Minecraft games and public participation in landscape design - current teaching experience

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ABSTRACT: The Covid-19 pandemic has resulted in a shift to on-line teaching and enforced adjustments to academic curricula all over the world. It has also affected the teaching of participative landscape design within landscape architecture studies in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland. In this article, the authors summarise experiences from the Social Communication subject during the 4th and 5th semester of landscape architecture directly linked to integrated design studio. A number of methods facilitating public participation were tested and included on-line questionnaires, social media profiles, on-line focus group interviews and elements of gaming on a special Minecraft server. Results indicate that although on-line participation may be fruitful, it requires considerable efforts in terms of time and workload. Therefore, despite the promising results, on-line participation requires as much careful planning and time management as traditional social research methods. Nonetheless, the on-line tools have proven to be particularly useful and appropriate in times of social distancing in the pandemic.

INTRODUCTION

Innovative principles of teaching social communication and participatory methods in landscape design are some of the distinctive features of the landscape architecture curriculum in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland; and they comprise a typical holistic approach to landscape architecture design [1]. The rationale behind teaching social communication to future professional engineers, including landscape architects is that they should not only excel in technical aspects, but also be aware of their social mission of creating …*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors,* as stated in European Landscape Convention (ELC) [2].

Over the Integrated Design Studio (IDS) course during the 5th semester of Bachelor studies, students have an opportunity to apply knowledge from social research introduced during the 4th semester. The curriculum has been oriented towards the benefits that may arise from public participation and the application of social research methods in landscape planning. It also includes the testing of specific tools ranging from those aimed at the investigation of various stakeholder needs in local communities to those that would elicit inspiration and design solutions proposals. In the semester following the completion of preliminary studies, students organise a participatory planning workshop, which marks the beginning of the design stage (see Table 1 within the Social Communication subject).

Table 1: Links between Social Communication and Integrated Design Studio: public park project.

Semester	Social Communication		
	Actions	Outcomes	
4 (Spring)	Desk study Planning document analysis On-site investigation Observatory research Surveys and questionnaires Interviews Focus group interviews (FGI) Brainstorming sessions	Preliminary studies for the park design: • identifying the extant situation before the design • identifying the appropriate circles of stakeholders • insight into the local community's habits, needs and preferences	
5 (Fall)	Participatory planning workshop:	Report from the workshop: • detailed guidelines for the	Integrated Design Studio - public park project

	thematic stands on particular problems, issues or functional elements of the park • large-scale model to build and experiment on	project • information on the stakeholders' preferences • most important elements needed in a particular location • draft of functional zones and paths layout	Design based on the guidelines resulting from the research outcomes and problems in the study curriculum, consisting of a site management plan in scale 1:500, sections, 3D visualisations, planting concept and numerous detailed elements

In this article, the authors focus on the most current aspect of integrating social issues into landscape design education, related to the Covid-19 pandemic, which has resulted above all in the reduction of traditional personal communication. Remote learning has become a must and evoked mixed emotions among students as stated, for example, by Kobylarczyk and Kuśnierz-Krupa [3]. This change demanded a swift reaction over the course of semester and immediate adjustments of the traditional methods to the new circumstances, on-line teaching and overall communication. In Poland, the initial month of radical lockdown with restrictions on mobility from the middle of March 2020 limited even on-site observatory research. A significant change in all other investigations followed and forced both teaching staff and students to switch to on-line participation tools of public involvement in their semester project on a public park design, including the experimental use of Minecraft as a substitute of the usual participatory planning workshop.

PUBLIC PARTICIPATION AS A STARTING POINT FOR EFFECTIVE PUBLIC PARK DESIGN

Benefits from public participation at many stages of landscape design are manifold. Public participation is highly valuable for all sides of the design process. A designer can receive relatively quick and efficient feedback that leads to creating a precious user experience which should be the one of the ultimate aims of the professional effort. Furthermore, incorporating the feedback amplifies the overall satisfaction of the user in terms of implemented design. As noted by Staniewska, the results of participative planning training of landscape architects can be seen later in their professional practice in the tendency to involve stakeholders in the design stage [4]. Furthermore, promoting and developing cooperation between academia, municipal authorities and green design policy offices, and involving them in decision-making helps in the creation of new public parks.

The participatory process has to accommodate specific situations, since social and cultural norms, age and location of stakeholders are crucial factors. Participatory design as an underlying principle for the design of public spaces is difficult, but highly rewarding in many aspects. Apart from the obvious benefits, such as educational value, public participation is widely recognised as a source of strengthening bonds of society. Particularly valuable is also knowledge about the regular patterns of space use in the case of space redesign, and the awareness of the existence and importance of key stories behind the established activities of a given community or actions undertaken in certain investigated areas.

Public participation brings an unprecedented chance to broaden the designer's point of view and helps wisely guide the design process of the park, which following also the preliminary guidelines can fulfil the expectations of current and future users. Moreover, the value of boosting creativity by the pure and unforeseen ideas of stakeholders should not be underestimated. As observed by Borucka et al and based on various international experiences …*students' engagement in the implementation of a participatory design and research project raises their awareness of practice-based professional activities and scientific aspects in education* [5], which is highly important for their future career. Over the years, landscape architecture students at the FA-CUT have taken part in 19 cycles of participative public park planning during the IDS course.

SELECTION OF PARTICIPATION TOOLS AND METHODS

The urban context of the future park was, as usual, a densely populated area in one of the districts in Kraków, Poland. During classes, students identified several groups of stakeholders and collectively made decisions on using specific social research methods with particular groups. Commonly used were paper surveys and questionnaires, face-to-face interviews, GIs and an open participatory planning workshop in a local school or public cultural institution. In 2020, due to the Covid-19 pandemic restrictions, students were barely able to carry out preliminary observatory on-site research similar to the project for public spaces (PPS) methodology [6] (see Table 2).

Table. 2. Social research methods used usually and during the pandemic over the course of social communication in public park landscape design in 2020.

Social research methods used usually	Social research methods used during the pandemic in 2020	Observed problems
In-person individual interviews Paper surveys and questionnaires Focus group interviews Information: paper posters Participatory planning workshop	On-line and telephone interviews (Skype) On-line questionnaires (Google Forms) On-line group meetings (Zoom) Facebook profile, Instagram Minecraft server, on-line facilitation of game (Discord)	Lack of face-to-face communication Less possibilities to encourage and activate participants Problems with reaching particular groups of stakeholders Lack of computer literacy in some stakeholder groups

While it was quite easy to convert some methods to their on-line equivalents using commonly accessible applications, such as Skype, Zoom, Google Forms and social media (Facebook and Instagram) as a Web information board, the participatory planning workshop remained particularly challenging.

To find a solution on how to conduct a fruitful participatory planning workshop in the time of pandemic, the authors decided to use the flipped classroom approach [7] and provided students with the video recordings of previous workshops and an on-line lecture to intensively use in-class time for active learning and problem-solving activities. During the class, students indicated their preference to involve stakeholders in hands-on activities rather than to use whiteboards (such as Google Jamboard, Mural or Miro). This was the reason why they suggested building a model of the project site in Minecraft.

ORGANISATION OF A WORKSHOP ON MINECRAFT

Minecraft was chosen as an experimental game environment to enable stakeholders' involvement in the participatory design process of the public park, next to the Podwawelskie housing estate in Kraków, Poland. The idea of using this tool came from the students who suggested it as a good equivalent of constructing a large-scale model of the site to engage the stakeholders in creating their own components and landscape of the future public park. The choice was made since the game is engaging and easy to use.

Minecraft, released in 2011, is a digital blocky environment claimed to be the best-selling video game of all time [8]. It can be played either in survival or creative mode. In creative mode, players have unlimited resources and are free to construct their world of blocks and introduce new gameplay mechanics and items. The method fulfils educational requirements as it is feedback friendly and let users easily identify flaws in the current design of the site and suggest their own improvements. The other aim was to uplift the stakeholders in hard times by the invitation to influence changes in their environment.

The whole student team was working in task-focused sub-teams. The technical sub-team responsible for transferring into the virtual environment the design site consisted of two members. The model had been made adopting the level of detail equal to 1 metre [9]. The nature of the Minecraft square design had been minimised by applying such a detailed projection of the real world. As a result, users were able to create more organic items and express their ideas more precisely.

The time spent by 3D modellers on transferring circa 124,992 sqm meters of the terrain (including greenery: 327 trees, visible infrastructure and 19 buildings) equalled around 50 hours. The other sub-teams were responsible to: set up the game server; implement the environment into the game; create a simple manual - how to play; create a set of rules for users; set up a Discord channel for the event; and finally, to set up an advertising campaign in Facebook and Instagram. The technical work, time up to the opening of the participatory workshop to the public, took around further 20 hours shared between nine team members.

The on-line sessions of the participatory workshop were held for 126 hours altogether, starting from 27 November 2020 to 18 December 2020, on weekdays between 4 pm - 10 pm (6 hours), and on weekends between 2 pm - 10 pm (8 hours). Due to system-specific issues and potentially inappropriate user behaviour, including virtual vandalism, the students had to take shifts to prevent or swiftly manage such issues or activity. That unforeseen activity brought an extra load of work and took an additional effort during the off-study time.

MINECRAFT IN EDUCATION AND AS A PARTICIPATIVE PLANNING TOOL

Numerous scientific papers published within the last ten years explore theoretical and practical connections between Minecraft and education (qualitative studies prevail). The game has a high educational potential and is often implemented as a digital learning environment, which is confirmed by the sales results of its educational version by educational institutions ranging from schools and libraries to museums [10]. According to Baek at al, Minecraft, when implemented in classroom can not only raise the students' enthusiasm, but also increase their motivation and creativity, thus improving their abilities in information technology and communication, and making their collaboration skills more effective [10]. The implementation of Minecraft requires, however, teacher presence since some users reported a lack of focused attention. Recent research by Diaz et al suggests that playing Minecraft in creative mode, where the player can move and construct 3D objects freely, improves students' ability to work in 3D space and also it allows to incorporate divergent thinking which improves creativity [11].

Minecraft as an information and communication technology (ICT) tool is claimed to be an enabler to encourage youth participation in urban design and governance. Several projects conducted since 2013 in partnership with gaming company Mojang AB, Block by Block foundation, United Nations Human Settlement Program (UN-Habitat) confirm that Minecraft is an accessible, inclusive and affordable tool that promotes the civic engagement of young people. It seems particularly useful for visualising ideas, thus promoting shared understanding and facilitating interaction between citizens and government [12]. Observations prove that using this game offers young people new avenues through which to become informed, shape opinions, get organised, collaborate and take action on shaping especially public spaces as presented in Table 3.

Table 3: Pilot projects carried out with Minecraft by UN-Habitat, the authors' own commentary based on Díaz et al [11].

Project type	Location
Public space and sports field project in Undugu at the Silanga area of Kibera	Outskirts of Nairobi, Kenya
Urban waterfront project protecting the city from flooding and erosion while providing public spaces	Les Cayes, Haiti
Redesign of Plaza Tlaxcoaque, a square in the historic centre of Mexico City (issues of safety and security, sociability, playfulness and games for children)	Mexico City, Mexico
Conservation and upgrade of existing public spaces for better community utilisation	Kirtipur, Nepal

RESULTS

As a result of the Minecraft sessions held for 20 consecutive days, the students obtained 17 objects constructed on their server. On average, six users were building their proposals every day. Each person spent an average of about three hours on creating. The students identified five users responsible for ceaseless virtual vandalism. Despite the students' constant watch over the site to prevent destruction or removals, they were unable to record all of the proposals created by stakeholders. Figure 1 includes some examples of user constructions on the Minecraft server.
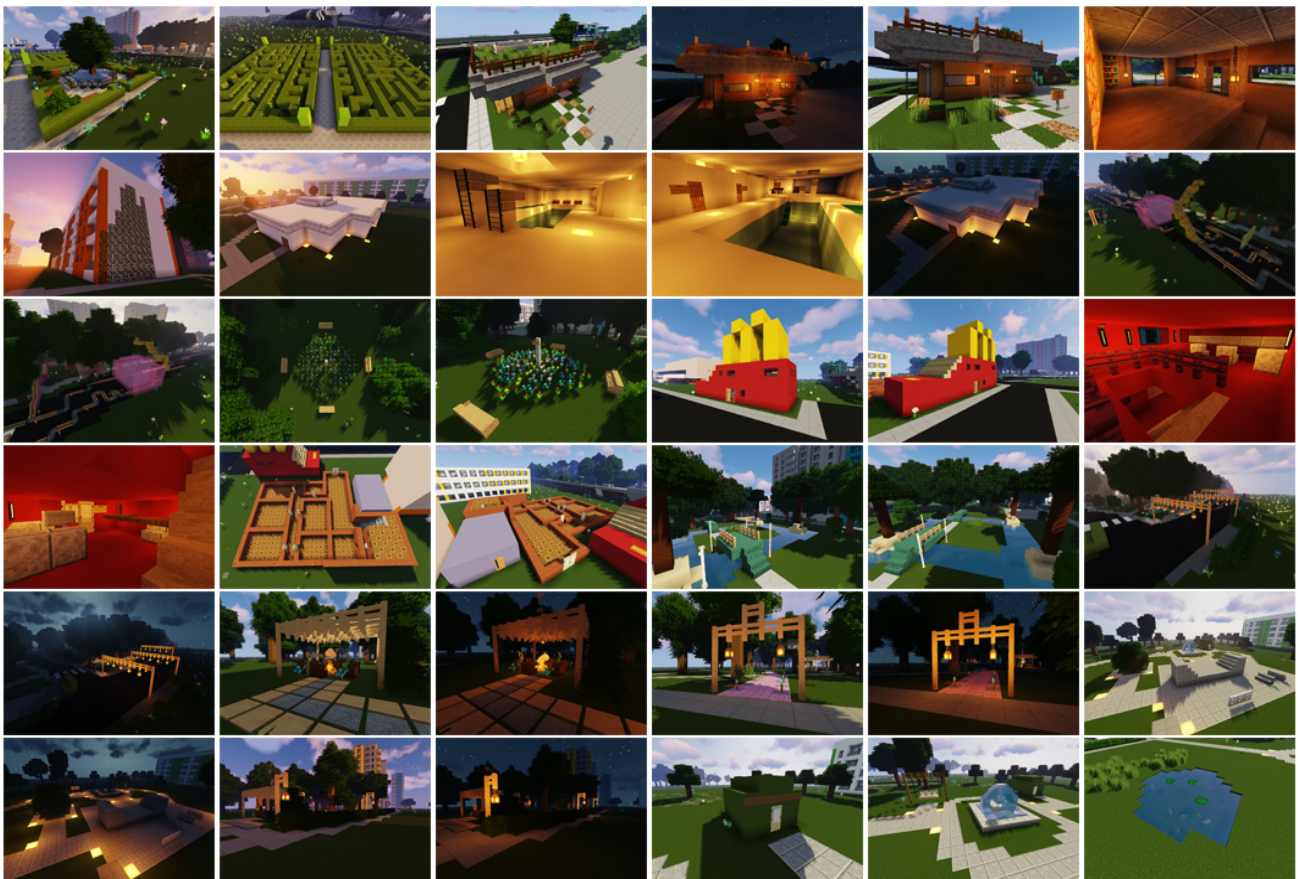

Figure 1: Examples of constructions in the future park created on the Minecraft server (source: archive of the Chair of Landscape Architecture, 2021).

The objects (construction time in brackets) on the Minecraft server included:

- garden with a labyrinth (about 5 hours);
- bookstore/library pavilion with a green rooftop terrace (about 4 hours);
- indoor swimming pool (3 hours);
- intricate roller coaster located between the treetops on the outskirts of the park (4 hours);
- sundial made of perennial flowers (20 minutes);
- McDonald restaurant with a rooftop garden (3 hours);
- complex big-area building unfortunately not finished - function not recognisable (1 hour);
- pond with an island, two bridges and several potted trees submerged in water (2 hours);
- lighting in the form of four gates framing the view (2 hour);
- wooden arbour with a fireplace/BBQ space (1 hour);
- lighting above a path in the form of a wooden gate (20 minutes);
- skatepark (2 hours);

- lighting and hedges along paths (20 minutes);
- small green shed - probably intended for gardening tools (20 minutes);
- creeper greenery covering the large empty facade of an apartment block (10 minutes);
- fountain combined with a swing (20 minutes);
- small pond with water lilies (5 minutes).

Figure 2 is a comparison of the constructions created on the Minecraft server and student designs; and Figure 3 includes one more example of a Minecraft user construction and student designs.

Figure 2: A comparison of the constructions created on the Minecraft server and students' designs: A - library by a Minecraft user; A1 – pavilion: library surrounded by a garden equipped with various modular benches by student Łukasz Byś; A2 - multifunctional pavilion: event space, library, cafeteria, public toilets by student Patrycja Kowalska; B - garden with a pond and bridges by a Minecraft user; B1 - multifunctional space: garden with a pond, benches, picnic area, bridge designed as a panoramic path - observation deck by student Patrycja Kowalska; C - gate by a Minecraft user; C1 - multifunctional space designed as a leisure area between artificially made hills, elements in the shape of a gate combined with different functions, such as a swing, slide, bouldering wall, and other children's playground facilities by student Ewa Nowak.
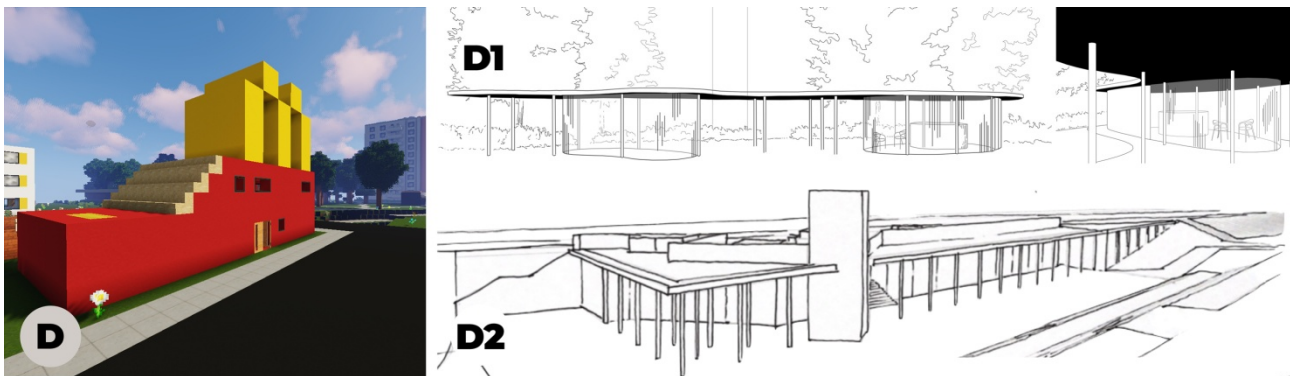

Figure 3: D - restaurant by a Minecraft user; D1 - multifunctional pavilion designed as a cafeteria combined under one roof with a new location for a nearby pet shop by student Magdalena Marasik; D2 - multifunctional pavilion designed as an event space, restaurant, cafeteria, on the top platform, a roof garden combined with a bus stop and an observation deck by student Zofia Frączek.

CONCLUSIONS

Although the gathered data and results might be promising, on-line participation in planning requires as much careful preparation and time management as traditional social research methods. Especially time consuming was the organisation and supervision of participative planning activities on the Minecraft game server. It took much more time than the organisation of a traditional on-site workshop, and amounted to 60 hours shared among 20 people (including preparation of the event and evaluation). The traditional workshop offered more intensive activities, such as building together a large-scale mock-up model in much shorter time. On the other hand, Minecraft offers a possibility to explore thoroughly a 3D model and experience comparable to virtual life applications.

When evaluating the activities outlined in this article, students mostly focused on on-line communication issues, such as the lack of face-to-face contact with workshop participants and less possibilities to encourage and activate them. Nonetheless, the on-line tools were particularly useful and appropriate in the time of pandemic-induced social distancing, and helped to unlock students' creativity (Figure 2). This experiment confirms that working in a virtual 3D environment was a good substitute of traditional model building, which is particularly useful in the education of designers who in their professional practice will need to resolve architectural problems in public spaces as indicated by Ratajczyk-Piątkowska and Piątkowska [13].

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