**How Does Cyberpunk2077 Improve Player Learning and Performance: Draft 1**

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**Abstract**

Video games are usually found to have the specialty of engaging their audiences and teaching the players how to play. Based on Gee’s (2005) analysis, there are 13 principles that helped video games attract users and improve their learning performance. This video game review will focus on the “Sandboxes” and “Information ‘On Demand’ and ‘Just in Time‘“ traits of the video game Cyberpunk 2077 (CD Projekt Red). Moreover, this article will also put an emphasis on how does Cyberpunk 2077 handles players and their in-game identity (2020).

Keywords: Video Games, Information, Simulation, Identity, Learning

**Introduction**

Video games, especially open-world Role Play Games (RPG) such as Grand Theft Auto V (Rockstar North, 2013), Red Dead Redemption 2 (Rockstar Studios, 2018), and Elden Ring (FromSoftware Inc, 2022) often contain complicated action, item, and weapon systems. Such systems bring players more freedom while playing the game, however, the learning difficulties of mastering these systems have also increased. As people well known, good video games often make users interested in learning the mechanisms.

Based on James Paul Gee’s article “Learning by Design: good video games as learning machines”, the author states that there are 13 principles from 3 main categories that help game designers engage the audience, which are: “Co-Design, Customize, Identity, and Manipulation and Distributed knowledge” from the Empowering Learners aspect; “ Well-Ordered Problems, Pleasantly Frustrating, Cycles of Expertise; Information ‘On Demand’ and ‘Just in Time’, Fish Tanks, Sandboxes, and Skills as Strategies” in the Problem Solving category; and “System Thinking and Meaning as Action” which belong to the Understanding part (2005.) As an open world RPG game, the video game this review choose, Cyberpunk 2077 (CD Projekt Red, 2020), is associated with most of these aspects such as the Fish Tanks and the Pleasantly Frustrating ones, however, it has an outstanding implementation of the Sandboxes and the Information “On Demand” methods. The application of the in-game Information “Just in Time” and how does that help players build and step into their in-game identities is also worth well elaborating.

**Review and Analysis**

**Sandboxes**

Defined as a “safe haven” that provides simulation in the context of real situations by Gee (2005), the sandboxes technique is not only appliable to the in-game contents, but also has the potential to make Cyberpunk 2077 (CD Projekt Red, 2020) become a sandbox for real-world problems. Before the first mission in the game, the players were offered the option to take the tutorial and they also could turn it down. Although this shows a certain amount of customization, the form of the tutorial is the factor that really makes a difference. For instance, when it comes to the hacking tutorial, players need to hack the screen to distract the enemy, which is highly resembled with the situations players might experience in the later on playing. In the second mission of the game, players will need to take undercover to escape from the enemies’ factory. In this mission, players need to fully utilize the hacking techniques they learned from the tutorial to distract the guards and turn off the cameras so they can apply their undercover skill set, which could also be learned from the tutorial but as an optional part, and sneak through the enemies. Otherwise, the players have to take a long and difficult fight with the enemies. However, unlike the real fighting scenes in the later parts of the game, the users are allowed to try and fail as many times as they want in the tutorials without needing to return to the previous checkpoint and lost many of the valuable items they can get from the fights. Described as a “VR” in the game, the rookie training tutorial provides a safe haven to the players and help them familiar with the essential skills.

On the other hand, the game itself could be considered as a potential sandbox for real world issues. For example, as an open world game that granted players a considerable amount of freedom, Cyberpunk 2077 (CD Projekt Red, 2020) has integrated an advanced driving system and a traffic simulation that resembles the real world large city situations which include different urban, off road, and track variations. In another game that has a highly similar traffic system with this, Grand Theft Auto V (GTA-V) (Rockstar North, 2018), has been proved by Martinez. et.al could be applied in deep learning of self driving cars. Every time after vehicle being destroyed in Cyberpunk 2077 (CD Projekt Red, 2020), it will be auto renewed. So, the time and money cost of gathering in game information could be largely lowered: from the cost of a life size vehicle that needed to be tested on real roads, to the cost of a computer that could run the game in multiple threads plus the price of this game. As the game is capable of providing such simulation of real world in much lower costs, it could be considered as a sandbox and potential solution for real world problems.

**Information “On Demand”**

Moreover, the implementation of Information “On Demand” feature is also very remarkable. Gee points out that the “On Demand” information is the information that requires the players to acquire by players actively and would benefit their play (2005). Most of the on demand information are existing in fan based platforms. For instance, in the third mission of Cyberpunk 2077 (CD Projekt Red, 2020), the player need to “deep dive” into a video material and retrieve 3 pieces of crucial information about enemies’ security system, data tablet contents and the location of a military chip. After 23 times of trying, the final piece of information was still not found. However, the clearance video of this part has proved to be could be easily found on the game community and also on many video platforms such as youtube and bilibili. Moreover, all checkpoints are individually named and indexed, so the player could search for the information they want effectively with precise keywords.

Aside from the community based platforms, in game on demand information is also sufficient for players to have a smooth game play. Every time after in countering a new None Person Character (NPC) that have significant influence on the main story, player could add their contact information to contact list and review mission related information as frequent as they want. On the contrary, the game is hiding certain amount of information such as the clues for side stories, fighting action combinations, technology point customizations, and so on and so forth. The hiding on information added more fun factors to the game when players trying to uncover the facts without being bothered by out of context readings and make a certain amount of customization to the game. This similar method could be found in The Legend of Zelda: Breath of the Wild (Nintendo Entertainment Planning & Development, 2017): players’ journey are mainly guided by lighting, shades and landscapes and text guidance information is hided to ensure immersive game play. The well organized communities and cleverly distributed portion of on demand and hidden information make sure users to have an undisturbed and efficient gaming experience and also maintain the interesting parts such as discovering and developing personal playing style.

However, this technique have the potential issue for a certain group of players. Developers usually do not have the control of contents shared in various communities and there are often videos or tutorials of using bugs to win games which bring unbalance to the game and are unhealthy for the whole game community. Such instance could be found in many other triple A scale games such as the Sekiro: Shadows Die Twice (FromSoftware Inc. , 2019), a huge amount of players uses assassin mechanism bug to achieve fast clearance of the first boss fight. Meanwhile, as the categories of gaming videos are so diverse, some people may buy the game and never play or not even buying the game but they could experience the same well designed and flourished storyline as the other players who spend more than fifty hours to finish the Very Difficult level of the game. These two kinds of unfairness would finally significantly affect the sale of the game. Serious considerations and effective actions are needed by the game developers when applying the Information “On Demand” feature to balance the game.

**Information “Just in Time” and Identity**

As the second section of the two information processing methods, information “just in time” is also an important part of how does the game improve player learning performance, and what is more interesting, is that it might benefit the game more by its association with another Gee’s learning principle: Identity. The Information “Just in Time” is defined as those information which is provided by the game itself to the gamers just at the time they are needed to promote story or gameplay (2005). In Cyberpunk 2077 (CD Projekt Red), this kind of information could be easily spotted (2020): the mission details provided by various NPCs; the deep diving skill provided just before the related mission; and the item information offered just after gamers pick up something on the battle field. Lomas et. al’s research has proven that the reverse “U” shape playing curve which consisted by reasonably difficulty with novelty is an ideal pattern for games to remain attractive and engaging (2017). The advantage of Information “Just in Time” is that it can reasonabily reduce the difficulty of the game by providing certain instructions as well as bring some novelty to the game by introducing new information. The Identity, which is common in RPG games, is also discussed by Gee, and he separated them into 3 sub categories: Real world (the players’ identities in real world), Virtual (gamers’ identities in the game worlds), and Projective (reflection of users’ feature, desire and value onto the in game character) (2003). In Cyberpunk 2077 by CD Projekt Red, the Virtual identity is more magnified than the other two. Although the outside look is customizable by the players, the game itself is fixed first person and there is no online mode to show off the looks, which makes the game extra difficult to support the real world or projective identities. However, when combined with the Information “Just in time” feature, the fixed person perspective of this game has become especially good at building the virtual identity of the main character “V”. Gamers go to where V goes, only know what V knows along the development of story line, and talk and act in the style of V. Such connection of information and identity has made the synchronization between character and gamers’ experience possible and thus help players learn and absorb useful information in the game world.

**Conclusion and limitations**

All in all, since the well designed implementations of several Gee’s (2005) principles such as the Sandbox and Information “On Demand” and “Just in Time”, the players are capable of learn to play more efficiently and better step into the virtual identity. In the developers need to filter and process information seriously to maintain the balance of game and community. Beyond the game level, Cyberpunk 2077 (CD Projekt Red) might be about to provide solution to real world issues. However, this review has some limitation. For instance, some of the sources this article based on are from 17 to 19 years ago and could be considered outdated. Further researches could be done focusing on more modern articles to improve accuracy and adaptivity.

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