

The Metaverse and Video Games: Merging Media to Improve Soft Skills Training[☆]

Edward Shin¹ Jang Hyun Kim^{1*}

ABSTRACT

Education systems have made efforts to prepare students by providing technical and nontechnical courses. With video games, however, there is the potential to develop dedicated metaverses that can help teach soft skills even during casual pastimes. The research conducted will propose a set of design practices for metaverse and game development to promote soft skills. While there are many soft skills people can acquire, this paper will focus on certain aspects based on specific games and studies. There will be some information collected from the information to support the design model and arguments. This paper will provide developers with a starting point for imaginative game creation and impart users with soft skills to assist in their professions and social life.

☞ keyword : Metaverse, Game Design, Soft Skills, Training

1. Introduction

While technical skills are needed to perform the necessary tasks, many corporations require soft skills like communication, coordination, handling pressure, and problem solving, yet find that much of management lacks such abilities [1]. Even college graduates were found to lack the nontechnical skills industries need to continue and grow their businesses [2]. With ideas and duties becoming increasingly complex, more people are required to help and contribute, which means they must have an effective working relationship. Without an adequate set of soft skills, the entire system would collapse and result in failure. There are already some methods implemented, like including soft skill training in hard skill courses [2], to help increase the number of people familiar with nontechnical knowledge. To contribute, this research will explore metaverse concepts and game design to provide more options and bolster these endeavors.

As of May 2021, the concept of virtual worlds and the metaverse is discussed more frequently for many future

applications than before. The metaverse is best defined as a 3D virtual space, in which numerous people can inhabit, migrate, and make use of as a virtually physical environment [3]. There are limitless possibilities on what can be created and how it can be utilized by creating an extension of our world through technology. For example, Bourlakis et al. discussed the possibilities of building more space for retail into the metaverse and how they can affect services and marketing [4]. They further discussed how this could be an evolution of traditionally offline and even current online methods of performing retail work [4]. This advancement could apply to other options like museums, schooling, business, and many others. Of course, this study will focus on one particular medium: video games.

Video games are interactive forms of entertainment that combine various fields like music, computer programming, artificial intelligence, user experience, and many more to create something immersive and memorable for the players. One great aspect about this medium is the vast amount of imagination from both developers and players alike. Toney (2011) wrote a study on how puzzle building in the metaverse could encourage players to make use of their creativity [4]. According to the researcher, *Myst*, a video game by Cyan, combines the metaverse and puzzles to challenge players to actively explore different spaces and use the given clues to form a solution [4]. In addition, games like this and *World of Warcraft* utilize the metaverse to bring

¹ Dept. of Interaction Science/Human-AI Interaction, Sungkyunkwan University, Seoul, 03063, South Korea.

* Corresponding author (alohakim@skku.edu)

[Received 05 October 2021, Reviewed 10 November 2021, Accepted 01 December 2021]

☆ A preliminary version of this paper was presented at APIC-IST 2021.

players together in a social and collaborative space, in which the experience could translate into a professional setting with the right knowledge and development [4, 5].

The objective of this research article is to provide a more clear understanding of the potential behind metaverse and video games as a combined effort to impart soft skills to many users. Along with references to past research, there will be data collected to determine how effectively people can gain nontechnical skills from this merging of media. After the information is introduced, there will be a design model along with a brief discussion of how to move forward with this proposal.

2. Theoretical Background

2.1 Metaverse

As computer generated 3D environments, the virtual world is a fascinating topic in the realm of human-technology relationships. The metaverse, according to Davis et al. (2009), is an interactive 3D virtual world, in which users can engage as avatars with others and digital entities [6]. These digital environments are constructed based on the real world while removing the physical limitations we normally face [6]. Although researchers have published a number of research articles with their own viewpoints and proposals, much of their discussions appear to revolve around two specific factors: the environment and avatar interactions. Land et al. (2011) stated that the virtual environment itself provides many visual cues and the freedom to design the space for different applications [5]. They further explain that avatar interactions use virtual representations of the users to allow them to communicate with each other and interact with the virtual spaces [5]. While concepts of the metaverse have not yet been fully developed nor implemented in every field and industry, there is no denying how promising progress has been.

Much of the discoveries from many metaverse studies remain on paper, but have the potential to be implemented into mainstream practice for consumers. As mentioned previously, retail has received some attention for metaverse utilization. The metaverse had already made advancements to e-retail, which itself is an evolution to traditional retail, by

providing "experience-oriented" or novelty-craving customers with a unique 3D experience [4]. Papagiannidas et al. has even proved that enhanced engagement through the virtual stores could increase the chances of purchase intention [7]. Another common application for the metaverse is education or delivery of information. The experiences of visiting a museum have now evolved to the point that they are becoming available in virtual reality. For instance, Google's Art Project (2016) is capable of providing knowledge in cyberspace and expanding on the museum experience through that content [8]. Simulations through virtual reality have also been accepted into many disciplines like medicine and gradually answers more questions and doubts behind their power to educate in a metaverse [9].

As a malleable virtual space open to anything and anyone, the metaverse is capable of bringing people together and establishing connections. As a refresher, avatars act as our bridge and means of engaging with the metaverse. Users are not only able to interact with the environment, but also with other people through their own virtual representations. Land et al. argued that teamwork in the metaverse can be achieved with effective avatar-interactions by taking advantage of features like social presence and self-presentation [5]. As collaboration is one of the keys to success, there have been efforts to transition into the use of a shared virtual workspace to encourage "collaborative work in more and more autonomous settings" [10]. Metaverses are also capable of providing social spaces, in which productivity can improve for the participants. Of factors that were considered, a social environment was proposed as a flow of communication for the virtual world of Second Life by Linden Lab [11]. Through actions like adding friends and engaging in group activity, users are able to connect with like-minded people, share ideas, and overcome personal hardships, which help reinforce group communication [11]. With enough research and the right execution, the metaverse can unite people and provide space for further experimentation.

2.2 Video Games as a Spatial Experience

Video games have had an interesting history that range from the Video Game Crash of 1983 to their debates as an art form. Through those positive and negative moments,

video games have received significant attention from the media, academics, and the general public. While some older problems like addiction and violence do still exist, there is a plethora of knowledge that can apply video games to benefit a wide audience.

At their core, video games were created to satisfy players eager for adrenaline-filled moments or something novel. Enjoyment can be interpreted as a moment of relief to allow people experience pleasure and escape their hardships briefly. Delight from the audience could range from compelling narratives to parasocial relationships through avatars [12]. When engaging in a video game, players would naturally be ecstatic when they complete a mission or reach a goal, but what keeps them engaged and excited is the gameplay. In Cowley et al.'s (2008) discussion on the flow of video games, they noted that a gamer does not enjoy accomplishing a goal, but instead enjoys pursuing a goal for the gameplay [13]. Also, the level of enjoyment built into a game often determines how motivated players are to play, which may stem from sensory delight, relief, achievement, or any other incentive [12]. Based on these statements, a video game's strength comes not from the rewards or end goals programmed in, but instead the mechanics and actions players use to progress. Even now, designers have continued to innovate to provide new and exciting experiences to capture the attention and dedication of many.

Video games as education tools can be questionable when reviewing the unsatisfactory results of some projects. Many language learning applications, for instance, provide a wealth of information, but no reliable means of practicing with it for the real world [14]. However, there is plenty of research stating that they are still a viable means of teaching. According to Ritterfield et al. (2006), video games can facilitate "developmental process," which explains that humans can grow by engaging in media usage [12]. To support this, the Blending Paradigm states that users can benefit from entertainment-education when they do not perceive the distinction between playing and learning [12]. Also, while video games are viewed and defined differently, they commonly share similar features like rules for guidance and challenges, conflicts to overcome, a set goal to reach, or events that require some action like decision-making or teamwork [15]. Surely, education can be applied to video

games if a developer can recognize and utilize these components. It seems that the key to effective education in gaming is not to cram as much knowledge into software as possible, but rather to use the cyberspace and virtual actions to impart the power to gain knowledge efficiently.

2.3 Metaverse + Video Games

Individually, the metaverse and games are capable of transforming the lives of people. When merging both mediums together, however, they have the power to perform beyond their base capabilities. Bourlakis et al. had even stated that much of the metaverses originated from massively multiplayer online role playing games (MMORPGs) before branching out into other fields [4]. Not only is there previous research that could confirm the strength of this relationship, but there are also fully developed games that utilize the metaverse with promising potential.

Progress in this combined effort proved popular with many consumers and resourceful for dedicated researchers. Many MMORPGs, for instance, were developed to satisfy social needs by providing a space for forming friendships [16]. World of Warcraft (WoW) achieved its success by incorporating this idea along with "realistic" interactions that created a social presence [5]. People who played this game had experienced an increase in social engagement when meeting people who loved the series and shared other related interests [16]. Other games also made use of the virtual environment for players to explore. Myst, in particular, used the 3D space to provide puzzles that unlock creativity by using the architecture to provide space for exploration and visual cues to guide players in the brainstorming possible solutions [17]. Perhaps one of the most well known metaverse applications is Second Life. While not exactly considered a game, Second Life's virtual environment works similarly to an MMORPG as many people can collaborate and partake in a realistic event for interactive learning and creative use of their space [18]. These are only a few examples that combine metaverses and video games to begin introducing nontechnical skills.

2.4 Linking Design to Soft Skills

There are many kinds of soft skills that people can learn and use. For determining design practices, however, soft skills are broken down into communication and creativity based on certain studies and the Theoretical Background. The two groups will also be further broken down and provide detailed support by referencing specific games research and linking them to metaverse concepts.

3. Communication

The ability to interact with people both familiar and unfamiliar is probably one of the most important skills to learn for many situations. Games that involve communication could effectively teach this ability as well as other skills like independence and tolerance to frustration [12]. As a result, players would not only remain active and conversational, but there would also be greater social presence, a prerequisite of avatar-interaction [5]. While this is a significant factor to any industry, it is important to remind everyone that it is also used during casual events, which themselves can contribute to serious work. Based on this logic, two contrasting subcategories were determined for providing games and metaverse design: teamwork and socializing.

3.1 Teamwork

Many video games have multiplayer modes for multiple people to play locally or wirelessly. It is quite easy to associate them with competitive gameplay. However, we believe the best way to encourage productive communication is to firmly incorporate teamwork into the main gameplay. If an objective can only be accomplished with the involvement of more than one person, players would be encouraged to converse with each other to finish smaller tasks for a bigger goal.

One shining example would be *Overcooked*, a cooperative local multiplayer cooking game, by Ghost Town Games. What makes this game special is that instead of a lone competitive spirit, the game requires near flawless teamwork and communication among players to complete goals and advance levels. Roach et al. (2017) mentioned that

cooperative gameplay depends on hearing and responding to one another [19]. They noted in their studies on English communication through video games that *Overcooked* had successfully made foreign students talk to each other in English, which led to productive teamwork [19]. Games like *Overcooked* could achieve this by providing a variety of tasks that force players to multitask and exchange roles, which itself requires active communication among themselves [19]. To reinforce this gameplay, shifting environments were crafted to keep players active, something that correlates well with the connection between the metaverse's interactivity and active information processing [5]. It could also be argued that the game's avatar selection improves teamwork as it utilizes social presence and self-presentation, two components capable of forming effective avatar-interactions [5]. Strengthening player interactions and incorporating teamwork into gameplay could further enhance the metaverse to encourage communication and cooperation.

3.2 Socializing

Socializing involves communicating with other people to bond and spend time casually. Teamwork may be vital for efficiency and productivity, but spending time off with close companions can bolster trust and likeness for each other.

Many MMORPGs like *WoW* were developed to satisfy social needs by providing a space for forming friendships and realistic interactions that exude social presences [7, 3]. People who played under such conditions had experienced an increase in social engagement when meeting people who loved the series and shared other related interests [7]. The experiences were further enhanced by introducing character customization, which meets another prerequisite of avatar-interaction: self-presentation [16, 5]. It was by creating strong avatar interactions that social presence grows into active social interactions [2]. While further research in other genres is necessary, games can utilize the online realm and common gaming interests to work with the avatar's social presence and the metaverse's communication capabilities.

Socializing also happens outside of the game in social media sites and dedicated online communities. This may appear to be off topic from the research's main purpose, but this is potentially significant for further relevant study.

Inevitably, video games that build a decently sized following will form communities outside of their virtual worlds. These outlets allow players to share many resources like comments, gameplay tips, and personal stories open for people to learn from [20]. This would give the metaverse an opportunity to teach utilizing a separate social presence outside of its boundaries. With the evolution of video games, there would be greater complexity that brought rise to software like Discord that allow players to gather, communicate, and contribute [21]. By taking advantage of this pattern, video games and the metaverse together can not only advance in experiences, but also entice a larger audience [20], who would in turn socialize in their respective groups and continue the cycle.

4. Creativity

No matter what industry the average employee works in, creativity is necessary for innovation in their field. Video games began mainly with simple objectives or linear paths to a goal. After some time, they developed more depth as developers evolved in every genre, while players became creative with their approach to the gameplay. Within the metaverse, the virtual spaces can be altered to fit their needs and imagination. One important aspect for this model is that creative thinking could be applied to real life experiences. Minecraft's crafting mechanic can inspire artists or architects [22]. Roblox can get young children started with game development [23]. The list could go on. Past research on certain games showed the application of creative thinking through exploration and resourcefulness.

4.1 Exploration

In terms of the virtual world, exploration derives from the metaverse's interactivity, to which Bishop et al. (2001) described as the ability "to move and navigate through a virtual environment" [24]. Giving players the ability to traverse an open world without feeling restricted to a linear path allows a freedom that affords them a wide range of ideas on how to approach the end goal or adapt in a current predicament.

Myst, for instance, made 3D puzzles in a metaverse to

encourage interaction at different angles; it even serves as a means to discover one's "self" [17]. Land et al. had associated self-presentation as a feature of avatar interaction like customizing faces [5]. In the case of *Myst*, however, the game proves that self-presentation can be achieved through action in the virtual space as well. People can learn and even shape themselves by reflecting on the choices they made within a metaverse or game world. In fact, players are not simply constrained to what is available strictly in a game's environment. Source code is sometimes open in the Internet, allowing many to use external tools like scripting and graphic software to modify the metaverse in a way that changes interactivity and inspire new ideas [6]. By combining the metaverse space with gameplay motivators like fantasy, curiosity, or challenges like *Myst*'s puzzles [12], players can find creativity inside and outside of the virtual worlds they traverse.

4.2 Resourcefulness

Another means of pushing creative thinking is the establishment of limitations that force players to be resourceful. Resourcefulness can be defined as a skill that allows an individual to recognize the environment and available resources, adapt to the situation, and improvise. Replicating this in a metaverse and a video game combined could potentially teach players how to adapt to tight situations and experiment with any possibility.

An important aspect to note is that every good game, even a non-digital one, is designed with a set of rules, which are essentially controlling elements in exploration and mechanics that affect the players' experiences [13]. While they may seem purely restrictive at first, they also create depth and opportunities for creativity. Games like Go and chess, for example, are made of simple rules and few colors, yet are played with deep complexity and a virtually infinite number of possible scenarios that continue to be discovered [13]. There is also Minecraft, which comes with three modes of play: Creative Mode, Survival Mode, and Adventure Mode. All these modes provide a different set of rules to follow, like Survival Mode and its requirement to strategically gather and use materials and beware of threats that come at night [25]. Whether a player chooses to play in

the more liberating Creative Mode or the more challenging Survival Mode, the importance of a game like Minecraft is allowing interactive learning and risk taking in a safe and open environment [25], something that could be translated into real world experiences with further study

5. Conclusion

We have reviewed the potential in combining the metaverse and video games and presented several design practices to promote soft skills. This model is created based on multiple studies and many established applications that succeeded in the metaverse concept, gameplay, or a combination of both. Metaverses provide a 3D virtual world where people can explore and engage in different activities. Video games are entertaining, yet they can also teach players in a unique way. Merging the various elements from both worlds could open everyone to more innovation and adventures.

From the foundations of the metaverse and soft skills, we set up a design model that would apply game design to teach communication and creativity to the players. We also covered different features of each skill in order to accommodate people of different preferences and learning strengths and prepare them for the real world. If they are applied properly, players could learn during their moments of reprieve without feeling obligated to sacrifice their free time. These practices are not intended to be one-size-fits-all solutions, but rather a set of foundations for developers to build on in order to develop more software that strengthen the metaverse and game design and possibly impart soft skills to their players.

References

- [1] Dixon, J., Belnap, C., Albrecht, C., & Lee, K., "The importance of soft skills," *Corporate finance review*, 14(6), 35, 2010.
<https://www.proquest.com/docview/751644804>
- [2] Schulz, B., *The importance of soft skills: Education beyond academic knowledge*, 2008.
<http://ir.nust.na:8080/jspui/handle/10628/39>
- [3] Rehm, S. V., Goel, L., & Crespi, M., "The metaverse as mediator between technology, trends, and the digital transformation of society and business," *Journal For Virtual Worlds Research*, 8(2), 2015.
<https://doi.org/10.4101/jvwr.v8i2.7149>
- [4] Bourlakis, M., Papagiannidis, S., & Li, F. (2009). Retail spatial evolution: paving the way from traditional to metaverse retailing. *Electronic Commerce Research*, 9(1), 135-148, 2009.
<https://doi.org/10.1007/s10660-009-9030-8>
- [5] Van der Land, S., Schouten, A., & Feldberg, F., "Modeling the metaverse: a theoretical model of effective team collaboration in 3D virtual environments," *Journal of Virtual Worlds Research*, 4(3), 2011. <https://www.learntechlib.org/p/178160>
- [6] Davis, A., Murphy, J. D., Owens, D., Khazanchi, D., & Zigers, I., "Avatars, people, and virtual worlds: Foundations for research in metaverses," *Journal of the Association for Information Systems*, 10(2), 90, 2009.
<https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?article=1021&context=isqafacpub>
- [7] Papagiannidis, S., Pantano, E., See-To, E. W., & Bourlakis, M., "Modelling the determinants of a simulated experience in a virtual retail store and users' product purchasing intentions," *Journal of Marketing Management*, 29(13-14), 1462-1492, 2013.
<https://doi.org/10.1080/0267257X.2013.821150>
- [8] Choi, H. S., & Kim, S. H., "A content service deployment plan for metaverse museum exhibitions-Centering on the combination of beacons and HMDs," *International Journal of Information Management*, 37(1), 1519-1527, 2017.
<https://doi.org/10.1016/j.ijinfomgt.2016.04.017>
- [9] Maharg, P., & Owen, M., "Simulations, learning and the metaverse: changing cultures in legal education," *Journal of Information, Law, Technology*, 1, 2007.
http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2007_1/maharg_owen/
- [10] Collins, C., "Looking to the future: Higher education in the Metaverse," *Educause Review*, 43(5), 51-63, 2008.

- <http://www.uh.cu/static/documents/RDA/Looking%20to%20the%20future.pdf>
- [11] Gómez-Diago, G., “Brainflowing, virtual/ physical space and the flow of communication: An explanatory approach to the metaverse through a tool designed for brainstorming,” *Metaverse Creativity* (new title: *Virtual Creativity*), 1(1), 51-67, 2010. https://doi.org/10.1386/mvcr.1.1.51_1
- [12] Ritterfeld, U., & Weber, R., “Video games for entertainment and education,” *Playing video games: Motives, responses, and consequences*, 399-413, 2006. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.456.5116&rep=rep1&type=pdf>
- [13] Cowley, B., Charles, D., Black, M., & Hickey, R., “Toward an understanding of flow in video games,” *Computers in Entertainment (CIE)*, 6(2), 1-27, 2008. <https://doi.org/10.1145/1371216.1371223>
- [14] Zheng, W., Cao, S., Wang, Y., Yang, K., Chen, Y., & Song, G., “The Impact of Social Value Orientation, Game Context and Trust on Cooperative Behavior After Cooperative Video Game Play,” *Psychological Reports*, 2020. <https://doi.org/10.1177/0033294120934705>
- [15] Sousa, C., & Costa, C., “Videogames as a learning tool: Is game-based learning more effective?,” *Revista Lusófona de Educação*, (40), 199-210, 2018. <https://doi.org/10.24140/issn.1645-7250.rle40.13>
- [16] Marton?ik, M., & Lokša, J., “Do World of Warcraft (MMORPG) players experience less loneliness and social anxiety in online world (virtual environment) than in real world (offline)?,” *Computers in Human Behavior*, 56, 127-134, 2016. <https://doi.org/10.1016/j.chb.2015.11.035>
- [17] Tonéis, C. N., “Puzzles as a creative form of play in metaverse,” *Journal For Virtual Worlds Research*, 4(1), 2011. <https://doi.org/10.4101/jvwr.v4i1.1901>
- [18] Livingstone, D., & Kemp, J., *Second Life Education Workshop at the Second Life Community Convention*, San Francisco, August 20, 2006. *eLearn Magazine*, 2007(3), 4, 2007. <http://hibgroupbpr.pbworks.com/f/Second+Life.pdf>
- [19] Roach, A., & Utami, Y. (2017). Using video game to enhance English communication skills. *Proceedings of ISELT FBS Universitas Negeri Padang*, 5, 200-204. <http://ejournal.unp.ac.id/index.php/selt/article/view/8003>
- [20] Squire, K., *Cultural framing of computer/video games*. *Game studies*, 2(1), 1-13, 2002.
- [21] Bankov, B., “The Impact of Social Media on Video Game Communities and the Gaming Industry,” Varna: University of Economics in Varna, 2019. https://www.researchgate.net/profile/Boris-Bankov/publication/337144821_The_Impact_of_Social_Media_on_Video_Game_Communities_and_the_Gaming_Industry/links/5dc6d8dd92851c81803c31d2/The-Impact-of-Social-Media-on-Video-Game-Communities-and-the-Gaming-Industry.pdf
- [22] Yoon, E., Andersen, E., Hariharan, B., & Knepper, R., “Design Mining for Minecraft Architecture,” In *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, Vol. 14, No. 1, September, 2018. <https://www.aaai.org/ocs/index.php/AIIDE/AIIDE18/paper/viewPaper/18112>
- [23] Meier, C., Saorín, J., de León, A. B., & Cobos, A. G., “Using the Roblox Video Game Engine for Creating Virtual tours and Learning about the Sculptural Heritage,” *International Journal of Emerging Technologies in Learning (IJET)*, 15(20), 268-280, 2020. <https://www.learntechlib.org/p/218337/>
- [24] Bishop, I. D., Wherrett, J. R., & Miller, D. R., *Assessment of path choices on a country walk using a virtual environment*, *Landscape and Urban Planning*, 52(4), 225-237, 2001. [https://doi.org/10.1016/S0169-2046\(00\)00118-3](https://doi.org/10.1016/S0169-2046(00)00118-3)
- [25] Overby, A., & Jones, B. L., “Virtual LEGOs: Incorporating Minecraft into the art education curriculum,” *Art Education*, 68(1), 21-27, 2015. <https://doi.org/10.1080/00043125.2015.11519302>

● Authors ●



Edward Shin

2017 B.A. in Architecture, Carnegie Mellon University, Pittsburgh, Pennsylvania USA

2020-Present M.S. in Human-Artificial Intelligence Interaction, Sungkyunkwan University, Seoul, Korea

Research Interests: Metaverse, Human-Artificial Intelligence Interaction, Human-Computer Interaction etc.

E-mail : edshin@g.skku.edu



Jang Hyun Kim

1996 B.A. in Economics, Yonsei University, Seoul, Korea

1998 M.A. in Communication, Yonsei University, Seoul, Korea

2007 Ph.D. in Communication, State University of New York at Buffalo, Buffalo, New York USA

2014-Present: Professor of Interaction Science, Sungkyunkwan University,

Research Interests: Social/Semantic Network Data Analysis, IT Leadership, Future Media, Social Media etc.

E-mail : alohakim@skku.edu