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Roblox and the Pervasiveness of Play: What Game-Making Communities Can Teach Us About Participatory Practices in Affinity Spaces

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Based on a multidisciplinary analysis of the current development of gaming in contemporary society, this article explores the learning potential that game environments offer from childhood and throughout one's lifespan. A comprehensive review of the existing literature is presented, along with a methodological investigation of an online, multiuser, sandbox video game environment in which players are actively engaged in building games. This article identifies elements of pedagogical value in the Roblox game-making community that allow users to design games independently in a virtual environment or to play games created by others. Using an interdisciplinary approach that encompasses pedagogy and media sociology, we speculate that the success of Roblox is due in part to the inclusion of game types that align with the psycho-cognitive development of childhood as described by Piaget and further developed by Resnick. Similar to kindergarten, where games serve as important mediators of learning, Roblox can be seen as an educational space supporting social processes within *affinity spaces* and encouraging peer education and participation, from exploring virtual environments to designing games.

Keywords: game-making, online communities, cognitive development, affinity spaces

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As video games evolve to include spectacular visuals and immersive experiences, Roblox and Minecraft are among the most successful online multiplayer games. These platforms offer simplified graphics reminiscent of LEGO blocks (Han, Liu, & Gao, 2023). Roblox prioritizes gameplay, creativity, and social interaction over graphics, and its focus on user-generated content has created a community where players can design and share their digital worlds. The platform's community comprises young children and adolescents interacting in an environment based on simplistic, playful interactions. Roblox offers a wide array of imaginative experiences, encouraging creativity and exploration, and employing a user-friendly interface and simplified mechanics. Users can engage in activities like building virtual worlds, participating in minigames, and socializing with other players, mirroring the social interactions and collaborative play commonly observed in a kindergarten setting. The reasons for this platform's success can be traced back to a reassuring structure that calls to mind one of the first social contexts in which children experience play outside the family: kindergarten. In the first chapter of *Lifelong Kindergarten*, Resnick (2017) analyzes Froebel's childhood garden as one of the greatest inventions of the millennium. Fröebel (1826) understood that young children learn better by interacting with the world around them and, for this reason, distanced himself from transmission approaches to teaching. He opted for an interactive model, providing children with the opportunity to interact with toys, materials, and other objects. Since Froebel was not satisfied with the toys of the time, he created new ones specific to the educational objectives that interested him (Moore et al., 2010). Froebel wanted children to know the world around them and proposed children's artifacts (gifts) and functional games to create models of the world. We can summarize Froebel's pedagogical model as "understanding through re-creation" and "creation and recreation" (Resnick, 2017, p. 8).

Starting from these premises, we identified a number of references in Roblox that are important to the pedagogical model of child development, and we explored how these characteristics intersect with the demand for lifewide and lifelong learning in a society marked by uncertainty and constant change, as investigated in the field of social sciences. Having analyzed Roblox as if it were a kindergarten, we are able to provide insights into its design, functionality, and user engagement. Just as kindergarten serves as a crucial learning environment for young children, Roblox can be seen as a digital counterpart that offers a range of experiences and developmental opportunities—a kindergarten that is beyond childhood for a liquid and constantly changing society (Bauman, 2000).

According to Bateson (1956), the pervasiveness of play in contemporary society is a response to the need for continuous learning in the rapidly changing social contexts to which humans have to adapt.

Roblox also hosts game types that mirror the phases of cognitive development described by important authors, such as Piaget and Vygotsky.

Finally, as defined in the concept introduced by Jean Lave and Etienne Wenger (1991), Roblox can be considered an *affinity space* (Gee, 2007) that facilitates legitimate peripheral participation. An affinity space is a virtual or physical environmen t in which individuals come together around a shared interest or passion, engaging in collaborative activities and knowledge sharing. With Roblox, players enter the platform with a common interest in gaming and game development. Within this virtual space, individuals are encouraged to participate in various roles and activities, gradually progressing from peripheral to central participation. Newcomers to Roblox may start by playing existing games created by experienced users and

observing and learning from their actions. Over time, they may become more actively involved by joining development teams or creating their own games. Starting from an analysis of Roblox through the theoretical lenses of pedagogical and sociological studies, this article investigates how implementation of the game dynamics and mechanics that occupy the stages of cognitive development and the social practices linked to affinity spaces contribute to building functional environments for online game-design communities that are functional to developing the dynamics of children's play beyond childhood, making play a transversal experience in a constantly changing society.

Theoretical Framework and Methodology

Starting from a multidisciplinary analysis of the contemporary evolution of gaming within society, this article delves into gaming environments' potential for learning across the lifespan, from childhood to adulthood. Through an extensive exploration of existing literature, the study is centered around a case study involving an online, multiuser video game environment categorized as a *sandbox* game. Sandboxes are games that provide players with a significant degree of creative autonomy. These gaming environments typically operate with no predetermined objectives; alternatively, they allow players to establish goals autonomously. This prompts an examination into the motivations driving the widespread use of games with simple aesthetic qualities, but with a notable openness to participant involvement in cocreating shared environments and storytelling.

Recent studies have explored socially constructed learning in online gaming communities while highlighting the potential of gaming communities as meaningful learning environments (Gandolfi, Feydig, & Soyturk, 2023). These studies emphasize the importance of expert support for novice members and suggest that fostering a supportive environment, particularly for older and female gamers, enhances meaningful learning in these online communities. Other analyses look at the creation and consumption of specialized content by video game voice actors (Švelch & Švelch, 2022) or examine the motivations and preferences of those who are "just watchers" observing gameplay videos created by other players and distributed online (Orme, 2022).

Other research projects have analyzed the digital media practices of teenagers and linked them to media skills developed within digital environments. The Transmedia Literacy project (European Commission, 2020) involved eight countries from three continents. Through data gathered using multiple methodologies (surveys, in-depth interviews, workshops, and media diaries), the project analyzed how teenagers consumed and produced media and how these practices are related to emerging transmedia skills (Taddeo & Tirocchi, 2021).

Building on these studies, this essay delves into a complementary and specific aspect concerning the acquisition of skills within informal gaming communities associated with game-making. These are environments where players can actively contribute to shaping games and narratives for the community itself. This essay explores this specific aspect to bridge current research in pedagogy and media sociology with both classical (from Piaget to Bateson) and contemporary studies (from Wenger to Resnick to Gee) within their respective domains. This analytical investigation seeks to examine a contemporary trend in the realm of video games, namely, the swift and pervasive proliferation of online gaming environments that have a strong social and

creative dimension, alongside low visual and graphic sophistication. Specifically, we are interested in exploring the similarities between the practices that are emerging in these environments and the dynamics observed in early childhood educational gaming environments, where the acquisition of play skills begins. The focal point of this article shifts toward identifying educational facets within the Roblox game-making community, where users autonomously design games in a virtual space or engage with games crafted by their peers. Employing an interdisciplinary lens that encompasses pedagogy and media sociology, our conjecture is that Roblox's success can be partially ascribed to the incorporation of game types aligned with the psycho-cognitive development of childhood, as articulated by Piaget and further nuanced by Resnick (Resnick & Robinson, 2017). Much like the pivotal role of games in kindergarten as facilitators of education, Roblox emerges as an informal learning community that supports social processes within affinity spaces, as expounded by Gee (2007). The parallels drawn between Roblox and educational environments underscore the potential for gaming platforms to transcend entertainment, assuming roles as dynamic educational tools within contemporary society. This research employs an explanatory case study methodology. The chosen case study focuses on the online, multiuser video game environment Roblox, categorized as a sandbox game. This specific gaming platform allows players to actively participate in the construction of games, offering a rich context for examining the motivations behind the prevalence of games characterized by simple aesthetic qualities, but with a notable openness to participant involvement in cocreating shared environments and narratives.

The theoretical framework underpinning this study draws on two primary domains. It incorporates elements of pedagogy and specifically examines learning processes within the context of childhood games. By delving into the pedagogical dimensions of gaming, this study aims to discern the educational value embedded in the gaming experience while considering how play contributes to cognitive development and learning.

At the methodological level, Roblox was deconstructed to highlight the main dynamics of play. These dynamics were then compared with the developmental stages of young children to understand whether parallels could be traced to justify the enjoyment that the Roblox environment elicits. Thus, the hypothesis of the present work is as follows: The success of Roblox stems from a re-creation of the preschool environment, where current players acquire important skills through play in a familiar and reassuring environment. A multi-perspective literature review was conducted to answer this hypothesis. The study also integrates perspectives from media sociology, focusing on informal learning within affinity spaces and participatory cultures. These theoretical dimensions elucidate the social dynamics and learning processes that occur organically within online game communities.

The Pervasiveness of Play in the Lifelong and Lifewide Learning Society

At the 1955 Macy Foundation conference, Gregory Bateson (1956) discussed the link between play and culture, describing culture as a layered system of shared norms and values. He suggested that play, as a form of non-formal learning, allows safe exploration of these cultural layers without violating social conventions. Erik Erikson (1968) highlighted play's role in identity formation, noting that games enable experimentation with social roles, especially in societies where young people explore opportunities before settling into fixed roles. Earlier, George Herbert Mead (1934) had identified play as crucial in children's self-development.

From childhood to adolescence and on to adulthood, play and games are hypertrophied into the liquid society of uncertainty (Bauman, 2000), where the scenarios and situations in which people act change very quickly, and behaviors do not have time to become established habits and procedures. In this context, playing becomes pervasive, serving as a way to experiment continuously with roles and identities. It extends to new experiences taking the form of gamification (Hamari, 2019), serious games (Fleming et al., 2017), alternate reality games (Milanesi & Morreale, 2021), and online multiuser gaming environments. Games emanate from the magic circle (Huizinga, 1938) and use any medium to engage players in a transmedia modality that constitutes the emerging techno-cultural paradigm (Leonzi, 2017) in our learning processes. In a constantly changing society, the themes of reconfiguring knowledge and skills throughout life have, in recent years, been the subject of study, research, and political action, targeting seamless integration into people's lives of forms of continuous learning opportunities, such as lifelong learning and lifewide learning. According to the European Centre for the Development of Vocational Training (Cedefop), lifelong learning is "any learning activity undertaken throughout life in a formal, non-formal or informal setting, which results in improving knowledge, know-how, skills, competences, and qualifications for personal, social, or professional reasons" (European Centre for the Development of Vocational Training [Cedefop], 2024a, p. 1). Lifewide learning is a dimension of lifelong learning and is about "learning, either formal, non-formal or informal, that takes place across the full range of life activities (personal, social or professional) and at any stage of life" (Cedefop, 2024b, p. 1). A significant part of informal learning activities, especially for younger generations, takes place in online-shared, playful environments (McGonigal, 2011), where they develop the ability to learn and constantly acquire new knowledge that will accompany their entire lifespan.

The maker approach, rooted in the foundational theories of Piaget (1951) and further developed by Resnick (2017), provides a theoretical lens through which to comprehend the evolving role of online sandbox environments as exemplary models for emerging learning platforms in a constantly changing society. Piaget's cognitive (1939) developmental framework underscores the importance of interactive, experiential learning, while Resnick (2017) expands on this by emphasizing the value of "learning through design" and collaborative creation. In a world characterized by dynamic societal shifts, the maker approach becomes particularly pertinent, emphasizing adaptability and creativity as essential components. In online sandbox environments, users engage in hands-on, collaborative activities, constructing virtual worlds and narratives. Grounded in the philosophies of Piaget (1951) and Resnick (2017), the maker approach provides a theoretical foundation that illuminates the transformative potential of online sandbox environments as models for learning platforms where players develop their learning abilities.

This learning competence is acquired from the first months of a cognitive development process in which games play a significant role, as described by important theories currently considered pillars of analysis.

The Role of Play in Child Development: Theories and Perspectives

Over time, several studies have explored the value of play for growth processes. Some of these studies and theories are referred to in this paragraph. They stem from traditional theories of play—from developmental psychology and evolutionary biology. These theories can be considered foundational, even if they are not exhaustive. The role of play in childhood is crucial, as it is a form of language through which children interact with and learn about their environment. Jean Piaget and Lev Vygotsky are two of the most

influential theorists in child development (Tudge & Winterhoff, 1991). Piaget's theory of equilibration viewed human development as an interaction between assimilation, accommodation, and equilibration (Bormanaki & Khoshhal, 2017). According to Piaget, children can develop cognitive skills and learn new information through play; they can also practice social skills, develop effective communication skills, learn self-regulation skills, acquire the ability to resolve conflicts, and work on problem-solving. In addition, when they play, children discover how to work with others, learn about themselves and their place in the world, and ultimately explore roles, interests, abilities, and relationships.

Piaget's cognitive theory (1939) recognizes four different developmental stages: the sensorimotor, preoperational, concrete-operational, and formal-operational stages (Babakr, Mohamedamin, & Kakamad, 2019). As Johnson, Christie, and Wardle (2005) emphasize, according to Piaget, children play different types of games that reflect their level of cognitive development: functional play, constructive play, symbolic/fantasy play, and games with rules.

In the sensorimotor stage (from birth to the age of 2), toddlers use their five senses to learn about their world. Exploratory play is the main type of play observed in this stage. Young children focus on two elements during this stage: their own bodies and external objects. According to Piaget (Piaget & Lewis, 1939), babies organize their knowledge conceptually from around the age of 6 months. Babies play through repetitive actions, like shaking a rattle. Later, these basic actions become play when the child engages in a specific activity intentionally and for pleasure (Frost, 1992). As they learn more about the properties of objects and how to manipulate them, they begin to understand the effects of play on their environment, and play becomes functional.

The second stage of cognitive development is the preoperational stage, which begins at age 2 and lasts until age 7. In this stage, children learn to associate objects with words (what Piaget (1923) called the "semiotic function"), and they use imaginative play to represent objects and build their conceptual knowledge through pretend and dramatic play. When children handle objects to create something, they participate in constructive play. Children develop their conceptual knowledge through constructive play and by asking questions, testing ideas, and gathering information. Children gradually make sense of their world and feel a sense of accomplishment. Piaget saw constructive play as a transition from functional to symbolic play.

Piaget's theory is especially known for its analysis of symbolic play, the most frequently studied form of play in childhood and educational psychology. In symbolic play, children interpret and reproduce life events from their own perspectives (Harris, 2007). For example, children can make great coffee using real or toy cups and have long conversations while holding a piece of wood or a stone to their ears. Therefore, what is important is the child's imaginative ability rather than the tools they are using.

Preschoolers enjoy role-playing and often incorporate social norms into their play. As their role-play and imagination become more sophisticated, socialization becomes an important part of their play. Children begin to assign roles to themselves and others, incorporating sequential steps and organized plans into their imaginative play. However, during the preoperational stage, their thinking is still driven by intuition rather than logic.

Logical thinking develops later in the concrete-operational stage (7 to 11 years). Hands-on games with rules become extremely effective learning tools. Initially, the rules provide the structure and repetition they need to develop logical thinking. Gradually, children focus more on the social aspects of play and move away from their egocentric thinking. In fact, they play to find connections with and acceptance in the group. When children use their imaginations and take part in symbolic or fantasy play, they develop cognitive abilities. In addition, new neural pathways are created whenever they think creatively.

Finally, during the formal-operational stage (12 years and above), children acquire the ability to reason, think hypothetically, and use abstract concepts. In this phase of cognitive development, children want more competitive games with complex rules and without adult guidance.

Any game in which the players have to follow certain rules is a game with rules, and they are the last type of play documented by Piaget (1951). To participate successfully in this type of play, children must first have the cognitive ability to understand and remember the rules. Second, the rules of these games require children to self-regulate and control their own desires and needs.

Games with rules are often characterized by logic and order, and as children mature, they develop methods and plans for their play (Frost, Brown, Sutterby, & Thornton, 2004).

It is important to emphasize that, according to Piaget's developmental theory (1951), play must be replaced by rational, logical thinking in adulthood (Harris, 2007). Some authors criticize Piaget for trying to reduce play to a function of thinking. They argue that this view is compromised by his preoccupation with a limited class of intellectual operations and that Piaget denies that play has any truly constitutive role in the thinking process (Sutton-Smith, 1966). Like Piaget, Vygotsky was primarily concerned with symbolic play, where play was defined in terms of creating imaginary situations (Pellegrini, 2009), but he was critical of Piaget's view of the young child as non-social and egocentric (Vygotsky, 1962). Like Freud, Vygotsky considered play to be a form of imagination that provides an escape from undesirable situations or a means to satisfy unfulfilled desires. For example, two children perform a symbolic game in which they want to drive a car, and each knows that they have neither a driving license nor a car. Nevertheless, they place chairs next to each other and hold up a plate in imitation of the driving scenes they have observed. Nothing is real, yet the game is highly rewarding.

According to Vygotsky (1962), this process is not an inferior variant of adult intelligence but rather a normal part of children's intellectual development. Through symbolic play, children first learn to use symbols and signs. Later, they learn to separate the meaning of a symbol from its referent and, consequently, recognize the arbitrary relationships between signs, such as words, and their referents. In Vygotsky's (1971) theory, this ability to represent alternative realities is realized through art, aesthetic expression, and imagination. One similarity between Piaget's and Vygotsky's theories concerns the importance of the social dimension of cognitive development (Bidell, 1988; Chapman, 1986; Pellegrini, 1984), except that an "experienced mentor" plays the central role in Vygotsky's theory (1978), whereas Piaget (1966) argues that peers are a stronger support for development than adults. A second difference between Vygotsky and Piaget is their conception of the functions of pretend play. Vygotsky (1978) regarded pretend play as a first-order symbol system, like drawing and some very early forms of writing. Piaget

(1966), on the other hand, considered pretend play to be primarily assimilative rather than accommodative and even believed that it should only be minimally associated with the creation of new knowledge.

Sociobiology has significantly contributed to understanding the role of play in the developmental processes of childhood. These studies are based on cost-benefit analyses assessing the adaptive value of a behavior (Barlow, 1989; Pellegrini & Gustafson, 2005; Pellegrini, Horvat, & Huberty, 1998). In short, human beings do not play to become adults; rather, they become adults as they play, and they can continue to do so. During the growth process, the skills acquired during play sessions can be useful when dealing with later situations. For example, in the context of environmental changes, especially radical ones, creativity is needed to generate functional responses. Bateson (1956) suggests that play is an ideal candidate to be at the vanguard of this change. The intrinsically motivating and non-instrumental dimensions of play during the juvenile period are, for Bateson (1956), fundamental for a creative response to new circumstances. In play, children recombine, eliminate, and add known elements. Acquiring such skills can be particularly useful during development. This kind of activity is intrinsically motivating, meaning that play will be sustained, thus increasing the likelihood of a solution arising during adulthood. Indeed, once a response is generated for a certain problem, it is likely to be used again by the subject and others who have observed the effectiveness of the solution. According to evolutionary developmental psychology (Bjorklund & Pellegrini, 2000), play is linked to both individual differences and behavioral flexibility. Correspondingly, it is possible to observe various alternative responses to the environment (Belsky, Steinberg, & Draper, 1991; Caro & Bateson, 1986). Summing up, the strategies used are closely related to the environment. When these responses are adaptive, they should be imitated and adopted by other members of society.

Pretend play is especially important in this model because children realize that they and their peers have different beliefs and desires (Hare, Brown, Williamson, & Tomasello, 2002; Humphrey, 1976; Jolly, 1966), yet they can still have fun together.

A good portion of the play processes previously described develop during infancy, at kindergarten, and in elementary school. Nevertheless, these same approaches to play do not end at these ages and can be observed in digital play contexts that target preteens, adolescents, and even adults. Drawing upon the detailed analysis of games provided in previous sections and considering the stages of development associated with the act of play, the following paragraphs scrutinize the world of online gaming and game-making within sandbox environments. The exploration highlights the capacity of online sandbox settings to emerge as learning platforms amid the dynamic landscape of contemporary society.

Childhood Play Dynamics Beyond Childhood: Online Gaming and Game-Making in the Roblox Playground

Following the extensive reconfiguration of experiences and daily life practices resulting from the COVID-19 pandemic, online gaming platforms have become important places for socialization and discussion, especially for young people. Some online playful social environments saw large increases in their user bases during the pandemic. For example, according to official data released by the game-maker community Roblox (https://www.roblox.com) in 2022, the number of platform users rose from 12 million in 2018 to 42.1 million in 2021, an increase of 300%. Studies show that exposure to mobile devices increased

by 200% from the start of the pandemic, along with the use of online gaming environments (Qustodio, 2021). YouTube, TikTok, and Instagram are the most widely used platforms among young people (Gaptain, 2020). The video games most used by children aged between 4 and 9 years are Roblox, Brawl Stars, and Minecraft. A recent study has found a direct relationship between the use of video games and the more frequent use of ICT tools among children for fun and education (Rangel-Pérez, Botey, Carrero, & Alard, 2023). The use of video games in leisure time helps children consolidate skills that are later applied in the school environment in formal education. According to Kye, Han, Kim, Park, and Jo (2021), Roblox can be considered an implementation of the metaverse in the form of a virtual reality simulation. Launched in 2006, it allows players to create their own 3D spaces and enjoy games in real time. Roblox is a "second real world" (Kye et al., 2021, p. 8) in which the virtual currency "Robux" is used and the economic ecosystem is complete. It features a game-making community where users can design games on their own in a virtual environment, or they can play games made by other users and interact with the Lego-like avatar that each player can build and customize. Other platforms, such as Minecraft, enable users to design virtual environments and places, architectures, and buildings, and also share their creations with other users, letting them explore those places with their avatars. These kinds of games are called sandboxes. But unlike other sandboxes, Roblox allows users to develop playful storytelling, not only playing a role with their avatar (play) but also developing rules for structured narrative games (game).

According to statistics provided by the company, in 2023, the number of daily active users rose to 66.1 million. Of these, 3.2 million users were creators of games (called experiences). The largest target group was children in primary and secondary schools. The platform is very popular among children aged between 5 and 16 years. Of the total number of Roblox users, 54.8% are children under the age of 13. In the United States, more than 55% of young people born between 1997 and 2012 had a Roblox account. More than other online digital environments, Roblox is especially popular among children born after 2012, who spend over 2.5 hours daily on the platform—three times more than on YouTube and seven times more than on Facebook. Young people use Roblox as a metaverse to interact socially and play games together. Players exchange approximately 60 billion messages in Roblox every day, a game community where they can also meet, trade, and exchange virtual goods and build social networks in a 3D visual environment.

Play and game are two concepts that are often used interchangeably, but there is a significant distinction between them. According to Huizinga (1938) and Caillois (1958), play can be defined as a voluntary, intrinsically motivated activity characterized by spontaneity, imagination, and enjoyment. Play is often open-ended, lacking explicit goals or prescribed rules. It allows individuals to explore, experiment, and engage in creative expression, unburdened by external constraints. The participants derive pleasure from the process itself rather than from external rewards. Play encourages improvisation and exploration and often involves the creation of fictional or imaginative scenarios, enabling participants to suspend reality and engage in make-believe worlds. As outlined by Piaget (1932), play refers to the set of activities related to functional play, constructive play, and symbolic play in the early stages of development.

A game (Crawford, 1984; Suits, 1978) is a structured activity that incorporates explicit rules, defined goals, and competitive or cooperative elements. Games provide a framework within which play can occur, introducing constraints and challenges that create meaningful experiences. They often involve a sense of progression, strategic decision-making, and outcomes that can be evaluated and measured. Games are governed by explicit rules that define the boundaries of acceptable actions. They can also foster cooperation,

teamwork, and shared objectives. Games often feature measurable outcomes that allow for the evaluation and comparison of performance. These outcomes may take the form of scores, rankings, or other quantifiable metrics.

Roblox seamlessly combines the two distinct dimensions of play and game, recalling Piaget's (1951) ludic and cognitive development processes. In the play dimension, Roblox becomes a vast virtual universe where players can explore, socialize, and express their creativity. The play dimension of Roblox is characterized by its immersive nature and the freedom it provides to its users. Players can engage in various activities, such as role-playing, conversations, and virtual world exploration. It is a virtual playground where individuals can interact using an avatar that can be customized. On the other hand, the game dimension of Roblox is based on the competitive and skills-based aspects of the minigames created by the community, from action platforms to puzzles, enabling players to immerse themselves in adventures, engage in competitions, and test their abilities. While the play dimension focuses on socializing and creativity, the game dimension provides challenges and opportunities for skill growth. Furthermore, the play dimension encourages community building, where players can collaborate, share ideas, and create their own virtual worlds.

The game-making community of Roblox, developed in a metaverse cocreated by users, encourages social practices among players. The less skilled can improve their knowledge and competencies by watching, communicating, and interacting with other players in an informal affinity space (Gee, 2007). According to Gee's (2013) conceptualization, affinity spaces denote environments—whether online or offline—where participants take part in shared activities and engage in communication centered on common interests. These spaces foster a culture of collaborative knowledge exchange and active involvement within distinct realms of interest, thereby facilitating informal learning opportunities. The framework emphasizes interactive dynamics and knowledge-sharing potential, underscoring their role in cultivating participatory learning experiences within specific domains of interest. As a community of game designers and players, Roblox is an affinity space where common practices and skills are shared among game makers and players. As a sandbox, Roblox is based on the building of a game environment cocreated by users within the rules defined by the Roblox Corporation. The platform embeds the principles of the constructionist approach (Papert, 1981; Resnick, 2017), where learners play an active role and take part in activities that improve their self-organization skills and creativity. In constructionist theory, learning is considered a reconstruction rather than a transmission of knowledge; thus, learning is most effective when some of the activities involve constructing a meaningful product through manipulative materials. In Roblox, manipulative materials are chunks of a simplified programming language called Lua, which is freely available to all users.

In online environments like Roblox, the maker and cocreative approach, shaped by the theoretical perspectives of Piaget and Resnick, is associated with a community-oriented environment where the integration of shared social spaces and playful dimensions is a particularly fertile ground for investigating continuous learning in the informal contexts that characterize the increasingly close association between online and offline life.

Affinity Spaces, Media Imaginaries, and Participatory Design in Roblox

In affinity spaces, people gather and interact positively around common and shared interests and passions. This fosters engagement and a willingness to socialize knowledge and skills because the in-group is

cohesive. While experts enjoy receiving recognition for their skills, novices enjoy the experience of gaining new knowledge in their topics of interest. In Roblox, numerous references to popular culture from the entertainment world (games, series, characters, etc.) serve as a motivational factor, drawing players closer to new game mechanics and social spaces due to their curiosity and wonder at experiencing their own preferred imaginaries while interacting with others. The most-played experiences on Roblox include games like *Anime Adventures* (Roblox Fandom, 2024), inspired by the world of anime and manga, and *Blox Fruits* (Blox Fruits Wiki, 2024), which reimagines the universe of the popular anime *One Piece* (Kopper, 2020). The reference to well-known imaginaries provides a reassuring and simultaneously motivating framework for players, as they can socialize their passions and share them with other players. At the same time, Roblox adds interactive (ergodic) features to the shared imaginary of portrayed cultural elements that acquire properties not present in any previous representation (Piano, Ilardi, & Ceccherelli, 2021). Users interact within transmedia extensions of their preferred imaginaries, cocreating storylines and shifting seamlessly between play and game. The Roblox programming language, known as Lua, is central to this process. It serves as the backbone of game development on the Roblox platform. Lua is a lightweight, versatile scripting language that offers a user-friendly syntax, providing game creators with tools to manipulate objects, define behaviors, and create interactive gameplay experiences. Roblox Studio, the platform's integrated development environment (IDE), provides a user-friendly interface that simplifies the process of writing and testing codes, thus lowering the entry barrier. Furthermore, the Roblox platform fosters the development of game communities where creators can collaborate, share knowledge, and learn from one another, enhancing the learning experience.

Roblox has assimilated the knowledge gained from studies on how members of communities of practice learn and support each other's involvement. In these communities, individuals initially learn by observing as spectators and gradually progress to more active engagement through specific fundamental activities. Skilled participants play a crucial role in motivating the progress of others and encouraging greater participation. This phenomenon, as described by Jean Lave and Etienne Wenger (1991), is known as *legitimate peripheral participation*. Newcomers and beginners are able to integrate more effectively when they observe and learn from experienced participants, such as when apprentices are assigned tasks like sweeping the floor, enabling them to witness and gain insight into ongoing activities and the application of skills by others. According to the authors, the periphery of a community is empowering because it offers a protected space where individuals can gradually increase their participation while benefiting from the support and guidance provided by various community members. As in communities of practice and affinity spaces, peripheral activities in Roblox enable novices to become familiar with the community's tasks, terminology, and organizational principles. Over time, they outgrow their newcomer status, and their participation becomes increasingly central to the community's functioning. They start by designing their own avatars and interacting with other avatars from the periphery while learning the community's practices and language. They then start to play games, learn rules, and compete or cooperate with other players. Some skilled players can provide the scaffolding for more complex and central activities toward the final stage, that is, game-making, where players can become designers and storytellers.

Roblox as a Learning Space

This article highlights the elements that have made this relatively simple product a widely successful game among preteens and adolescents. Aside from the peculiarities related to its design

structure, its success can be attributed to the merging of multiple game logics into a single social space. Indeed, all the game types described in Piaget's stages of development can be found in Roblox (Babakr et al., 2019). As in functional play, users can explore objects as they are intended to be used. Functional play shows users how objects are to be used in relation to each other and for their intended purposes. Of course, such processes require more complex skills commensurate with the age of the users, especially when users engage in designing and making games. In fact, manipulative materials in Roblox can also include chunks of the Lua programming language.

It would be interesting to investigate the reasons why users participate in such construction phases. This could be partly due to self-realization: It may be that the construction design of games for the community represents a form of social recognition for the designer. Roblox offers vast opportunities to develop symbolic games; users can experience various realities through avatars and multiple imaginaries. This reality is placed in an open system between the real and the virtual. Roblox provides all the structural elements that characterize the first playful experiences of each player. The game types are quite simple, and the concept is not new. What makes Roblox different, and perhaps explains its success, is that all these playful modes are brought together in a single environment. In kindergartens, children can explore and have free access to different forms of play, and all the different spaces are well laid out and in order. Similarly, Roblox users have access to different game modes. Another important aspect reminiscent of childhood learning dynamics is the ability to observe experienced users. On Roblox, users can interact with other users and environmental factors and compete or cooperate with peers. These factors improve users' interactive experience, motivation, and interest and promote peer-to-peer exchange. Players can realize that they have a different or similar desire to their peers to share a game space while participating in the construction of the same affinity space. Furthermore, Han et al. (2023) underline that task settings in Roblox place emphasis on challenges and cooperation, so players have to collaborate to complete a task. Han et al. (2023) summarized three main areas of use of Roblox in learning: social interactive learning and collaborative learning, VR environment-supported learning, and programming/STEM education. It is an immersive experience, as users can immerse themselves in a game context and a social context where, with no particular aim, they can live in an intense game space for the sake of it. The skills acquired during play sessions on Roblox can be useful for dealing with subsequent situations for a potentially unlimited period of time. Perhaps because it allows for a known universe, this playful proposal puts users at ease and enables them to share different interests. The Roblox experience is linked to both individual differences and behavioral flexibility. Correspondingly, it is possible to observe various alternative responses to the environment, as highlighted in evolutionary developmental psychology theory. Through the free circulation of games and interaction between different users, it is possible to stimulate the development processes of autonomy, self-esteem, and independence. These features make it particularly suitable for personalized learning paths. Personalization is an ever-expanding umbrella term that includes different expressions and perspectives, including student-centered learning and learning tailored to individual student needs (Bransford, Brown, & Cocking, 2000; Sebba, Brown, Steward, Galton, & James, 2007), which traditionally describe good teaching practices. The personalized learning approach aims to encourage students to learn in a way that suits their abilities and skills, allowing them to break down and build on the information they receive in the classroom. Roblox can be a great opportunity to achieve the goal of personalized learning and provide concrete help to teachers to diversify their teaching. Roblox can support teaching and learning strategies that actively engage students to develop their competence and confidence, as kindergarten

teachers do. People create an entire life filled with complex "recipes for play" by which to learn and relate to the world, with "ingredients" that are tested for the first time in kindergarten.

Conclusions and Further Directions for Research

Play is distancing and moving away from reality; it is a suspension of the activities of ordinary life; it is non-literality, make-believe, and parody of reality, imitation. It is fun, euphoria, joy, and laughter, but it is also commitment, concentration, and seriousness; it is superfluous but also necessary; it is adaptive and transgressive, biological, and cultural; it is freedom and unproductivity, but it is also constraint, calculation, rules, and strategy. (Braga, 2005, p. 18)

This is how Braga (2005) describes the complexity of gaming. Educational potential cannot be summarized in a narrow space of human existence. At the same time, play activities must take on ever greater dignity and value in educational processes. As Montessori (1953) said,

> If you watch a small child of three, he is always playing with something. That means he is elaborating with his hands, putting into consciousness, what his unconscious mind had taken in before. It is by this experience in the environment in the guise of playing that he goes over the things and the impressions that he has taken into his unconscious mind. It is by means of work that he becomes conscious and constructs Man. (p. 27)

The educational potential of Roblox is clearly evident to designers, to the extent that it is recognized in the educational section of the website: "We're constantly working to make it easier and more convenient to use Roblox in classrooms and other educational settings so that students everywhere can benefit" (Roblox Education, n.d., para. 2).

The trend of rapidly spreading online gaming environments that emphasize strong social and creative features alongside simple graphics was investigated by analyzing the parallels between these characteristics and the dynamics of educational gaming in early childhood. The aspects of Roblox that are reminiscent of play proposed in kindergarten, along with their community-based social features, were investigated to highlight the theoretical foundations that cast light on the transformative potential of online sandbox environments as models for learning platforms where players develop their ability to learn.

The reference to a playful approach that is well-known to users could also, in part, explain the success of Roblox. This analysis underlines the potential for the use of online game-making communities like Roblox, not only by young players in formal and informal settings but also as a model for the future development of learning platforms capable of meeting the challenges of lifelong and lifewide learning.

Using an interdisciplinary approach, this article explored how game-making communities seamlessly combine both dimensions of play and game to provide a virtual universe for creative expression and competitive gaming. The remediation of popular media imaginaries enabled by the game-design features of platforms like Roblox is an engaging cultural activator (Jenkins, 2006) that fosters community building and collaboration and integrates interactive (ergodic) elements into a collective imagination of depicted cultural elements, imbuing

them with attributes that are distinct from any prior representation (Piano et al., 2021). The platform facilitates collaborative game development and supports the learning process within an affinity space (Gee, 2007) through legitimate peripheral participation (Lave & Wenger, 1991), where newcomers gradually integrate into the community, learn its practices, and eventually become designers and storytellers.

The interdisciplinary approach combining pedagogy and the sociology of media offers a lens for analyzing the complex dynamics at play within the virtual environment of online game-making communities. With its focus on learning theories and cognitive development, pedagogy enables researchers to understand how users engage with and learn in virtual social environments. On the other hand, the sociology of media provides a broader perspective from which to investigate the social structures that shape users' interactions within the platform, uncovering the social dimensions of Roblox. These include the influence of popular media imaginaries in motivating community building and the potential offered by the integration of social game-making features as a model for more complex sociotechnical systems, such as formal and professional learning communities.

There are several areas for further analysis involving both users and developers. Combining pedagogical and sociological approaches, future research could explore Roblox's application in specific educational contexts, assessing its impact on learning outcomes within distinct disciplines. This could provide valuable insights into effectively using Roblox in discipline-specific settings.

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