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A comparative study of the Metaverse platforms through college students' experiences using the Metaverse

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Abstract

This study was conducted to analyze the metaverse usage behavior of college students through in-depth interviews and to explore the characteristics of the major metaverse platforms with a focus on keywords. This study derived elements such as metaverse participation activities, real-world order, metaverse system, presence, and self-expression from previous research. This study examined how college students who use the metaverse perceive these variables. We present the following research results: First, the college students who participated in the study showed interest in content with many interactive elements on the metaverse platform and appeared to participate more actively in such content. Second, college students cited the ability to engage in economic activities in the metaverse as their greatest strength. It was expected that social norms applied in the real world would also be applied in the metaverse. Third, the Metaverse system, such as the Metaverse UI, UX, and servers, was found to be a factor that needs to meet users' expectations and hinders immersion. In this study, the characteristics of the metaverse platform were analyzed, focusing on essential keywords from in-depth interviews. The analysis results are as follows: It was expressed with keywords such as 'Zepeto has 'avatar' and 'personality expression,' 'Ifland has 'free decoration' and 'communication convenience,' 'Gathertown has 'movement convenience' and 'video chat.' 'Roblox has 'game-based' and 'dynamic.'

Keywords: Metaverse Usage, Metaverse Platform, Metaverse Features, College Student Metaverse User

1. Introduction

Various communication methods connecting to the metaverse space have been established with the non-face-to-face culture that has become routine due to COVID-19. As the metaverse transitions to post-COVID-19, various entities are participating and fostering a non-face-to-face culture connected to face-to-face interactions. Key stakeholders related to the metaverse have analyzed various vital factors that constitute the makeup of the metaverse. Meta's Mark Zuckerberg explained presence, avatars, personal space, teleportation, interoperability, privacy, and virtual goods as the primary features of the metaverse. Roblox's David Bazuski analyzed identity, immersion, experience transition, diversity, all places, economy, and citizenship as characteristics of the metaverse. Matthew Ball of Epsilonco viewed the components of the metaverse as

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persistence, transcendence, concurrency, interoperability, unlimited content, and economic system.

According to a survey by the Information and Communication Policy Research Institute, domestic users were found to use metaverse in the following order: "Animal Crossing," "Zepetto," "Minecraft," and "Roblox" [1]. These metaverse components are implemented with different characteristics for each metaverse platform. This study aims to analyze the experience of college students in their 20s who are in the early stages of using the metaverse. In addition, we would like to derive the main keywords of the implemented metaverse platform and examine the characteristics of each platform, ultimately deriving implications for the direction of future metaverse services. According to a study by the Information and Communication Policy Research Institute, users use metaverse content such as games and worlds in the metaverse, decorate virtual environments such as avatars and houses, interact with other people, and engage in activities necessary for work. It was shown to do.[1]

2. Theoretical background

2.1 Research on metaverse service

Major metaverse platforms such as Zepeto, Roblox, and Minecraft offer various types of interactive content characterized by the ability to form a user-centered community. According to an analysis conducted by the Korea Creative Content Agency, the Metaverse is a space where interaction between virtual environments and reality is possible, and users engage in social and economic activities within it[2]. Furthermore, activities such as business, communication and collaboration, education, events, and performances are conducted in the Metaverse. The discussion shows that users are participating in content such as communication, events, games, and more in the Metaverse and that elements such as economic activities, social functions, and social order are applied to the Metaverse [3].

One of the essential factors related to using Metaverse's significant services is the platform usage environment. According to a survey by the Korea Creative Content Agency, most of the inconveniences while using Metaverse were due to the system, such as 3D content needing to be implemented smoothly and the interface needing to be easier to access and use[2]. The environment for using this metaverse platform was defined as 'usage environment,' and sub-factors were set as "interface," "machines and tools," and "interaction" [3]. In this study, "interface" was defined as a point of contact through which metaverse users can exchange media information or signals. Additionally, "mechanical tools" were defined as features that users can directly set and operate, enabling them to conduct transactions, produce items, or decorate them. According to an analysis by the Seoul Research Institute, various systematic elements are essential for realizing the Metaverse, a virtual space connected to reality[4]. The seamless integration of hardware, software, network, payment system, and virtual platform was analyzed as essential in revitalizing the metaverse ecosystem. In this study, what was explained as the metaverse "usage environment" in previous studies is defined as the "metaverse system environment," and its impact is analyzed.

2.2 Research on virtual space content usage

In the Metaverse, the avatar that represents you interacts with other avatars in a three-dimensional space and experiences a more vivid virtual reality. These characteristics can be explained by presence, and thus, the presence can be considered an essential factor in explaining the Metaverse. In previous research, presence in the Metaverse has been conceptualized through characteristics such as "remote presence," "social presence," and "real space connection." They defined the presence in the Metaverse as a "real-space connection" and viewed it as recognizing that digital space exists in connection with real space[5][6]. They analyzed the metaverse presence as comprising remote presence and social presence factors[7]. In this study, the reality felt while operating in an environment connected to virtual technology is defined as "remote presence," and "social presence" is defined as the perception of interacting with other people in the Metaverse. This presence in the Metaverse was found to positively influence the intention to continue using the Metaverse and the intention to recommend it. They regarded presence as one of the characteristics of the Metaverse and defined it as the degree to which the services offered by the Metaverse resemble reality[6]. In other words, the perception of

engaging in exchanges similar to reality while interacting using personal avatars and spaces in the Metaverse was analyzed as presence. Based on the research, this study sets the “metaverse presence” as an element of users’ metaverse experience and plans to analyze how they perceive it.

In the Metaverse, we can connect with reality, engage in creative activities that fit our purpose, and participate in various content. Accordingly, metaverse users customize avatars, craft virtual environments, and create interactions that suit their purposes. Recently, metaverse creators have appeared, performing role-plays, filming them on video, and turning them into secondary creations. This usage can be analyzed as a process of self-expression in the Metaverse. Research on self-expression in the Metaverse has been conducted in connection with the activities of creators. The categories of self-expression of creators were measured by classifying them into emotional expression, individuality expression, opinion and thought expression, and creative activities[8]. In previous study, creating a character in the Metaverse, interacting with other characters, expressing individuality, emotions, and the latest situation were set as sub-factors of self-expression within the Metaverse [9]. In this way, in the Metaverse, like SNS, the user can build their avatar and world to express themselves, select and use various other worlds, and interact with other avatars to form a community. Also, like in games, users can create their own characters with avatars, design interactions, and enjoy games created by other users. This study defines this usage behavior as “self-expression” in the Metaverse and analyzes how it is experienced.

3. Method

In this study, we analyzed factors affecting the metaverse usage experience through in-depth interviews with college students and, based on this, attempted to identify users' emotional and functional perceptions of major metaverse platforms. To this end, in-depth interviews were first conducted with college students. Through this, we sought to explore factors that affect the metaverse experience and derive platform elements linked to positive experiences. In-depth interviews were conducted with college students who had experience using the contents of Zepeto, Ifland, Roblox, and Gathertown for classes, etc. Students were asked to write about their experiences using the metaverse through an online bulletin board during class, and additional interviews were conducted with students who had utilized all four metaverses. Through these procedures, 11 students were selected as the final subjects of the study. As shown in Table 1, 5 female students and 5 male students participated in the in-depth interview, and their average age was 22.7 years.

Table 1. In-depth interview subject

NO	Gender	Grade/Age	NO	Gender	Grade/Age
1	man	4 th , 26	7	woman	3 rd , 22
2	woman	3 rd , 22	8	woman	1 st , 20
3	man	3 rd , 24	9	man	3 rd , 24
4	woman	2 nd , 21	10	man	4 th , 26
5	woman	4 th , 23	11	woman	3 rd , 22
6	man	1 st , 20			

The study was conducted by having students subject to in-depth interviews fill out online questionnaires and discuss the characteristics and improvement elements of the platform in non-face-to-face in-depth

interviews. In addition, keywords connected to the metaverse platform will be extracted through in-depth interviews, and based on these, the characteristics of each metaverse platform will be analyzed.

4. Results

4.1 Experience using the Metaverse

Metaverse users use content through interaction in virtual space with their avatars. Although various types of metaverses are being formed, the UI for entering virtual space with one's avatar is a common feature[10]. In this study, based on previous research, in-depth interviews were analyzed, focusing on factors such as "participation activities," "order of the real world," "metaverse system," "presence," and "self-expression."

4.1.1 Metaverse Participation Activities

Interview participants were using content through various interactions within the metaverse. It was observed that people relatively actively participate in content using chat, events, games, and others within the metaverse.

I am communicating and interacting with people in Zepeto World. It is interesting because you can experience many events at Zepeto, including various festivals and fashion events.

In Ifland, the ability to use voice chat and text chat simultaneously further increased the fun of interaction. I liked that Ifland allows you to configure and use the world for various purposes, such as communication, classes, and meetings.

In Gathertown, user communication is possible through various interactive objects such as guestbooks, video playbacks, and image and document sharing.

Roblox was the most dynamic metaverse platform I had ever experienced, as it had various game features to enjoy. Roblox has a leaderboard so you can compete with other people and set records. Elements that provide a sense of accomplishment through randomly placed waffle coins and a level system are also included.

4.1.2 Order of the real world

We analyzed how interview participants perceive the order of the real world implemented in the metaverse. Users responded most positively to the metaverse structure that allows for actual economic activities.

What is attractive about Zepeto is that users can create and sell items themselves. Zepeto attracts users more because they can create their own products and make money in addition to decorating their avatars.

In Roblox, simple characters are interesting, and items can be purchased with goods obtained through missions. The UI for displaying products or purchasing products in Roblox is impressive. Roblox was similar to real life in that you earn coins by working or completing missions and buying items with the coins.

There were also opinions from participants who expected that the laws that operate in the real world would also apply to the metaverse.

In Zepeto, users use characters to perform activities, so anonymity and reliability are low for continued use. CCTV is needed even in virtual spaces to prevent cybercrime.

There is no virtual currency system in Ifland, so there needs to be more variety in high-quality clothing and miscellaneous items. If a currency that can be used in Ifland is developed, it will likely be more attractive to creators.

The video chat function is fun in Gathertown. You can enjoy communicating more comfortably with people you know in Gathertown.

When I got into a car in Roblox, unlike in reality, I could only move back and forth. When I found out that the car movement in Roblox was different from reality, my desire to continue playing decreased.

4.1.3 Metaverse System

The metaverse consists of various worlds that use content. Interview participants found it challenging to learn the functions while exploring the different metaverse worlds and mentioned that a tutorial was needed.

Each Zepeto world has a different concept or method of use, so I wish there was a tutorial for playing it properly. There was no separate tutorial on using Ifland, so figuring out how to use it took much work.

The good thing about Gathertown is that you don't need to install the app and can quickly enter through the link.

Roblox takes time to learn the world and feels difficult.

In mobile-based Zepeto and Ifland, users perceived the degree of content optimization differently depending on the device.

In Zepeto, the smooth operation of content varies depending on the specifications of the user device.

Even when users use Ifland on high-end devices, they experience inconvenience and feel that the app needs further optimization.

Gathertown and Roblox, which are PC-based platforms, are highly accessible, but satisfaction with ease of use was not high among generations accustomed to mobile media.

Gathertown is PC-based, so you can quickly move between worlds. In Gathertown, you use the control keys to move, but if there are many buildings when moving, it can be challenging to control the avatar.

It was disappointing that Roblox did not fully utilize PC convenience due to the long map loading time. Roblox requires a system optimized for mobile play.

4.1.4 Metaverse presence

Interview participants experienced the presence in the metaverse, and the factors causing this were diverse. Users expressed a sense of presence as if they had entered another world when their avatar entered the metaverse space.

The features of Lotte World in Zepeto were implemented well, and I felt like I was actually going to Lotte World.

Many places in Zepeto, including the Han River and an amusement park, are fun to visit. Additionally, Zepeto details real space, making it feel like I have entered real space.

The design of each place in Ifland was very realistic, so it was nice to walk around and see and experience it. It was also interesting because the characteristics of each land were implemented.

There are more things to experience in Gathertown than I thought and using it smoothly without any lag was fun.

Roblox has a vast world that allows for detailed manipulation. Unlike other metaverses, it has many game elements, making it highly immersive.

Through in-depth interviews, it is evident that the factors that make users feel a sense of presence are realistic spatial expressions and interactive content.

4.1.5 Self-Expression

During in-depth interviews, college students were found to be exploring various ways to express their identity using Zepeto, Ifland, Gathertown, and Roblox.

In Zepeto, you can customize your avatar to look how you want. Amazingly, in Zepeto, you can use the

smartphone camera function to have the character imitate your facial expressions.

What is unique about Ifland is that you can create various poses using emoticons that express emotions.

Roblox characters are simple. You can create your character by increasing your stats by leveling up.

They were expressing their identity by decorating their avatars, expressing their emotions, and selecting the metaverse space for their purposes. In other words, Metaverse users were expressing themselves through avatars and content selection.

I do various activities in Zepeto through the avatar I have created, and I have entered that space.

Ifland has a variety of meeting places, such as conference rooms and galleries, and by customizing them, I feel like I'm in my own space.

The Roblox world I chose consisted of content and games that fit the purpose, so it was fun to explore the world.

In in-depth interviews, college students presented the following points they would like to improve for self-expression while using metaverse.

It would be good to improve the fact that in Zepeto, users can only view the world from a third-person perspective.

In Ifland, users have limitations in decorating their avatars in detail.

Gathertown is not a platform that emphasizes decoration, and it is unlikely to be attractive to people who want to express their individuality.

Roblox is based on 3D graphics, but simplified graphics make detailed expressions difficult.

4.2 Metaverse platform mapping

As shown in table2, we analyzed major metaverse usage patterns through in-depth interviews and derived related keywords based on this. This allowed us to identify users' functional and emotional perceptions of major metaverse services.

Table 2 Metaverse platform keyword mapping

Metaverse	Keyword	Characteristic
Zepeto	Avatar	You can express your individuality through various facial expressions and clothes.
	Self-expression	You can freely express your individuality that cannot be expressed in reality.
	Brand Features	I felt that the world created in Zepeto was interesting and immersive because it felt like a real place.
	Feels like a real place	I visited Gucci World, and I loved it because it felt like I was going to an actual Gucci store. It felt like I was at an amusement park, and it was very similar to reality.
Ifland	Decoration free	Decorations are available for free, but styles are limited. It was nice to have a lot of free clothes, but I wish there were more types even if I had to pay.
	Emoticon gestures	Gestures were expressed through emoticons, making it easier to use gestures.
	Meeting place	It seems to be a platform focused on meetings, and there are various meeting place themes such as conference rooms and galleries. It can accommodate up to 131 people and is useful for holding briefing

	Easy to communicate	sessions, forums, talk shows, and concerts, making it an advantage from a business perspective. When it comes to communication, it has more functions than other metaverse and is easy to use.
Gathertown	Easy to transfer	Compared to mobile platforms, it is easier to move to other worlds. It's good because it moves quickly and the screen has a wide field of view.
	Video chat	The video chat function is convenient. You can enjoy the metaverse by communicating through video.
	Based on 2D graphics	It had 2D graphics and felt familiar because it felt like an old game. Because the world is composed of familiar 2D graphic-based interactions, even people who find the metaverse difficult can use it well. I thought that the area that could be decorated was limited because the 2D graphics were not sophisticated.
Roblox	Game-based	The characters are relatively simple and users can easily create game-based maps. You can enjoy it at a higher level than simple minigames in other metaverses
	Dynamic world	The world is very large and consists of a variety of contents, so you can enjoy a lot, and there are transportation methods, so it is convenient and fun to move around. It is interesting because there is a lot of dynamic content with high gameplay. It's interesting because you can do the motion of riding a board with your avatar.
	Make world coin and spend it (economic activity)	You can earn coins through missions and purchase items. It's fun to be able to earn coins by moving around the map, and there's good guidance on where the missions to solve are.

First, upon analyzing the frequently mentioned keywords in in-depth interviews related to Zepeto, they can be summarized as "avatar," "expression of individuality," "brand characteristics," and "feeling like a real place." Zepeto's biggest feature is that it allows for detailed avatar expressions, allowing you to fully express your individuality. In addition, many of the Zepeto worlds are similar to real places, so people enjoy exploring these spaces.

The main keywords that interview participants expressed while using Ifland were "free decoration," "emoticon gestures," "meeting place," and "convenient communication." Ifland currently needs a system for goods in place, so decoration is free. However, it is disappointing that various expressions of individuality are not possible due to this. Interview participants valued the functionality and convenience of Ifland's space and recognized it as a metaverse that was easy to use for various events.

Analyzing the interview content, keywords such as "convenience in transportation," "video chat," and "2D-based" were presented concerning Gathertown. Gathertown is a PC-based metaverse that allows users to explore the space at a glance using the mouse or keyboard, which users find convenient. Because it is 2D-based graphics, it is perceived as familiar and friendly. However, it is believed to have limitations in expressing individuality.

Keywords such as "game-based," "dynamic," and "coin acquisition" can be suggested when analyzing the content of in-depth interviews about Roblox. Interview participants cited the ability to use various worlds and the relatively high game quality of the content as immersion factors. Additionally, Roblox's world is composed of relatively diverse content. By creating game elements within the world as content, users evaluated Roblox

as the most dynamic metaverse. Users were most interested in Roblox World because they could earn coins, an in-game commodity, through activities within the world. Users were attracted to the application of real-world economic life, such as earning and using coins in the world, and considered this to be Roblox's unique strength.

5. Conclusion

This study derived factors that influence the use of Metaverse through previous research and conducted in-depth interviews with college students accordingly. Through this, college students' metaverse usage experiences were analyzed, keywords for major metaverse platforms were extracted, and platform keyword mapping analysis was conducted based on these. The results of this research are as follows.

We found Zepeto to be mentioned with keywords such as "avatar," "expression of individuality," "brand characteristics," and "feeling like a real place." Users perceived it as a three-dimensional space for self-expression. Ifland is mentioned with keywords such as "free decoration," "emoticon gestures," "meeting place," and "convenient communication." The convenience of meetings in the Metaverse is evaluated positively. For Gathertown, keywords such as "convenience in transportation," "video chatting," and "2D-based" were derived. It is evaluated as convenient to use because it is PC-based. Roblox was mentioned with keywords such as "game-based," "dynamic," and "coin acquisition." Users showed interest that users from various countries existed in the same space.

We analyzed the characteristics of the metaverse platform through in-depth interviews with college student metaverse users, yet it has the following limitations. The study's reliance on in-depth interviews presents a limitation in generalizing the research results to the usage behavior of people in their 20s. It would also be interesting to analyze the relationships between variables based on the factors related to metaverse use presented as a result of the study. Through this, theories such as public relations and communication will be able to expand into the Metaverse.

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