The Impact of Games on Architectural Education and Awareness of the Commons

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Introduction:

The majority of architecture education programs are structured according to a strict hierarchy of concepts and methods that are deemed to be reliable, recognisable, and stable. (M.S. Garcia, 2020) The intersection of games and architectural education has opened up new and exciting paths for learning and specifically exploring the concept of the common.
The common, in its essence, represents a shared resource that is owned and managed by a community. "Common" functions as both a noun and an adjective in this situation. When used as a noun, it means the resource itself. It can be anything from a public park to a digital platform. When used as an adjective, it specifies how the resource is owned and managed. When a resource is referred to as "common," it signifies that more than one person or organization does not own or control it privately. Instead, it is collectively owned, and decisions regarding its usage and management are usually made in agreement. Sharing, cooperation, and sustainability are concepts that are deeply related to the idea of the commons. It emphasizes that rather than being exploited for personal gain by a select few, some resources should be managed in a way that benefits the entire society and makes sure their long-term power.
With gamification in Architectural education, the learning methods had a great transformation, reaching levels of effectiveness and engagement never seen before. “Gamification is the use of game mechanics in non-game situations.” (F. Valls, 2016) Using game design concepts, it is about improving the fun, interactivity, and rewards of tasks or experiences in order to promote desired behaviours and results. The idea behind gamification is to use the psychological factors that make games interesting and addictive.
This paper aims to research the aspects of adding games into architectural learning practice, focusing on the potential for creativity and collaboration through modding virtual worlds, as well as the risks associated with limited real world impact. Additionally, the research will explore how games can create a deeper understanding and appreciation of the common among architecture students, finding a sense of belonging and empathy for users' needs and preferences.
The first section of this paper will have a brief but informative history of games and architectural education. Moving forward, the essay will explore the positive aspects of games in architectural education, such as modding, collaboration and problem solving. Furthermore, the research will consider the potential negative aspects of games in architectural education, such as limited real world experience and taking fun away from games. In the last section, the paper will analyse the awareness of commons for architecture students with games and how it can be improved with gamification.

I. The Beginning of Games and Architecture

Initially, games were actually developed primarily for military training and education, with shooting games being among the early examples in this context. These games were designed to simulate real world military scenarios and provide soldiers with valuable training in combat and strategy. Over time, the popularity of games grew, and they transitioned from being exclusive military tools to entertainment for the public, becoming some of the most played and beloved games to this day.
But games related to architecture and gamification started with urban and regional planning. The strategic way to play war and business games were adapted into lecture material. Beginning in the early 1960s, planners realized that war simulations might be modified for growth rather than destruction because they can simulate a variety of scenarios while taking complex circumstances into account. Urban planners adopted the idea of optimization rather than a solution in the face of opposing goals from military simulations. (E.M. Keslacy, 2015)
Richard Duke was the first person to open a path for laboratories to create and test urban planning games. One example of this is the Environmental Simulation Lab at the University of Michigan. In these laboratories, there were a lot of games, simulations as they called at first, have been made. These interactive experiences evolved into what we now commonly refer to as urban planning games.
One noteworthy game developed within this context was Metropolis. It was created especially for educating university students or young professionals in the fundamental decision processes involved in urban land use changes. Players were tasked with portraying one of three crucial roles: politician, speculative developer, or city administrator. The participants' actions had an effect on the tax rates, population growth, school spending, and the availability of optional funds, which prepared the way for the cycle that followed. (R. Duke, 2013)

II. Positive Aspects of Games for Architecture Education

a. Modding Virtual Worlds:

One of the most significant positive aspects of games in architectural education is the concept of "modding," which refers to the act of modifying virtual worlds within games. Games like Roblox, Minecraft, and Garry's Mod have long offered players the opportunity to engage in modding and level design, adding a new layer of enjoyment and creativity to the gaming experience. This gives the player the ability to modify game environments while giving room for experimentation and creativity.
These virtual worlds in games serve as testing grounds for architectural ideas. While modding, the gamer can usually ´fly´ in the environment and see the place in a new way allowing students to view their architectural creations from various angles and distances. This freedom allows students to explore unconventional ideas, pushing the boundaries. While some games have physics simulators (like gravity and collision), the most popular ones do not have these simulators. This makes it interesting to see what can be done without the restraints of the gravity. By finding themselves in these virtual landscapes, students can push the boundaries of traditional architectural thinking.
In traditional architecture education, once a project is completed and submitted, it is often considered finished. The students do not go back and revise the project after submission. It is

finished, most of the times, even if there are room for growth. However, modding in virtual worlds changes this dynamic entirely, by creating a new sense of ownership. Because of the convenience of editing and changing this game environment, it is easy to go back and improve all the time. This continues process is crucial in the development of an architecture student's skills and mindset. As they witness their projects evolve and improve over time, students begin to view their work as an ongoing journey rather than a one-time brain activity for a specific semester. Failure becomes a valuable aspect of the learning process, as students can quickly make adjustments, test new ideas, and understand the outcomes in a risk-free environment.
Another significant benefit of modding virtual worlds is that it allows students to collaborate with others. Students can share their mods with each other and get constructive feedback on their work. This can help them to improve their designs and to learn from each other.

b. Collaborative Design Opportunities:

Traditionally, art and architecture education has been focused on the individual artist or architect. It is making education a competition between students, trying to put some projects higher than the others, which is only based on the lecturer’s preference. This way of education is potentially risking the sensibility. Architecture in reality is never a solo project. Architects always work with other professions, such as engineers and other designers.
In contrast, games, particularly multiplayer ones, offer a fresh perspective on collaborating with other professionals and players. It's interesting to note that a study (C. Llinares, 2014) discovered that when urban landscape computer simulations were presented as games, architects and non-architects reviewed them differently. The game-based method enables non-architects to actively participate in the evaluation and critique process while simultaneously enabling architects to successfully express their design thoughts. This gamified environment serves as a new platform for the exchange of concepts and information, bridging the gap between professionals and the general public. This is a new way to exchange ideas and knowledge. This game approach takes the ideation from pen and paper sketches to 3d virtual worlds, creating a new way to shape design together.
In addition, games can help students to overcome the challenges of distance learning. Especially in Covid-19 times, it was especially hard to work on group projects for students, not being able to use even traditional pen and paper was really harsh, and lots of ideas got lost because of the language barrier. With games and virtual worlds, it is much more than just a 2d sketch but a bigger and more detailed understanding of new designs.
Virtual collaboration by games are breaking down geographic barriers and opening up a new world by being global. It is much more diverse and encouraging. Every architecture education is different even in the same city, so sharing the way to learn with other students and universities open up different understandings of architectural education. It is a way to feel connected to the people even from the other side of the earth.

c. Innovative Problem-solving Skills:

Games often put players in interesting challenges and complex puzzles that require unique and creative solutions. By adding games into architectural education, the puzzle based nature of the games can contribute to helping students to think outside the box and find new ways to solve the problems.
One fascinating example of a game that has innovative problem-solving is Monument Valley. This game challenges players to navigate through visually aesthetic and surreal landscapes, manipulating optical illusions and architectural elements to progress through each level. The

game's clever design forces players to question their knowledge about spatial relationships and explore new perspectives, encouraging their creativity.
Another good example is Subnautica, a survival-adventure game set in an underwater world. Although the game is not primarily focused on architecture or design, the game presents players with the task of creating a base to sustain life in the depths of the ocean. This forces the player to think about living under the sea and the challenges that comes with it.
By actively interacting with these games, architecture students can expand their problem-solving methods. They learn to understand complexity and unpredictability, recognizing that there may be multiple paths to solving a design challenge. Furthermore, games in architecture education promote a culture of experimentation and risk-taking. Failure becomes an essential part of the learning process, as students are encouraged to explore different approaches and learn from their mistakes.

III. Negative Aspects of Games for Architecture Education

a. Taking the Fun Away:

There is always this risk when combining something fun with education. It can be games like hide and seek to virtual gaming experiences, it can take the fun away. After all, architecture is a creative and artistic field, and some people worry that using games could make it feel more like a chore.
When doing something you like as a hobby or doing the same thing as a mean of making money, there is always a shift in perception and feeling. Naturally, when something becomes a must or requirement, humans don't enjoy it the same way. It loses the charm. However, there are a few things to keep in mind here. Making money from a hobby, even if it is not fun as it was, it can hold greater value than making money from a boring desk job. And the same way applies to the subject here, it can be argued that it is still a better learning method than just conventional, sitting in a lecture hall and listening to the professor.
It is essential to recognize that not all games are equally suitable for educational purposes. Just as there are educational books and entertainment books specific to different preferences and purposes, games can also be categorized into those that focus on entertainment and those designed with educational value in mind. Selecting games that align with specific learning outcomes and goals is important for game-based learning while minimizing the risk of losing the fun element.

b. Limited Real-world Impact:

One of the potential drawbacks of using games for architectural education is that they may have limited real-world impact. "Physical and digital spaces may share formal, stylistic, cultural, and environmental characteristics, but they are lived in very different ways." (M.S.Garcia, 2020) There are some games that use physics simulators, but there are still many aspects of the physical world that humanity does not fully understand or has yet to accurately simulate digitally, it is impossible to create a virtual world the same as the physical world. While virtual worlds can offer a degree of creative freedom that might not be possible in the real world, this freedom can sometimes lead to designs that are impractical or impossible to realize physically. This creates a difference and the game world may not affect real world practices. Virtual worlds have simple mechanics and limitations than physical spaces.

On the other hand, the limitations present in virtual worlds can also be viewed as an opportunity for creative exploration and problem-solving. It gives a freedom, to go wild and create designs that can not be done in the real world. The challenges from these constraints help students and architects to think critically and collaboratively with engineers and other experts to imagine potential real world applications. This exercise in linking between virtual and physical realms becomes a valuable brain challenge, encouraging learners to consider the engineering and logistical aspects necessary to translate innovative virtual designs into practical built environments. Moreover, the freedom to experiment and think beyond conventional constraints can lead to groundbreaking and visionary ideas.

IIII. Creating Awareness of the Commons Among Architecture Students

a. Understanding the Users:

“Video games are a powerful medium for communicating ideas about architecture. They can allow players to explore and interact with virtual spaces in ways that are not possible in the real world. This can be a valuable tool for architects, who can use games to test their designs and get feedback from users.” (M. Sweet, 2013)
Traditionally, there has been a tendency in architecture to adopt egoistical methods of learning, leading to a disconnection between designers and users. Architects and architecture students started to design for themselves and to prove some ideas, rather than considering the practical requirements and desires of the people who will ultimately inhabit and use the spaces they create. Regrettably, more and more projects can be seen in architectural competitions, that won´t work in the area and context that they have been designed for. However, through these interactive mediums and virtual worlds, students can put themselves in virtual spaces, opening them to experience and explore the environments from the perspective of potential users. As students engage with the virtual worlds and games, they can experiment with various design choices and witness the impact of their decisions on the user experience This hands on approach enables students to gain knowledge into their needs, preferences and behaviours. Moreover, virtual worlds and games enable students to receive direct feedback from users without the need for costly and time-consuming physical prototypes. This method enhances the design process, encouraging empathy and sensitivity. Students may start to shape spaces that are not only aesthetic but also functional and user-friendly.
One example of this might be the famous game the Sims. After the successful launch and especially with Sims 3 (2009) and Sims 4 (2014), people have started to model their own houses and rooms. They have put the furniture in their own houses and designed their living spaces. They became both the user and the designer, while putting their avatars in those houses and watching how they are living in that simulation game. According to C. Thompson, 2003, “The Sims is a laboratory for understanding not only our personalities, but also our personal spaces"

b. Understanding the Commons:

Multiplayer games allow architects to personally experience the commons firsthand by actively participating in shared virtual spaces with other players. While doing so, it highlights the importance of designing for the collective and the impact on the users. For example, a game might require players to work together to build a shared structure. The games which have this feature present are usually survival games, in which players are trying to survive the wild environmental elements and building a base structure for essential needs. In these games, players often separate their roles, like gatherer, builder, cooker, fighter etc.
Virtual worlds offer a safe and controlled environment for architecture students to explore and experiment with ideas related to the commons. While virtual commons may be different from real world commons in terms of the selectiveness of the participant group, as they remain limited to the players, they still provide an important platform for collaboration and knowledge sharing among like minded individuals.
Understanding and considering the feelings and needs of the people who will use a building is crucial in architecture, but it's not always fully recognized. Additionally, when architects imagine how their designs would play out in different situations, it can make them think about the broader social, political, and environmental impacts of their work. This can inspire them to prioritize ethical considerations in all the decisions they make. (J. Collier, 2006)
Participating in these virtual commons creates a collaboration, opening a path for architects and students to interact with others who share similar interests and goals. By exchanging ideas, insights, and feedback within these virtual communities, architecture students can improve their understanding of the commons and how to design spaces that truly serve the collective. Architects can take risks and try out innovative concepts, which may not always be feasible or practical in physical spaces.

c. New Sense of Belonging:

Traditionally, architecture students often find themselves navigating between two worlds—the technical and analytical world of engineering and the creative and imaginative world of artists. This being in the middle ground can lead to feelings of being lost or isolated within the university. As students try to be the best in their studies and showcase their individual talents, it can create an environment where collaboration and a sense of community are overshadowed by individual goals, creating a lonely environment for students.
However, the virtual worlds and multiplayer games create a new sense of belonging. With these virtual worlds, students can meet with like minded people. These virtual communities become a space where students from different backgrounds and experiences come together, linked by their interest in architecture. Groups created in these worlds can become important sources of inspiration, knowledge-sharing, and emotional support for architecture students. Having a space to interact with others who understand their struggles and imaginations can provide motivation. This sense of belonging can enhance the overall learning experience, creating a positive and inclusive atmosphere where students feel comfortable expressing their ideas and seeking feedback from others.

Conclusion:

“There is a whole new generation of students learning that questions are more important than answers, that process is more important than the product, that the architect is more than a form-giver, that architecture is more than a series of individual monuments. What now exists primarily as a revolution in the schools could well become a revolution in the profession.” (Revolution in Architectural Education, 1967)

The incorporation of games into architectural learning practice holds great potential for architecture students to explore and engage. It transforms the way architects feel about themselves, the users, the commons and thus influencing the way they approach the design process. They begin to view architecture not merely as a technical exercise but as a means of creating spaces that positively influence people's lives. These game based solutions create a culture of creativity, innovation and thoughtful way of thinking while designing. As a result, students develop a new understanding of projects, not seeing them as a short term work but a continuous way of learning and opportunities. Moreover, games serve as an important factor for creating awareness of the common among architecture students. By putting themselves in virtual worlds and simulations, students gain valuable knowledge about the importance of designing spaces that serve the collective needs of users. Additionally, the gamified learning environment develops a risk-taking and experimental mindset. Students are encouraged to experiment with various design concepts, investigate innovative concepts, and grow from their mistakes. This environment of creative discovery builds confidence and adaptability, two attributes that great architects need to have in the real world.

For the evolution of architectural education, it is crucial for educators and institutions to embrace game based approaches, integrating them into the curriculum. The role of games in architectural education should be seen as a means to go away from traditional teaching methods, encouraging students to explore, experience, and collaborate in endless virtual environments. By using the power of games, architectural education can evolve into a dynamic and adaptive discipline, shaping a new generation of architects who are not only technically proficient but also creatively driven, empathetic, and careful to the needs of the users.

In conclusion, games in architectural learning bring a revolutionary shift, empowering students to question conventional knowledge and prioritize processes over products. The architectural landscape is being enhanced through this innovative educational approach's creative ideas, environmentally friendly solutions, and a strong commitment to creating places that meet the requirements of people, communities, and society as a whole. The architecture profession is likely to be forever changed by the revolution brought on by game-based learning, which could push it in the direction of more inclusivity, adaptability, and human-centred design.

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