renewable energy integration, and smart grid applications.

As summarized in the following <Table 1>, WPT technologies can be broadly categorized into inductive coupling, resonant inductive coupling, and radio-frequency (RF) radiation based transmission. Each approach represents a different trade-off between efficiency, transmission distance, positional tolerance, and regulatory constraints. Inductive coupling offers high efficiency at extremely short ranges, resonant coupling extends operational flexibility, and RF-based approaches enable long-distance power delivery to low-power or embedded devices. More recently, so-called “smart WPT” systems have begun to integrate real-time control, communication, and power management, evolving toward an “energy-information convergence” model akin to an energy internet.

Table 1. Types of WPT technology and their key-features.

Technology	Key-Features
Inductive Coupling	the simplest and most established method: great efficiency at extremely short range but limited distance and alignment flexibility
Resonant Inductive Coupling	range extension and positional tolerance by using resonant tuning, at the cost of complexity and slightly lower efficiency under some condition
RF radiation	reach beyond near-field ranges, opening possibilities for powering remote/embedded low-power devices, yet comes with regulation and lower efficiency trade-offs

Figure 1. Basic configuration based on wireless power transfer system and its applications.



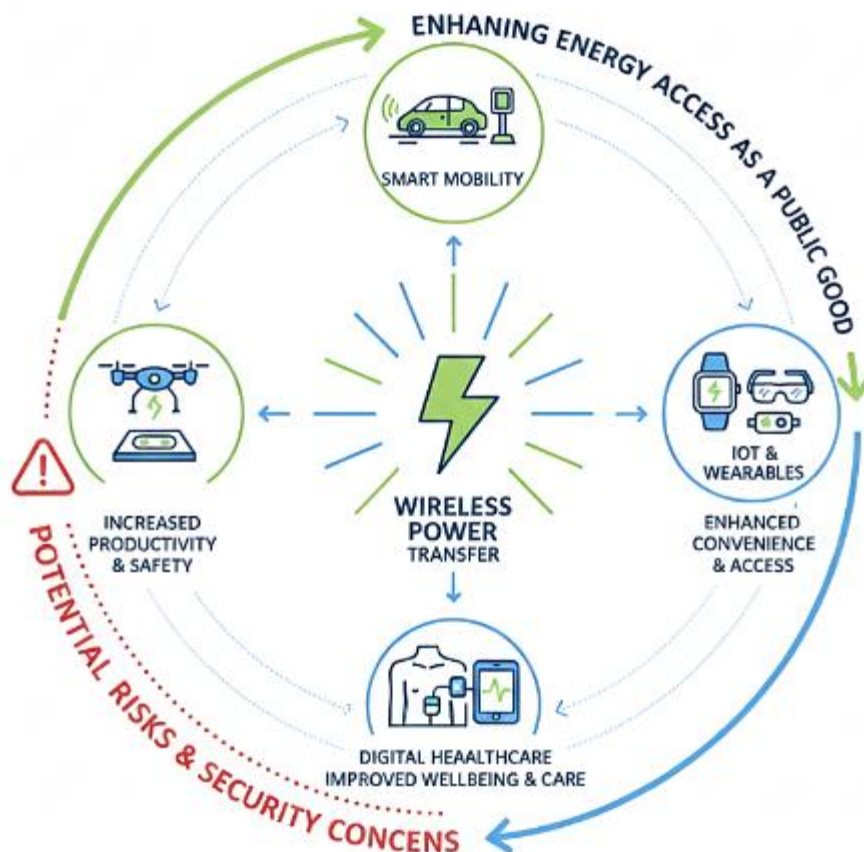
As above <Figure 1> illustrates the structure and the operating principle of a wireless power transfer system in which a transmitting coil driven by a high-frequency inverter generates a magnetic/resonant field to deliver energy contactless to multiple receiving coils, demonstrating

the technical basis for supplying power without cables to static, rotating, and mobile devices in smart environments, and showing that high-frequency power conversion, magnetic/resonant optimization, multi-receiver support, and application scalability can be explained in an integrated system view and implemented through power electronics technologies.

The diffusion of WPT carries public-value implications that extend beyond mere technical convenience. Wireless energy, by decoupling power delivery from fixed cables and locations, has the potential to enhance mobility, accessibility, and resilience, particularly in emergency situations and public service contexts. For example, wireless EV charging infrastructures may reduce installation complexity, spatial constraints, and cable-management hazards compared to conventional wired charging stations.

At the same time, the public-good-like characteristics of wireless power - such as partial non-excludability and shared electromagnetic environments - generate tensions between public interest and private control. Questions arise concerning who governs access, allocates capacity, manages interference, and ensures fairness when multiple users simultaneously rely on shared wireless power resources. These issues, illustrated conceptually in the <Figure 2> of the original manuscript, signal that WPT is not merely an engineering innovation but a socio-political challenge involving the redesign of energy provision as a public infrastructure.

Figure 2. Public value and challenge of wireless power transfer in smart society.



Against this backdrop, this paper advances the argument that WPT in smart societies must be analyzed and governed through a public value lens. Rather than focusing exclusively on efficiency or market competitiveness, policymakers and stakeholders must address how wireless

power systems shape safety, equity, trust, and sustainability. The paper addresses the following research questions:

1. What are the major public value challenges associated with the deployment of WPT in smart societies?
2. How can public value theory and the risk society perspective help conceptualize these challenges?
3. What governance solutions are necessary to align WPT ecosystems with public value objectives?

The analysis proceeds in four steps. Section 2 outlines the technological and conceptual foundations of WPT and smart societies, introducing public value theory and risk society as analytical lenses. Section 3 identifies five key public value challenges stemming from large-scale WPT deployment. Section 4 proposes governance solutions and policy directions. Section 5 concludes with implications for research and practice.

2. Conceptual and Theoretical Foundations

2.1. Wireless power ecosystems

Wireless power transmission refers to technologies that transfer electrical energy from a power source to a load without conductive wires. Contemporary WPT systems can be broadly categorized into near-field and far-field approaches.

- Near-field systems typically use inductive coupling or magnetic resonance within relatively short distances - such as wireless charging pads for smartphones and electric vehicles.
- Far-field systems employ microwaves or radio frequency (RF) waves to deliver power over longer distances.

Recent developments in standards such as Qi and air-field have accelerated the commercialization of wireless charging for consumer electronics and are increasingly being integrated into furniture, vehicles, public spaces, and urban infrastructures. In parallel, research is exploring WPT for powering sensors, drones, and implanted medical devices, thereby strengthening the vision of a wirelessly powered IoT.

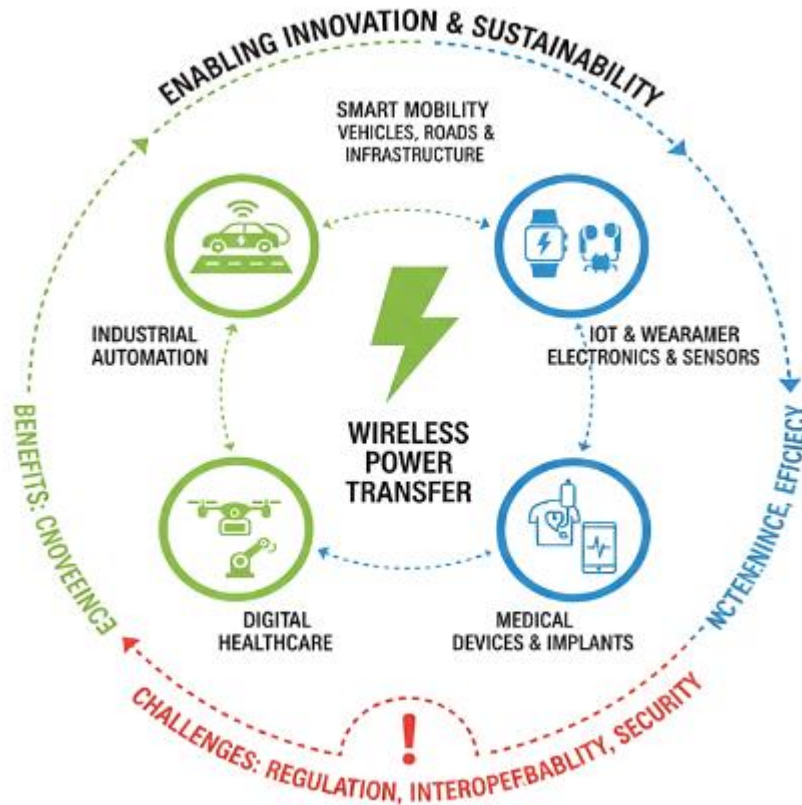
When woven into smart society architectures - smart homes, smart factories, smart mobility, and smart cities - WPT becomes part of a complex socio-technical system that also includes data networks, AI-based control systems, cloud platforms, and public institutions [1]. As shown in the following <Figure 3>, this entanglement makes it necessary to go beyond narrow engineering perspectives and consider social, political, and ethical dimensions [2][3].

WPT is part of Social Overhead Capital, a.k.a. Infrastructure. That is, it does not directly produce industrial activities but essentially supports them. Therefore, WPT functions as a foundation within this mechanism while simultaneously serving as a cyclical medium that connects industry and society. In particular, WPT operates as part of the power grid, effectively and efficiently linking the flow of energy that drives all industries and daily life. Just like mobile communication, WPT functions as a “connecting channel” that wirelessly delivers energy from the point of production to the point of consumption.

Thus, as an energy linkage network, WPT goes beyond a simple supply chain to play a role in mediating industrial innovation and sustainability. At this very point, the necessity arises for

discussions on Public Value in the development and operation of WPT. Therefore, an examination of the functional interconnection between WPT as a technology and Public Value as a structure of social operation is required.

Figure 3. Wireless power ecosystem based on WPT.

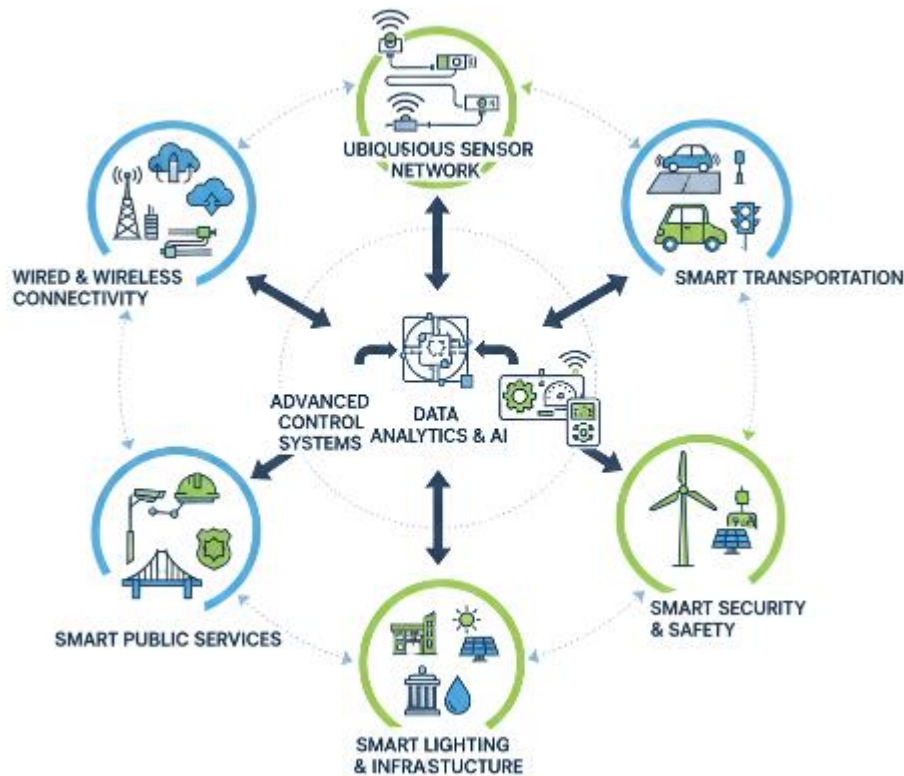


2.2. Smart society and public value

The concept of a smart society generally refers to the large-scale integration of digital technologies into social, economic, and governmental processes with the aim of improving efficiency, sustainability, and quality of life. Smart societies employ sensor networks, data analytics, and automated control systems to manage transportation, energy, lighting, security, and public services.

As illustrated in the following <Figure 4>, public administration scholars argue that such systems must be evaluated not only in terms of efficiency but also in terms of public value [4]. Public value, as articulated by Moore and further developed by Bryson and colleagues, encompasses collectively valued outcomes such as safety, equity, transparency, participation, trust, human rights, and environmental sustainability[5]. In smart societies, public value is often mediated by digital infrastructures that can simultaneously enable innovation and introduce new vulnerabilities, including cybersecurity risks and opaque algorithmic decision-making[6]. Wireless power infra-structures therefore require evaluation with respect to how they support - or undermine - public value objectives[7].

Figure 4. Smart society and public value.



2.3. Risk society and technological governance

As mentioned above, Wireless Power Transfer (WPT) represents a technological domain in which innovation and societal risk co-evolve, thereby necessitating governance frameworks that are simultaneously value-oriented and reflexive. In this context, WPT must be situated not merely as a technical advancement but as a component of social overhead capital, functioning both as a foundational infrastructure and as a mediating channel that connects industrial activity with societal needs[8][9].

A value-oriented governance approach requires the explicit integration of public values - such as sustainability, equity, and accessibility - into the development and deployment of WPT systems. This entails evaluating WPT not only in terms of technical efficiency but also in relation to its broader contributions to social welfare and environmental resilience. Reflexive governance, in turn, emphasizes adaptability: regulatory structures must remain flexible to accommodate rapid technological evolution, while simultaneously anticipating emergent risks, including electromagnetic exposure, cybersecurity vulnerabilities, and infrastructural dependencies.

By embedding WPT within the broader framework of energy networks and public infrastructure, governance can ensure that its trajectory aligns with industrial innovation and societal sustainability. Ultimately, the co-evolution of technological innovation and societal risk in WPT underscores the necessity of governance solutions that are both normatively grounded in public value and dynamically responsive to changing contexts.

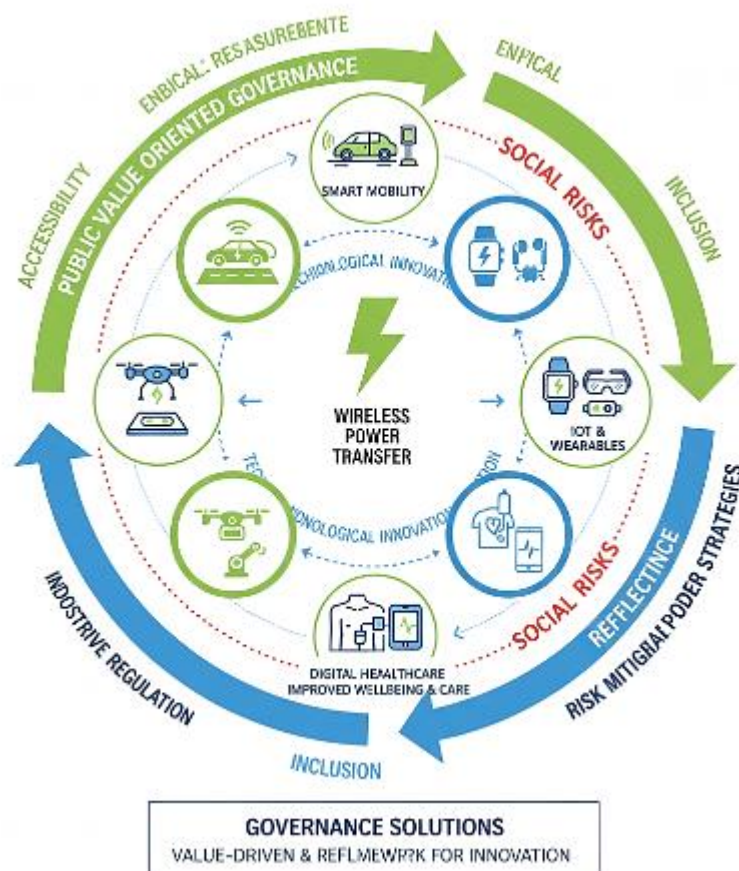
However, since technological progress does not necessarily unfold in alignment with ethical progress, it is necessary to conduct a value assessment of technological advancement itself. In particular, Ulrich Beck's concept of the risk society provides important implications in this regard[10].

Ulrich Beck's concept of the risk society emphasizes that modern societies increasingly face systemic, manufactured risks arising from technological and industrial processes whose consequences are uncertain, distributed, and often irreversible. In such contexts, traditional regulatory approaches that focus on known hazards become insufficient. Instead, reflexive governance and precautionary principles are required to deal with uncertainty and long-term impacts.

Wireless power infrastructures are emblematic of risk society dynamics: their EMF emissions, integration with data infrastructures, and reliance on complex supply chains make them prone to both known risks (e.g., interference with medical devices) and unknown or contested risks (e.g., cumulative health effects, privacy erosion). Governance arrangements must therefore incorporate risk-aware, adaptive mechanisms that can respond to evolving knowledge and public concerns[11].

By integrating public value theory with the risk society perspective, this paper frames WPT as a field where technological innovation and societal risk co-evolve, requiring governance solutions that are both value-oriented and reflexive as shown in the <Figure 5>. The social risks that may arise from the development and utilization of WPT, along with governance solutions to address them, must unfold as value-oriented activities while simultaneously advancing toward the redesign of social structures or frameworks. The aspects related to such innovation are concretized through multi-layered mechanisms of application, whereby diverse domains achieve innovation within their respective spheres while autonomously and evolutionarily developing integrative models of convergence.

Figure5. Public value risky society and governance solutions of wireless power transfer in smart society.



3. Public Value Challenges of Wireless Power in Smart Societies

WPT's public value can be exemplified in four ways. First, convenience, which is embodied in expanded access to electricity in public spaces and transportation. Second, safety, which is manifested in enhanced safety in multi-use facilities like hospitals and subways. Third, environmental friendliness, which is manifested in city-level energy efficiency and carbon reduction. Fourth, innovation, which is developed through innovations in smart city and electric vehicle infrastructure, and social ripple effects. This section identifies five interrelated public value challenges that arise from the deployment of wireless power in smart societies.

3.1. Safety and health concerns

WPT systems emit electromagnetic fields (EMFs) in frequencies that overlap with other wireless communication technologies. The International Commission on Non-Ionizing Radiation Protection has established guidelines for limiting EMF exposure, and most commercial WPT devices adhere to these thresholds. Short-term health effects at these levels are generally considered unlikely[12].

However, debates persist regarding long-term exposure to low-level EMFs, especially in environments where multiple wireless technologies coexist. As wireless charging pads, embedded coils, and RF transmitters become ubiquitous in homes, offices, public transport, and urban spaces, cumulative exposure patterns may change in ways that current models do not fully capture. Vulnerable populations - such as children, individuals with implanted medical devices, or people living in dense urban environments - may experience disproportionate risks or anxieties. From a public value perspective, the issue is not only whether WPT is objectively safe but also whether citizens can trust that risks are being adequately monitored, transparently communicated, and fairly managed[13].

3.2. Privacy and data-governance risks

Wireless power infrastructures are often intertwined with sensor networks and data platforms. Smart charging stations may collect information about device identity, location, charging frequency, and user behavior. When coupled with IoT ecosystems, these data can be linked to mobility patterns, consumption habits, or even intimate aspects of daily life.

Surveillance Capitalism: Shoshana Zuboff describes surveillance capitalism as an economic logic that commodifies personal data and uses it for prediction and control. If WPT infrastructures are designed primarily to maximize data extraction and monetization - for example, by tracking user interactions with public charging points - they may become integral components of surveillance capitalism[14].

Privacy-by-design principles - which advocate embedding privacy safeguards into systems from the outset - are thus crucial for WPT. Without such safeguards, the expansion of wireless power could inadvertently normalize continuous, invisible data collection in everyday spaces, undermining autonomy, anonymity, and trust.

3.3. Energy justice and infrastructure inequality

The concept of energy justice highlights the need for fair distribution of energy services, equitable decision-making, and recognition of vulnerable communities in energy transitions. Wireless power infrastructures, like other smart technologies, risk reproducing or exacerbating social inequalities[15][16].

- Infrastructure Divide: Early deployment of WPT is likely to focus on profitable zones (premium residential areas, commercial centers). Low-income neighborhoods, rural

regions, and marginalized groups may initially be excluded from the benefits, creating a new form of infrastructure divide.

- **Pricing Burden:** Pricing models for wireless charging services may disproportionately burden users who lack alternative options, raising concerns about fair access, inclusion, and distributive justice.

If public authorities rely heavily on private providers without clear equity criteria, this divide may deepen over time.

3.4. Environmental sustainability and e-waste

While WPT proponents argue for benefits like reduced battery stress and optimized charging behavior, engineering studies indicate that efficiency losses in wireless charging can increase total energy consumption compared to wired charging, particularly when misaligned or used at suboptimal distances. At scale, this may undermine energy-efficiency and climate goals.

Additionally, the proliferation of wireless charging infrastructure (pads, coils, transmitters) will contribute significantly to electronic waste (e-waste) and resource extraction. The United Nations Environment Programme notes that global e-waste is already growing at an alarming rate, with low recycling rates and significant environmental and social impacts [17]. From a public value angle, sustainability requires life-cycle responsibility, ensuring WPT rollout aligns with strong eco-design standards.

3.5. Platform monopolization and control of public infrastructures

Wireless power ecosystems are likely to be dominated by a small number of platform actors that control standards, intellectual property, and integrated service environments. This concentration of power can lead to monopolistic practices, lock-in, and reduced interoperability.

When WPT infrastructures become embedded in public spaces, platform control raises questions about who governs critical infrastructures. If municipalities become dependent on proprietary platforms, their capacity to enforce public value obligations - such as transparency, accountability, or universal access - may be weakened. This infrastructural privatization challenges traditional public governance models.

4. Governance Solutions and Policy Directions

Addressing the public value challenges requires a multi-layered governance approach that includes regulation, standards, institutional design, and participatory mechanisms.

4.1. Adaptive safety regulation and EMF monitoring

Regulators should adopt adaptive frameworks that combine adherence to international guidelines with ongoing monitoring of WPT deployments in real environments [18].

- Continuous measurement of EMF levels in public spaces.
- Publicly accessible registries of WPT installations.
- Applying precautionary principles where plausible risks exist.

4.2. Privacy-by-design and data governance

WPT infrastructures should be designed according to privacy-by-design principles:

- Minimizing data collection to what is strictly necessary for power delivery.

- Avoiding persistent identifiers that enable cross-context tracking.
- Independent oversight bodies should audit WPT providers and enforce compliance.

4.3. Public value-based infrastructure standards

Infrastructure planning and procurement processes for WPT should incorporate public value assessments with criteria including equity, accessibility, environmental life-cycle impact, and alignment with human rights[19][20][21].

4.4. Energy justice and fair access mechanisms

To prevent WPT from becoming a luxury technology, governments can implement energy justice strategies[22][23]:

- Subsidies or support programs for deploying WPT in underserved communities.
- Universal design criteria for public charging points.
- Tariff regulation for public charging services to avoid exploitative pricing.

4.5. Accountable public-private partnerships (PPPs)

PPPs must safeguard public value through contractual clauses that enforce open standards and data protection. Governance should adopt co-creation processes where public agencies, private actors, and civil society collaborate in problem-solving[24][25].

4.6. International coordination and standardization

Governments should actively engage in international forums (IEEE, IEC, and ITU) to promote standards that embed public value concerns, such as energy efficiency, recyclability, and open interoperability. International collaboration is vital to prevent regulatory arbitrage[26][27].

5. Conclusion

Wireless power technologies are moving from speculative concepts to tangible infrastructures that will shape the everyday life of smart societies[28]. While the potential benefits in terms of convenience, flexibility, and innovation are substantial, WPT also brings non-trivial public value challenges. These include safety and health uncertainties, privacy and data-governance risks[29], energy justice concerns, environmental impacts, and the risk of platform monopolization[30].

By applying public value theory and the risk society framework, this paper has argued that WPT must be governed as a public infrastructure whose design and deployment are aligned with societal values, rather than being left to purely market-driven dynamics. Governance solutions require adaptive safety regulation, privacy-by-design, public value-based standards, energy justice mechanisms, accountable PPPs, and international coordination.

Future research should deepen this analysis by:

- Developing public value impact assessment tools tailored to wireless power and other smart infra-structures.
- Empirically studying citizen perceptions of WPT and trust in associated institutions.
- Exploring how AI and data analytics can be used to enhance, rather than erode, public value in energy and data governance.

- Comparing policy approaches across countries to identify best practices and pitfalls.

Ultimately, the question is not whether smart societies will adopt wireless power, but how they will do so - and whether the resulting systems will serve the public interest in a fair, sustainable, and democratic way.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Lead Author	TK	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
Corresponding Author*	HK	-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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The Impacts of ADHD Tendencies on Mental Health in Elementary School Students: Mediating Effects of Optimism

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Abstract

Purpose: The mental health of elementary school students in South Korea has reached a critical threshold, with a growing number of students exhibiting 'ADHD tendencies'—a condition where core symptoms are present but fall below the threshold for a formal diagnosis. The primary objective of this study was to empirically analyze the direct impact of these ADHD tendencies on mental health outcomes, specifically depression and anxiety, among elementary school students. Furthermore, this study aimed to verify the mediating effect of optimism, a positive psychological asset, to determine if it functions as a protective factor in the relationship between ADHD tendencies and mental health deterioration.

Method: To achieve these objectives, data were collected from 407 elementary school students in grades 4 through 6 located in the capital area. The participants completed self-report surveys assessing ADHD tendencies, mental health (depression and anxiety), and dispositional optimism. The collected data were analyzed using descriptive statistics and correlation analysis to ensure data validity. Subsequently, Structural Equation Modeling (SEM) was employed to compare model fit and verify the structural relationships among variables, and bootstrapping analysis was conducted to test the significance of the mediating effects.

Results: The comprehensive results of the analysis are as follows. First, ADHD tendencies in elementary school students were found to have a significant positive direct effect on mental health problems, indicating that higher levels of ADHD symptoms directly exacerbate depression and anxiety. Second, ADHD tendencies were found to significantly reduce the level of optimism in students. Third, optimism was identified as a partial mediator in the relationship between ADHD tendencies and mental health. This reveals a specific pathway where ADHD tendencies deplete a child's optimism, which in turn accelerates the deterioration of their mental health.

Conclusion: These findings suggest that ADHD tendencies, often situated in a diagnostic blind spot, act as a core risk factor threatening the mental health of elementary students regardless of formal diagnosis. The study highlights that the 'loss spiral' of psychological resources, such as optimism, plays a crucial role in this process. Therefore, effective interventions for students with ADHD tendencies should not be limited to symptom management but must also include strategies to preserve and enhance positive psychological capital, such as optimism, to buffer against mental health risks.

Keywords: ADHD Tendency, Mental Health, Depression, Anxiety, Optimism

1. Introduction

The mental health problems of elementary school students in South Korea appear to have reached a critical threshold that requires a national-level response, transcending the level at which individuals or individual families can resolve them. While the major developmental issues of elementary school students in the past were focused on overt factors such as physical growth and basic academic skills, internalizing mental health problems such as depression and anxiety

have been constantly reported in recent years. According to the results of the ‘Student Emotional and Behavioral Screening Test’ by the Ministry of Education, the proportion of elementary school students classified as an emotional high-risk group has been steadily increasing every year, and in particular, the age of onset for depression and anxiety in children is gradually decreasing[1]. Statistical data from the Health Insurance Review and Assessment Service show similar results, indicating that the number of children under the age of 10 who received treatment for depression and anxiety disorders has surged by more than 30% over the past five years[2]. Mental health issues in elementary school students are considered a very serious situation in that they not only hinder the formation of a healthy self-concept but also lead to a decline in academic and school adaptation skills, and are even linked to school violence, with a high possibility of transitioning into adult psychiatric disorders[3][4][5].

Another point to note in dealing with the mental health problems of elementary school students is that there are groups that exhibit relatively more severe mental health issues, represented by students with ADHD tendencies. ADHD is an externalizing emotional and behavioral disorder characterized by inattention, hyperactivity, and impulsivity as its main symptoms, and it is usually diagnosed in adolescents aged 12 or younger when they exhibit these three core symptoms continuously for more than six months in various settings, causing serious difficulties in social and academic life[6]. ADHD tendencies refer to a state in which a child exhibits a significant portion of the core clinical symptoms of inattention, hyperactivity, and impulsivity, and experiences clear difficulties in daily life or school adjustment, yet does not fully meet the threshold of diagnostic criteria or has not received a separate formal diagnosis due to social prejudice or parental refusal[7]. According to recent studies, the number of children with such ADHD tendencies is estimated to be much higher than that of officially diagnosed ADHD children, and it is expected that as many as 10% or more of children in general classrooms belong to this category[7][8][9]. Because children with ADHD tendencies do not have a formal diagnosis, they are frequently in a more vulnerable position as they are easily labeled as ‘children lacking will-power’ or ‘problem children’ by teachers or parents and tend to accumulate repeated failure experiences while being excluded from appropriate educational and therapeutic support systems.

The negative impact of ADHD tendencies on the mental health of elementary school students is very serious. First, ADHD tendencies can act as a decisive factor in deepening the depression problems of elementary school students[10]. According to previous studies, children with ADHD tendencies have a decreased ability to complete tasks due to low executive function, which can contribute to forming a negative self-image in the classroom[11]. The surrounding criticism regarding the continuous academic failures and behavioral problems they experience induces ‘learned helplessness’ in the child, which can eventually solidify into chronic depression[12]. Furthermore, according to the previous studies, children with higher ADHD tendencies were found to have a significantly higher risk of developing depressive disorders compared to general children by failing to appropriately process negative emotions and instead internalizing them[13][14]. In other words, in the case of children with ADHD tendencies, extreme emotional depression is experienced even in minor frustration situations due to insufficient emotional regulation ability, and if this emotional depression is repeated, mental health problems can occur[15].

Next, the anxiety experienced by elementary school students with ADHD tendencies is also a serious factor causing their mental health problems. In many cases, children with ADHD tendencies have a perception that it is difficult to control their own behavior, which often leads to excessive worry and a sense of uncontrollability about future situations[16][17]. According to actual previous research, it was analyzed that about 25-40% of children with ADHD tendencies belong to an emotional high-risk group experiencing high levels of general anxiety and separation anxiety simultaneously[18][19]. In addition, children with ADHD tendencies were found to

frequently experience social anxiety, a potential fear that they might receive negative evaluations from others due to their impulsive behavior[20]. This excessive anxiety experienced by children with ADHD tendencies consumes their cognitive resources, further dispersing their attention and creating a vicious cycle that worsens their symptoms[21][22].

In order to protect the mental health of elementary school students with ADHD tendencies and to successfully support those exhibiting mental health problems, it is essential above all to identify the pathways through which their ADHD tendencies transition into mental health issues such as depression and anxiety, and what factors can alleviate those negative influences. In that sense, it is worth noting recent studies showing that internal psychological mechanisms such as optimism can mediate or moderate the impact of ADHD tendencies on mental health. Traditionally, psychology has focused on children's deficits and disabilities, but with the recent rise of positive psychology, research on psychological assets that maintain an individual's emotional well-being and resilience even in environmental adversity is being actively conducted[23]. Among them, optimism in particular is receiving attention as a key mechanism for overcoming the unique psychological crises faced by children with ADHD tendencies. Optimism is defined as a cognitive tendency to interpret the cause of currently occurring events in a positive direction while maintaining a hopeful disposition toward the future, beyond simply vague positive expectations[24].

This optimism acts as a powerful protective factor that alleviates emotional pain and maintains mental health. According to the 'Expectancy-Value Model' of Scheier and Carver, optimistic children do not give up halfway and persevere using adaptive coping strategies even when they encounter obstacles in the process of achieving goals because they expect positive results[24]. This cognitive tendency exerts a direct effect on suppressing depression and anxiety. Children with high optimism prefer problem-focused coping in stressful situations and tend to actively regulate negative emotions rather than avoiding them[25]. In fact, many previous studies report that optimism has a strong negative correlation with mental health problems such as depression and anxiety[26][27]. A high level of optimism provides emotional stability by improving self-esteem and increasing the ability to perceive social support[28]. Particularly, studies showed that the initial level of optimism appeared as an important variable predicting subsequent emotional maladjustment and children with higher optimism have a significantly lower incidence of depression even in psychological trauma or stressful situations [29][30].

ADHD tendencies are a serious risk factor threatening the mental health of elementary school students in themselves, but if a buffering psychological system such as optimism operates appropriately, there is a high possibility that the negative influence will be substantially alleviated. However, to date, domestic research has mainly focused on clinically confirmed ADHD children, so academic discussion for students with ADHD tendencies, who actually account for a much larger proportion in the school field, is relatively insufficient. Accordingly, this study aims to analyze the direct influence of ADHD tendencies on mental health, including depression and anxiety, targeting elementary school students in South Korea, and to identify what mediating effects optimism exhibits in the process. Through this, it is expected to illuminate the group of elementary school students with ADHD tendencies who are likely to be placed in the blind spot of diagnosis and treatment amidst the social task of deteriorating mental health of elementary school students, and furthermore, to provide practical implications for establishing a school-based mental health support system by explaining the path leading from ADHD tendencies to mental health problems through optimism as an intervenable protective factor. Specifically, this study intends to proceed focusing on the following two research questions.

First, how do ADHD tendencies in elementary school students affect their mental health?

Second, what mediating effect does optimism show in the influence of elementary school students' ADHD tendencies on their mental health?

2. Research Method

2.1. Research model

The purpose of this study is to examine the impact of ADHD tendencies on the mental health of elementary school students and to investigate the mediating effect of optimism in this process. In this study, a partial mediation model, in which ADHD tendencies exert both direct and indirect effects on mental health, was established as the baseline model, while a full mediation model, in which they only exert an indirect effect, was set as the competing model. The configurations of the baseline and competing models are illustrated in <Figures 1> <Figures 2>.

Figure 1. Baseline model.

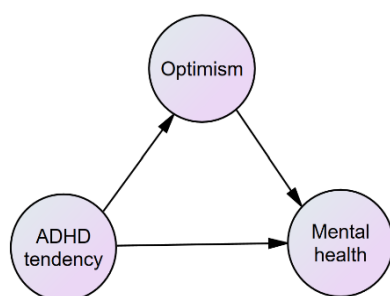
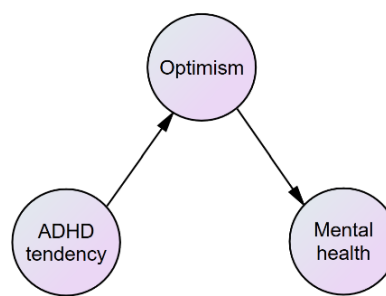


Figure 2. Competing model.



2.2. Participants

The participants of this study consisted of 407 students in grades 4 through 6 from two elementary schools located in the capital area. Initially, the surveys were delivered to each school by the researcher via mail, and they were completed through a method where the homeroom teachers at each school distributed and collected the surveys in bulk from the students. Subsequently, each school returned the surveys to the researcher again via mail. Among the collected surveys, 407 were utilized as research data, excluding 6 copies where the reliability of the responses was deemed questionable (e.g., leaving one or more scales unanswered or marking the same number for all scales). The general characteristics of the students who participated in the study are presented in <Table 1>.

Table 1. Characteristics of the participants.

Characteristic	Area	N	%
Gender	Male	208	51.2
	Female	198	48.6
	Non-response	1	.2
Grade	4	167	41.0
	5	125	30.7
	6	115	28.3

2.3. Research instruments

2.3.1. ADHD tendency measurement scale

To assess the ADHD tendencies of the participating students, this study employed the ADHD Symptom Measurement Scale for Elementary School Students developed by Choi[31]. This scale was constructed based on the DSM-IV criteria and consists of a total of 18 items, comprising 9 items for inattention and 9 items for hyperactivity and impulsivity. Each item is designed to be evaluated on a 4-point Likert scale. A higher aggregate score indicates a greater degree of ADHD tendencies. The internal consistency reliability of this measurement instrument is presented in <Table 2>.

Table 2. The internal consistency reliability of ADHD tendency measurement scale.

Area	Item(N)	Cronbach'α
Inattention Hyperactivity/impulsiveness ADHD tendency	9	.789
	9	.833
	18	.884

2.3.2. Mental health measurement scale

In this study, to measure the levels of depression and anxiety among the participants, the depression and anxiety scales of the Korean version of the Symptom Checklist (SCL), standardized by Kim, Won, Lee, and Kim, were utilized[32]. The depression scale consists of a total of 13 items, and the anxiety scale consists of a total of 10 items, both designed to be evaluated on a 4-point Likert scale. A higher total score indicates a greater presence of mental health issues. The internal consistency reliability of the mental health measurement instrument observed in this study is presented in <Table 3>.

Table 3. The internal consistency reliability of mental health measurement scale.

Area	Item(N)	Cronbach'α
Depression	13	.936
Anxiety	10	.921
Mental health	23	.958

2.3.3. Optimism measurement scale

To measure the participants' levels of optimism, this study utilized the 'Children's Dispositional Optimism Scale' developed by Kim and Lee[33]. This scale consists of a total of 12 items and is designed to be evaluated on a 4-point Likert scale, including two filler items. In this study, the scores were summed after reverse-scoring the items, such that a higher total score indicates a lower level of optimism. The internal consistency reliability of the optimism scale analyzed using Cronbach's α was found to be .842

2.4. Data analysis

In this study, structural equation modeling (SEM) was conducted to investigate the mediating effect of optimism in the process through which ADHD tendencies influence mental health. First, descriptive statistics and correlation analysis were performed to verify whether the measured variables satisfied the normality assumption and to check for potential multicollinearity issues. Subsequently, a model fit comparison was conducted to determine which of the research models, established based on the analysis of previous literature, was most appropriate. For the model fit comparison, absolute fit indices (χ^2 , GFI, RMSEA) and incremental fit indices (TLI, CFI) were utilized. Based on the research model selected through the fit comparison, the paths between latent variables were analyzed to explore the structural relationships between the latent

and measured variables. Finally, a bootstrapping analysis was performed to verify whether ADHD tendencies influence mental health through the mediation of optimism.

3. Research Results

3.1. Research model

First, descriptive statistics were conducted to examine whether the measured variables satisfied the normality assumption. Specifically, the normality of the data was assessed based on skewness and kurtosis values, and as shown in <Table 4>, all measured variables were found to meet the criteria for a normal distribution, with all values falling within the acceptable range. Subsequently, a correlation analysis was performed to verify the absence of multicollinearity issues among the measured variables. The findings revealed significant positive correlations among all variables, and the correlation coefficients were confirmed to be within an acceptable range, indicating no concerns regarding multicollinearity.

Table 4. Descriptive statistics and correlations of the measurement variables.

	Inattention	Hyperactivity/ Impulsiveness	Optimism 1	Optimism 2	Mental health1	Mental Health2
Hyperactivity/ Impulsiveness	.664**					
Optimism 1	.405**	.297**				
Optimism 2	.434**	.259**	.728**			
Mental health1	.503**	.340**	.522**	.531**		
Mental Health2	.492**	.398**	.510**	.523**	.809**	
M	1.816	1.75	1.531	1.428	1.936	1.892
SD	0.58	0.517	0.623	0.586	0.673	0.675
Skewness	0.551	0.84	1.388	1.589	0.584	0.655
Kurtosis	-0.093	0.76	1.492	2.209	0.185	0.081

Note: *p<.05, **p<.01, ***p<.001.

3.2. Comparison of model fit between the baseline model and the competing model

To determine whether the baseline model or the competing model established in this study is more appropriate, a comparison was conducted using model fit indices. According to the analysis of the χ^2 index—an absolute fit index—the baseline model yielded $\chi^2(6) = 2.426$ and the competing model yielded $\chi^2(7) = 7.095$, as shown in <Table 5>. The χ^2 difference relative to the change in degrees of freedom between the two models was $\chi^2(1) = 4.669$. This was found to exceed the critical value of 3.84 at the .05 significance level, indicating that the baseline model is more suitable than the competing model. Furthermore, since other fit indices also suggested that the baseline model performed better, it was ultimately adopted as the research model for this study.

Table 5. Model fit indices.

Model	χ^2	df	p	GFI	CFI	TLI	RMSEA
Baseline	2.426	6	.024	.988	.993	.984	.059
Competing	7.095	7	.000	.961	.967	.930	.123

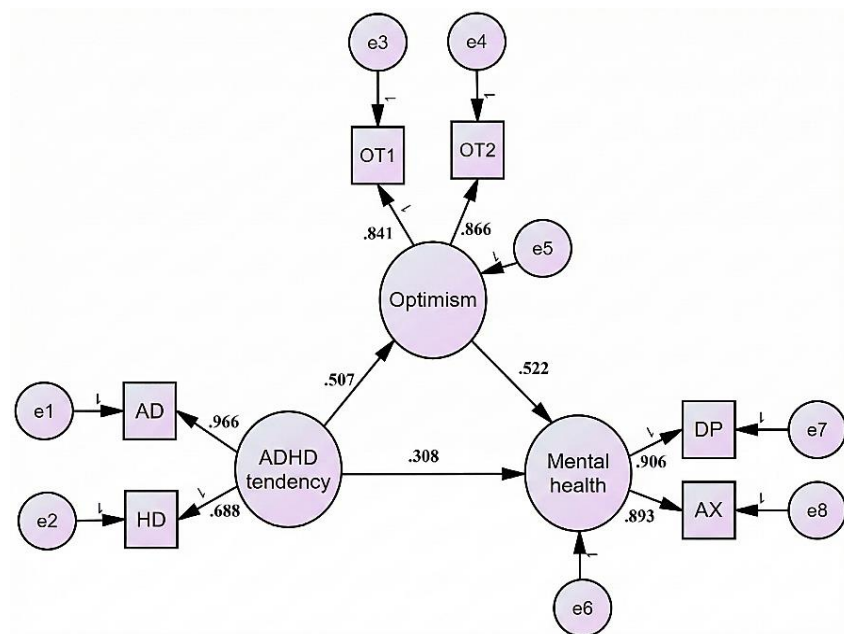
3.3. Path analysis between latent variables

Based on the adopted research model, a path analysis was conducted among ADHD tendencies, mental health, and optimism. According to the analyzed results, all paths presented in the research model were found to be significant. Looking at the results specifically, as shown in <Table 6>, ADHD tendencies were found to worsen mental health and reduce optimism. Furthermore, it was observed that as optimism decreases, mental health further deteriorates. The path coefficients between the latent variables and the measured variables of the research model are illustrated in <Figure 3>.

Table 6. Analysis of path coefficients.

Pathway	Non-standardized coefficient	Standardized coefficient	Standard error	t
ADHD tendency → Optimism	.513	.507	.066	7.803***
ADHD tendency → Mental health	.288	.308	.055	5.235***
Optimism → Mental health	.482	.522	.055	8.840***

Note: *** $p < .001$.

Figure 3. Standardized regression weight between the variables.

3.4. Mediation effect analysis

A mediation effect analysis was performed to verify whether ADHD tendencies influence mental health through the mediation of optimism. According to the results, as shown in <Table 7>, the mediation effect was found to be statistically significant, as the 95% confidence interval for the mediation path did not include zero. Specifically, the findings indicated that ADHD tendencies reduce levels of optimism, and this diminished optimism, in turn, further exacerbates mental health issues.

Table 7. Mediating effects between variables.

Pathway	Estimate	SD	<i>p</i>	95% Confidence Interval (Lower Bounds, Upper Bounds)
ADHD tendency → Optimism → Mental health	.247	.052	.009	(.162, .335)

4. Discussion

This study investigated how ADHD tendencies in elementary school students affect their mental health and identified the mediating role of optimism in this process. Based on the analyzed research results, the discussion is as follows.

4.1. Impact of ADHD tendencies on mental health among elementary school students

According to the analyzed results, it was confirmed that ADHD tendencies in elementary school students significantly worsen their mental health. These findings are consistent with the results of several studies indicating that ADHD tendencies serve as a powerful indicator for predicting children's internalizing problems, such as depression and anxiety[33][34]. Furthermore, this demonstrates that ADHD traits themselves are risk factors that hinder a child's psychological adjustment, regardless of whether a formal diagnosis has been made[35]. Several reasonable inferences regarding how ADHD tendencies in elementary school students exacerbate their mental health can be made from the following perspectives.

First, the social exclusion experienced by elementary school students with ADHD tendencies can worsen their mental health. Children with ADHD tendencies often experience persistent rejection within peer groups due to their clumsiness in reading social cues and their impulsive responses[36]. Children with ADHD tendencies experience significantly higher levels of social exclusion compared to general children, and due to the nature of ADHD traits, this social exclusion is more likely to become chronic rather than ending in the short term. Such chronic social exclusion is highly likely to cause anticipatory anxiety regarding interpersonal relationships in children with ADHD tendencies and, furthermore, act as traumatic stress that induces serious depressive emotions due to a lack of belonging[37].

Second, there is the possibility that mental health problems arise due to failures in emotional regulation associated with ADHD tendencies. Various previous studies point to deficits in self-regulation ability as a core problem for children with ADHD tendencies[38]. These deficits in self-regulation ability cause functional problems in various areas of life, typically resulting in difficulties with emotional regulation. In particular, children with ADHD tendencies have been found to have weak bottom-up regulation mechanisms that control emotional arousal, which leads them to fall into a state of hyperarousal even in response to minor stressful stimuli, resulting in high levels of anxiety[39]. In addition, once they focus on negative stimuli, they tend to be unable to self-regulate and switch their attention to other positive stimuli, showing a

tendency toward repetitive thinking; such repetitive preoccupation with negative stimuli can become a core mechanism that deepens depression[40].

Third, there is a possibility that mental health problems occur due to learned helplessness resulting from chronic academic failure and school maladjustment associated with ADHD tendencies. The core symptoms of ADHD tendencies—inattention, hyperactivity, and impulsivity—serve as major mechanisms that prevent children from achieving their actual potential in academics and school adaptation. The continuous discrepancy between their potential and their academic achievement or school adaptation due to these ADHD tendencies can make children feel a sense of learned helplessness[41]. The learned helplessness formed in this way leads to attributing the causes of failure to internal and permanent defects, which is sufficient to eventually cause chronic depression and anxiety, thereby worsening mental health[42].

4.2. Mediating effect of optimism on the relationship between ADHD tendencies and mental health

According to the analyzed results, optimism showed a significant mediating effect in the relationship between ADHD tendencies and mental health in elementary school students. This reflects the fact that positive psychological assets such as optimism can perform a psychological buffering function between physiological risk factors like ADHD tendencies and mental health problems like depression and anxiety, while also aligning with the results of several previous studies showing that optimism can alleviate psychological distress[24][25][26].

First, how optimism can mediate the impact of ADHD tendencies on mental health can be explained by Hobfoll's Conservation of Resources (COR) theory[43][44]. The COR theory emphasizes that humans have an instinctive motivation to acquire, maintain, and protect the 'resources' they believe to be valuable. Here, resources include not only material resources but also personal characteristic resources such as optimism and self-efficacy. According to this COR theory, stress occurs when one's resources are threatened or actually lost. For children with ADHD tendencies, their inattention, hyperactivity, and impulsivity are not simply behavioral problems but can act as a chronic drain on resources that constantly consume their psychological energy in their daily lives. A child's resource of "optimism" is a defense mechanism against stress, but as ADHD tendencies become stronger, the possibility of this precious internal resource being depleted first through repeated failure and criticism increases. Hobfoll warned that individuals who have lost resources enter a 'loss spiral', becoming more vulnerable to additional resource loss[43][44]. In other words, children who have already consumed their optimism due to ADHD tendencies find themselves in a state where they lack the psychological resources to respond to subsequent academic pressure or peer conflict, and as a result, are more likely to face an emotional collapse such as depression and anxiety much faster than general children.

Second, there is a possibility that ADHD tendencies disrupt the cognitive filtering function of optimism, leading to mental health problems. According to Seligman, who first introduced positive psychology, optimism serves as a cognitive filter that reduces the emotional impact of negative events by helping individuals interpret them as temporary and external factors[23][45]. However, if a child experiences repeated failure and criticism in school, home, and interpersonal relationships due to ADHD tendencies, this naturally collapses their optimism about their own life, and consequently, the cognitive filter that reduces the emotional impact of external events also disappears. In a situation where this cognitive filter of optimism has collapsed, when negative feedback is provided from the environment, children with ADHD tendencies accept it uncritically as a permanent defect they cannot change, which ultimately increases the likelihood of causing mental health problems as negative self-concepts accumulate[46].

4.3. Limitations of the Study

The limitations of this study are as follows. First, there are limitations in inferring clear causal relationships due to the cross-sectional research design. As this study analyzed survey data collected at a single specific point in time, it is difficult to definitively determine strict causal relationships between variables that change over time. Future research should employ longitudinal designs to track the developmental trajectories of ADHD tendencies and their long-term impact on mental health, as well as changes in the mediating effect of optimism.

Second, there are limitations associated with the use of self-report surveys. The data for this study were primarily collected through the participants' subjective self-assessments. Consequently, there is a distinct possibility that subjective bias may have influenced the results. Given that ADHD tendencies is a variable that often manifests with distinct gender differences, future studies should incorporate multi-informant assessments, including teacher observations and parental reports, to ensure more objective data collection.

Third, the study is limited by its focus on optimism as the sole mediating variable. This study established optimism as a specific psychological trait mediating the relationship between ADHD tendencies and mental health. However, there are numerous other psychological variables that could potentially mediate this relationship. Future research that integrally considers a wider range of psychological variables would be able to derive richer educational implications.

4.4. Suggestions and conclusion

This study empirically analyzed the direct influence of ADHD tendencies on mental health in elementary school students and the indirect influence through the mediation of optimism. The suggestions and conclusions based on the results of this study are as follows.

First, this study clearly demonstrates that ADHD tendencies, which are in a diagnostic blind spot, can themselves be a core risk factor that directly worsens a child's mental health. These findings mean that the direct negative impact of ADHD tendencies can threaten mental health in proportion to the level of symptom manifestation, regardless of clinical diagnostic criteria (cutoffs). Therefore, in educational settings, it is necessary to identify students who exhibit ADHD tendencies early, regardless of formal diagnosis, and to establish a support system that can alleviate the mental health problems they experience.

Second, this study showed that optimism mediates between ADHD tendencies and mental health, which indicates that in the case of children with ADHD tendencies, mental health problems can be further accelerated as their psychological resource of optimism is eroded first. This reflects that the loss spiral described in Hobfoll's COR theory can actually operate within children with ADHD tendencies. These research results show that in intervening in the mental health of children with ADHD tendencies, interventions to preserve and recover depleting optimism must be conducted alongside the management of the symptoms themselves.

In this study, it was confirmed that optimism plays a significant buffering role in the process through which ADHD tendencies in elementary school students worsen mental health problems. The results of this study are significant in that they show the need for immediate mental health support for children with ADHD tendencies who are currently in the blind spot of diagnosis and support, and they demonstrate that support for them should not stop at mere behavior modification but should expand toward augmenting positive psychological capital such as optimism.

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6. Appendix

6.1. Authors contribution

Initial name		Contribution
Author	JC	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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An Ecological Process Model of International Student Settlement -Linking Affective and Structural Dimensions of Settlement

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Abstract

Purpose: This study aims to reconceptualize the settlement of international students not as a static outcome but as a dynamic ecological process. It seeks to redefine settlement through an integrated framework that captures the relational and interactive nature of psychological adaptation, institutional stabilization, and social integration.

Method: The study adopts a theoretical synthesis approach, integrating Berry's (1997) cultural adaptation theory, Bronfenbrenner's (1979) ecological systems theory, and Bourdieu's (1986) theory of social capital. Through conceptual analysis, settlement is modeled as a dual-circulation structure in which affective and structural dimensions mutually reinforce one another within a relational ecosystem.

Results: The findings conceptualize settlement as an ecological and relational process composed of three interrelated dimensions: affective settlement, structural settlement, and integration. Settlement emerges as a dynamic ecosystem where psychological, institutional, and social factors continuously interact, rather than as a fixed or linear stage. This framework shifts the analytical focus from individual adjustment to relational and systemic conditions of settlement.

Conclusion: This study advances the discourse from "settlement support" to "relational design," emphasizing the need for a sustainable settlement ecosystem. Policy implications include the establishment of region-university-government networks to support international student settlement. Educationally, the study suggests the development of a settlement-based Korean language curriculum that integrates language education with cultural understanding and social participation.

Keywords: International Students, Settlement Ecology, Cultural Adaptation, Ecological Systems Theory, Social Capital

1. Introduction

1.1. Need for and the purpose of the study

Recently, South Korea has been confronted with a structural crisis characterized by rapid population decline and regional extinction. This reality extends beyond the issue of the survival of local universities to threaten the sustainability of regional communities and national competitiveness as a whole. In response, local governments have increasingly adopted the attraction of international students as a core strategy to strengthen regional universities and revitalize local economies.

One representative example is the RISE (Regional Innovation System and Education) initiative introduced in 2023, which aims to move away from a centralized, uniform university funding

system toward a regional innovation governance model linking local governments and universities[1]. In addition, the Ministry of Education implemented the Study Korea 300K Project in 2023 to enhance international education competitiveness[2]. As a result, the number of international students in Korea reached 304,059 by October 2025[3].

Despite these efforts, current policies largely focus on the attraction of international students and reveal structural limitations in linking student inflows to settlement and integration. In practice, many international students return to their home countries or relocate to the Seoul metropolitan area after graduation due to difficulties related to employment and residency. According to Kim Myung-Kwang and Lee Yun-Ju (2023), among 166,892 D-2 visa holders in 2022, only 1,511 students (13.42%) successfully transitioned to the E-7 professional employment visa, with the vast majority concentrated in the metropolitan area and significantly lower transition rates in non-capital regions[4]. This phenomenon reflects not only visa constraints but also structural factors such as mismatches between academic majors and available jobs, difficulties in adapting to Korean corporate culture, and the absence of systematic employment education.

Thus, the settlement of international students should not be approached as a matter of administrative support alone, but rather as an ecological process involving complex interactions among psychological, social, and institutional dimensions. Nevertheless, existing research has tended to focus on fragmented factors—such as language adaptation, academic achievement, or residence management systems—often reducing settlement to an individual act of adaptation.

Against this backdrop, the present study reconceptualizes international student settlement not as an outcome but as a process and proposes an integrated theoretical framework to explain it. Specifically, by synthesizing Berry's theory of cultural adaptation[5], Bronfenbrenner's ecological systems theory[6], and Bourdieu's theory of social capital[7], this study conceptualizes settlement as a dual-circulation structure in which psychological and cultural adaptation (affective settlement) and structural and institutional foundations (structural settlement) mutually reinforce one another. Furthermore, the study argues that settlement is completed only when these two processes converge into integration, thereby activating the principles of an ecological "settlement ecology" for international students.

Accordingly, this study addresses the following research questions:

First, what ecological characteristics define the settlement process of international students? Second, how can international student settlement be theoretically conceptualized through an integrated application of the theories of Berry, Bronfenbrenner, and Bourdieu? Third, what implications does this integrated model offer for region-based settlement policies and educational practices?

Ultimately, this study redefines international student settlement not as mere "stay," but as a process of relational formation. It seeks to present directions for constructing a settlement ecology in which psychological, institutional, and social cycles are integrated. By doing so, the study moves beyond one-sided administrative discourses centered on settlement support and proposes a relational ecosystem paradigm in which individual effort, social relationships, and institutional structures operate in dynamic interconnection.

2. Theoretical Background

2.1. Concept of settlement and review of previous studies

The concept of settlement does not simply refer to the act of remaining in a particular place. Its meaning becomes clearer when compared with related terms such as adaptation, residence,

and dwelling. Adaptation refers to the process of adjusting to a new environment and gradually establishing oneself, representing an intermediate stage of adjustment. Residence denotes a condition of continuous physical presence over a certain period, often associated with legal residency status; for example, long-term residence for foreigners in Korea is generally defined as staying in the country for more than 90 days. Dwelling, by contrast, refers to the physical act of living itself, encompassing spatial aspects of daily life such as one's address or housing type.

Settlement, however, encompasses all of these dimensions and can be defined as a comprehensive state of life stabilization that includes psychological security and the formation of social networks. In this sense, settlement is not a static condition but a continuous process of interaction through which individuals achieve a sustained and integrated mode of living.

Yoon Eun-Kyung et al. (2024), through a comparative analysis of the concept of settlement in Japan and Korea, demonstrate that Korean foreigner policy has shifted from a control-oriented approach aimed at preventing settlement under the Third Basic Plan to an integration-oriented approach that encourages settlement through transitions in residence status under the Fourth Basic Plan[8]. Building on ecological systems theory, they conceptualize settlement as an ecological life process in which foreigners use Korean as a language of everyday life, form diverse human relationships, and construct community cultures. However, their study remains limited in that its focus is largely confined to a Korean language education perspective and does not fully capture the broader dimensions of settlement.

Son Daseon (2023) discusses the “settlement-oriented utilization” of foreign labor as a response to regional depopulation, but addresses settlement primarily at the level of structural policy, leaving individual relational experiences insufficiently explained[9]. Similarly, Kim Hyun-Jin's (2016) study on the cultural adaptation scale (ASISK) offers valuable insights into the psychological stability of international students, yet does not extend settlement into a framework of post-adaptation social and institutional expansion[10].

In summary, previous studies tend to conceptualize settlement either as an outcome or as a phenomenon limited to individual psychological or linguistic dimensions. In contrast, the present study understands settlement not as the result of individual will or competence, but as the product of an interconnected network of social, cultural, and policy environments. From this perspective, settlement is not the “end point” of migration but a process of reconstructing life within new relational networks. It is a dynamic field through which relational agency is continuously expanded—namely, a platform of sustained interaction rather than a fixed state.

2.2. Berry's(1997) theory of cultural adaptation

Berry (1997) conceptualizes cultural adaptation as a process through which migrants achieve psychological balance within a new cultural environment[5]. He proposes four adaptation strategies—assimilation, separation, integration, and marginalization. When applied to international students, these strategies can be illustrated as follows.

Table 1. Cultural adaptation strategies and examples among international students.

Type	Concept	Example among International Students
Assimilation	Abandoning one's original culture and fully adapting to Korean culture	Forming friendships only with Koreans and avoiding the use of one's native language
Separation	Maintaining one's original culture while avoiding interaction with Korean society	Living exclusively within one's home-country community
Integration	Maintaining one's original culture while also embracing Korean culture	Engaging in social interactions using both Korean and one's native cultural practices
Marginalization	Feeling a sense of belonging to neither culture	Experiencing loneliness and alienation in both the home and host societies

Among these four strategies, Berry identifies integration as the most stable and desirable form of cultural adaptation[5]. Integration does not merely represent a compromise between two cultures; rather, it refers to a psychologically stable state in which migrants maintain their own cultural identity while practicing mutual respect and active participation within the host society. This integrative form of adaptation is closely associated not only with individual mental well-being but also with the formation of social networks.

Empirical studies support this perspective. Ward and Kennedy (1999) found that migrants who exhibit integrative adaptation in multicultural environments experience lower levels of psychological stress and higher levels of life satisfaction than those who do not[11]. Similarly, Phinney et al. (2001) reported that individuals who maintain a balance between their ethnic identity and acceptance of the host culture demonstrate higher levels of social connectedness and self-efficacy[12]. In the Korean context, Kim Hyun-Jin (2016), through the development of the Acculturation Scale for International Students in Korea (ASISK), showed that students classified under the integration type scored highest in psychological stability, academic satisfaction, and interpersonal relationship satisfaction [10]. In addition, Cho Yoon-Young (2024) found that relational interaction experiences, rather than identity confusion or social isolation, significantly strengthen international students' intentions to settle[13].

Taken together, integrative cultural adaptation goes beyond simple cultural acceptance and represents a process in which psychological adaptation and social participation are harmonized. It can thus be understood as the starting point for the emergence of an ecological relational network of international student settlement, grounded in mutual respect among individuals, society, and institutions.

2.3. Bronfenbrenner's(1979) ecological system theory

Bronfenbrenner (1979) conceptualizes human development not as a process determined solely by individual characteristics, but as the result of dynamic interactions among multiple layers of environmental systems surrounding the individual [6]. He distinguishes among the microsystem, mesosystem, exosystem, and macrosystem, arguing that development and adaptation occur within an interconnected ecological structure in which these systems function organically.

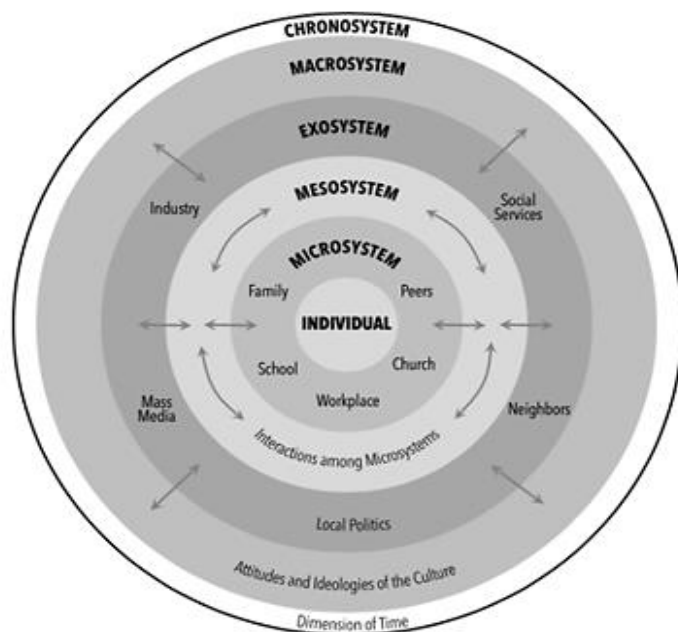
From this perspective, the settlement process of international students cannot be adequately explained by individual psychological effort or language proficiency alone. Rather, it is shaped by the responsiveness, inclusiveness, and support structures of the broader social ecology, encompassing local communities, institutional arrangements, and policy environments. For example, the microsystem of international students consists of everyday relational networks such as universities, peers, academic advisors, and local communities, which form the foundation for emotional stability and academic persistence. The mesosystem refers to the interconnections among institutions, including collaborative structures among universities, local governments, and enterprises, such as international student support programs or regional internship initiatives.

The exosystem includes administrative and policy environments that indirectly influence international students, even when they are not directly involved, such as residence status regulations, visa policies, and scholarship systems. Finally, the macrosystem comprises overarching societal values, immigration policies, and perceptions of multiculturalism, which collectively define the institutional foundation for international student settlement.

Ultimately, international student settlement cannot be reduced to individual adaptive capacity. It becomes possible only when support from micro-level relational networks, institutional receptivity, and policy-level structures interact synergistically. In this sense, ecological systems theory enables an understanding of international student settlement as an ecological circulation

process linking individuals, regions, and the state. This perspective further suggests the need to shift international student settlement policy from a model centered on individual support toward one focused on environmental restructuring and systemic design.

Figure 1. Ecological system (Bronfenbrenner, 1979).



Note: Reproduced from Yoon et al. (2024, p. 106).

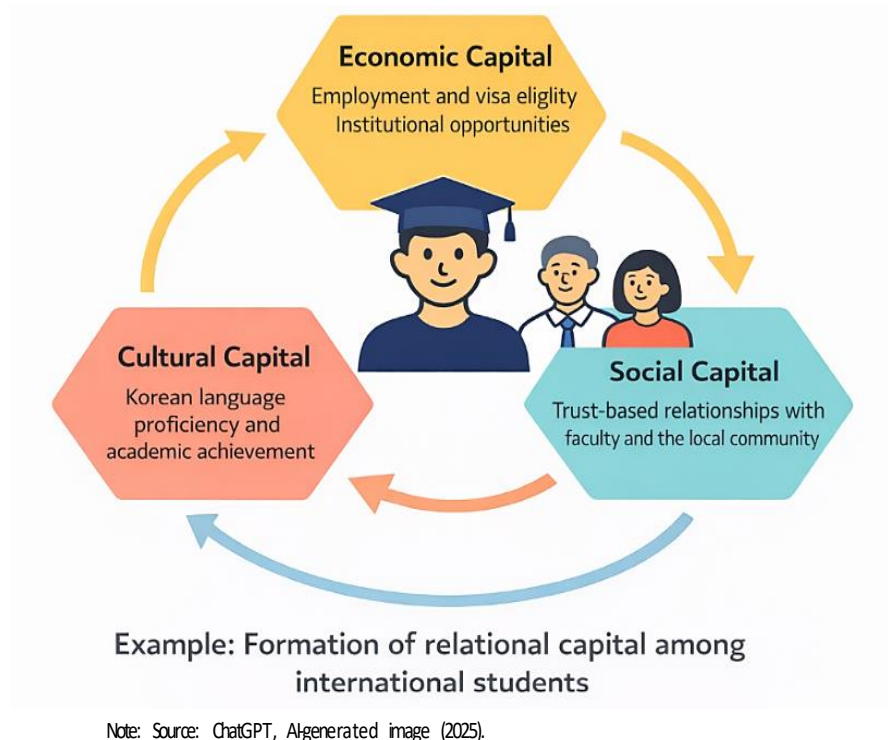
2.4. Bourdieu's(1986) theory of social capital

Bourdieu (1986) defines social capital as the “totality of resources” that are embedded in durable and meaningful networks of relationships[7]. He argues that an individual’s social position or success is not determined solely by economic capital or cultural capital, but is also shaped by social resources accumulated through relationships with others—such as trust, a sense of belonging, and experiences of interaction. From this perspective, the settlement of international students should be understood not merely as an economic or institutional adjustment, but as a social process through which relational capital is gradually accumulated.

Putnam (2000) conceptualizes social capital as a key resource that strengthens community cohesion through social trust and civic participation, suggesting that migrant integration is more likely to occur smoothly in regions where trust-based interactions are active[14]. Coleman (1988) likewise empirically demonstrates that social capital functions as a mediating factor that facilitates the formation of human capital and enhances social efficacy[15]. In the Korean context, Kim Min-Ju (2023) finds that higher levels of social capital accumulated within local communities significantly increase international students’ settlement intentions and motivation for employment preparation[16]. Similarly, Cho Yoon-Young (2024), in a study on regional settlement intentions among science and technology professionals, identifies the diversity of social ties and relational networks as a key explanatory factor for settlement potential[13].

Taken together, these studies suggest that international student settlement extends beyond the dimension of economic survival. Rather, settlement can be conceptualized as a relational ecological process in which various forms of capital are converted and expanded through the continuity of social networks and the formation of trust.

Figure 2. A cyclical model of relational capital formation among international students.



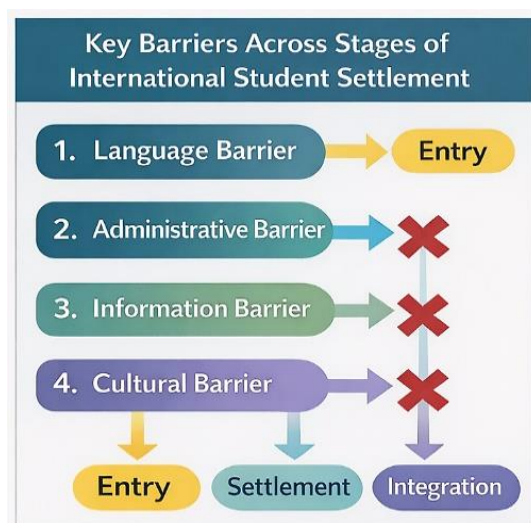
3. The Ecological Process of Settlement: An Integrated Theoretical Model

3.1. The need for theoretical integration

Berry's (1997) theory of cultural adaptation[17], Bronfenbrenner's (1979) ecological systems theory[18], and Bourdieu's (1986) theory of social capital each explain only a partial aspect of international student settlement[19]. When interpreted integratively, Berry's framework accounts for the individual's psychological and cultural adaptation processes, Bronfenbrenner's theory elucidates the operation of environmental and institutional structures, and Bourdieu's perspective explains the formation and accumulation of relational capital. However, the settlement of international students cannot be fully understood through such linear and fragmented approaches alone.

Above all, international student settlement involves navigating a multi-stage and complex pathway that extends beyond visa transition itself, encompassing attraction, education, management, employment, settlement, and integration[17]. Throughout this pathway, international students encounter persistent practical barriers and institutional frictions, which continue to operate as structural constraints that limit long-term settlement[20]. These challenges underscore the necessity of an integrated theoretical framework capable of capturing the dynamic interactions among individual adaptation, environmental structures, and relational resources within the settlement process.

Figure 3. Key Barriers Across Stages of International Student Settlement.



Note: Source: ChatGPT, AI-generated image (2025).

First, language barriers constitute a major obstacle. Insufficient Korean language proficiency constrains administrative procedures and classroom participation, extending to difficulties in everyday communication[21]. Second, administrative barriers arise from complex procedures related to visa changes, extensions of stay, and post-graduation employment visa transitions. Due to fragmented responsibilities across institutions, international students often struggle to receive consistent and coordinated support[22]. Third, information barriers persist as information related to study, employment, and settlement is dispersed across multiple agencies, making it difficult for international students to independently access and utilize the resources they need[23]. Fourth, cultural barriers emerge from limited opportunities for interaction with local communities, which intensify psychological and social isolation and hinder the formation of belonging and identity[20][22]. Collectively, these four barriers function as attrition factors at each stage of the “attraction–settlement–integration” pathway, undermining the sustainability of settlement. Accordingly, for an international student settlement ecosystem to function effectively, language and cultural adaptation, institutional and policy support, and social relational networks must be cyclically interconnected.

In response, this study synthesizes the three theories to propose an integrated model of an international student settlement ecosystem characterized by the interactive circulation of psychological, institutional, and relational dimensions[24]. This integration is not a simple aggregation of concepts; rather, it is realized through a dual-circulation structure in which (1) Berry’s notion of *integrative adaptation* operates as the inner cycle[20], and (2) the systems and capital perspectives of Bronfenbrenner and Bourdieu constitute the outer cycle. When these two cycles interlock, psychological adaptation, institutional inclusiveness, and the accumulation of relational capital are integrated into a single ecological process that enables settlement[23][24]. In this way, the ecological process of international student settlement is completed.

Furthermore, international student settlement is understood not as a single-stage adjustment, but as a stage-based and cyclical process progressing from *psychological and cultural adaptation* to *institutional and social stabilization*, and ultimately to *civic and community integration*[20][23]. Specifically, these three stages correspond to affective settlement (psychological and cultural adaptation), structural settlement (institutional and social stabilization), and integration (civic and community integration). Through mutually reinforcing dynamics, these stages function as mechanisms that deepen and expand the settlement ecosystem.

3.2. The dual structure of settlement

1) Affective Settlement: The Starting Point of the Inner Circulation

Affective settlement refers to the initial stage in which international students form emotional stability and cultural resonance within an unfamiliar environment. As Berry's (1997) theory of cultural adaptation suggests that integration represents the most stable and desirable form of adaptation, international students at this stage seek a balanced coexistence between self and other by maintaining their original identity while engaging in interactions with the host culture. Affective settlement is not a passive process of adjusting to a new culture; rather, it is an active process in which individuals reinterpret themselves through the gaze of others and reconstruct the self within relationships[17][18][19].

Through the expansion of cultural understanding and empathy, affective settlement leads to the formation of relational identity, which in turn establishes an emotional foundation for psychological connection with the local community. In particular, as international students acquire language proficiency, understand cultural differences, and immerse themselves in academic and social networks, their psychological stability is strengthened, thereby increasing the likelihood of transition toward institutional settlement. Accordingly, affective settlement functions as the starting point of the inner circulation of the settlement ecosystem and serves as a key driving force in the broader settlement process that extends toward institutional stabilization and social integration.

2) Structural Settlement: The Completion of the Outer Circulation

Structural settlement denotes the stage in which international students become durably embedded within the institutional structures and social networks of Korean society. This stage represents the intersection of Bronfenbrenner's ecological systems theory and Bourdieu's theory of social capital. At the institutional level, administrative linkages—such as visa regulations, employment support, housing and living infrastructure, and scholarship policies—play a central role. At the social level, participation in local communities, mentoring programs, and the formation of trust-based relationships become crucial.

The relational resources accumulated at this stage—namely, social capital—constitute a key asset enabling international students to transition from “foreign residents” to “autonomous civic subjects.” Coleman (1988) emphasizes that social capital serves as an essential mediator in the formation of human capital and social efficacy, while Putnam (2000) demonstrates that higher levels of social trust and participation facilitate smoother regional integration of migrants. In this sense, structural settlement represents the stage in which international students secure institutional stability and social recognition through relational networks, marking the completion of the *outer circulation* of the settlement ecosystem[14][23][24].

3) Integration: The Completion of Civic Subject Formation

When affective settlement and structural settlement mutually circulate and reinforce one another, the outcome is integration, through which international students become members of the local community as “immigrant students and autonomous citizens.” At this stage, international students are no longer positioned as outsiders but actively perform roles as community members. Ager and Strang (2008) identify identity, relationships, and participation as key indicators of migrant integration, emphasizing that settlement is completed not only through institutional inclusion but also through mutual recognition and social interaction—what they term relational integration[1][17].

Integration thus signifies not merely the continuation of residence, but the integration of everyday life itself. It involves the formation of civic life grounded in mutual trust with the local

community and active participation in shared communal values and practices. Ultimately, integration should not be understood as the endpoint of settlement, but as a continuous outcome of an ongoing ecological circulation in which affective and structural settlement remain dynamically interlocked. It is through this process that international students are transformed into active community subjects who live together with others across psychological, institutional, and social dimensions.

3.3. Ecological circulation model of settlement

Settlement is not a linear process of adaptation, but a form of cyclical interaction. The integrated model proposed in this study can be explained through the following structure.

Inner Cycle — Affective Settlement

→ The formation of emotional stability, empathy, and intimacy through linguistic, cultural, and psychological adaptation.

Outer Cycle — Structural Settlement

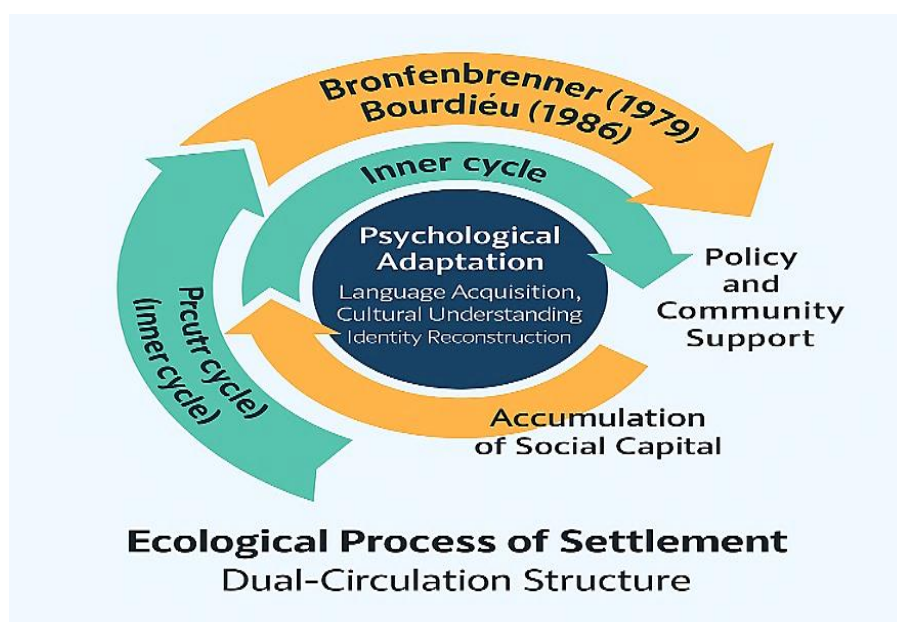
→ The construction of institutional foundations and social networks, along with the accumulation of trust-based social capital.

Integration — The Intersection of Reciprocal Circulation

→ The realization of relational citizenship, active participation in local communities, and the completion of the settlement ecosystem.

This structure is grounded in the three-dimensional interaction of psychological, institutional, and relational domains. Through this framework, settlement is redefined not as mere stay, but as the ecological integration of life, in which individuals become embedded within a dynamically interconnected social ecosystem.

Figure 4. An ecological model of international student settlement: a dual-circulation structure.



Note: Source: ChatGPT, AI-generated image (2025).

This model enables the understanding of international student settlement as a relational ecosystem where individual effort, social relationships, and institutional structures are dynamically intertwined, offering a theoretical foundation for explaining settlement as an ongoing process of circulation and mutual reinforcement rather than a static outcome.

4. Discussion & Conclusion

This section discusses the academic, policy, and educational implications of international student settlement research based on the theoretical model proposed above. By expanding the notion of settlement beyond simple residence or institutional arrangements to an ecological process in which psychological, institutional, and relational dimensions interact, this study aims to suggest new directions for international student policy and education.

4.1. Academic implications

First, this study moves beyond approaches that limit international student settlement to individual psychology or institutional support, extending the concept into a relational–ecological paradigm that encompasses the multilayered interactions among psychological, social, and institutional dimensions. By reconceptualizing settlement as an ecological circulation of settlement, the study theorizes settlement as a dynamic and cyclical structure, rather than a static or linear condition.

Second, by integrating the theoretical perspectives of Berry (1997), Bronfenbrenner (1979), and Bourdieu (1986), this study proposes a triple structure of settlement consisting of psychological stabilization (affective settlement), institutional stabilization (structural settlement), and relational integration (integration). This framework explains settlement not as a one-time outcome, but as a continuously reinforced relational network generated through cyclical interactions, thereby offering a new analytical lens for both domestic and international research on migration and international students.

Third, this study highlights the potential for the quantification and digital transformation of settlement research. By operationalizing psychological, social, and institutional dimensions of settlement, future research may develop a Settlement Prediction Index or employ AI-based predictive algorithms to identify at-risk groups at an early stage and design tailored support policies. This implication demonstrates how humanities and social science research can converge with data science, evolving into AI-driven predictive models for social integration.

4.2. Policy implications

First, international student policy must shift from an attraction-centered approach toward a settlement ecosystem–centered framework. Current policies primarily focus on managing administrative stages such as entry, residence, and graduation. Going forward, however, policy design should encompass all-phase settlement, covering the entire settlement trajectory. This shift signifies a paradigm change from simple residence management to relational design, emphasizing the intentional structuring of relationships rather than administrative control.

Second, governance linkages among local communities, universities, and administrative agencies must be strengthened. Existing support systems remain fragmented across institutions, often resulting in discontinuities along international students' settlement pathways. To address this issue, it is necessary to establish a data-driven one-stop settlement management system and develop a cyclical support network that connects attraction, academic study, employment, settlement, and integration.

Third, policy design should incorporate qualitative support targeting the affective settlement stage. Beyond administrative assistance or physical infrastructure, enhancing psychological accessibility is critical. This can be achieved by institutionalizing mentoring programs, cultural exchange initiatives, and community participation activities that promote emotional stability and the formation of social bonds during the early stages of settlement.

Fourth, both central and local governments should develop localized models that reflect regional characteristics. For example, region-specific versions of Study Korea—such as Jeonnam-,

Gyeongbuk-, or Chungnam-type models—can be evolved into settlement platforms aligned with each region’s industrial, cultural, and educational ecosystems. Such models transcend simple international student recruitment policies and can function as strategies for addressing regional depopulation and promoting sustainable regional revitalization.

4.3. Educational implications

First, Korean language education should shift from a model focused solely on linguistic transmission to settlement-based Korean language education, which aims to facilitate social relationship formation, cultural empathy, and settlement among international students. In this approach, language is not taught merely as a functional tool, but as a medium for empathy, participation, and relational engagement.

Second, Korean language curricula should be designed as settlement-oriented programs that integrate language, culture, and community participation. For example, rather than relying exclusively on TOPIK-centered assessment, curricula should incorporate region-based project learning such as local exploration, volunteer activities, and field-based practicum experiences that foster sustained interaction with local communities.

Third, teachers are required to assume the role of settlement facilitators, rather than remaining solely as language instructors. This role demands relational teaching competency, encompassing an integrated capacity for academic understanding, cultural sensitivity, and social communication that supports students’ psychological stability and social integration.

Fourth, at the level of educational policy, there is a need to develop a settlement-based Korean language curriculum. Such a curriculum should integrate language education, cultural education, and community participation into a unified system, thereby constructing an educational ecosystem in which international students can take root in Korean society psychologically, socially, and culturally. Furthermore, it is necessary to establish assessment components related to Korean cultural understanding within the Ministry of Justice’s Korea Immigration and Integration Program (KIIP), aligning national integration education with settlement-based educational objectives.

5. Conclusion

This study reconceptualizes international student settlement as an ecological circulation process consisting of affective settlement, structural settlement, and integration. The proposed model explains the principles of a settlement ecosystem in which psychological adaptation and institutional stabilization circulate reciprocally, enabling the expansion of relational capital.

Chapter II reviewed the concept of settlement and prior studies, redefining settlement not as mere residence but as a process of relational interaction. Chapter III integrated the theories of Berry, Bronfenbrenner, and Bourdieu to propose a dual-circulation structure and a three-stage model of settlement (affective settlement–structural settlement–integration). Chapter IV comprehensively discussed the academic, policy, and educational implications of this model, confirming the potential for interdisciplinary expansion in settlement research.

Future research should proceed in the following directions. First, it is necessary to conduct comparative analyses of settlement policies led by local governments—such as Chungnam-, Jeonnam-, and Gyeongbuk-type models—to verify the sustainability of ecological settlement frameworks. Second, in-depth analyses of international students’ lived experiences—particularly emotional adaptation, language acquisition, and relationship formation—are needed to elucidate the actual pathways linking affective settlement, structural settlement, and integration. Third, data-driven settlement prediction analyses should be conducted by constructing

predictive models that incorporate variables such as language proficiency, length of stay, social capital, and experiences with policy support. Fourth, there is an urgent need to design AI-based settlement support systems that integrate psychological and social data, enabling the development of AI-driven settlement platforms applicable to administrative and educational settings.

Ultimately, international student settlement is neither solely an individual issue nor merely an administrative concern; it is an ecological task of society as a whole. By conceptualizing settlement as a matter of relational design and ecosystem construction, this study offers a perspective that can be extended as a core strategy for multicultural coexistence and regional revitalization in Korean society.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Author	YL	<ul style="list-style-type: none"> -Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/> -Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/> -Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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