

# Can Games Motivate Urban Youth for Civic Engagement?

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**Abstract.** In this paper, we explore the possibility of using games as a way of engaging youth in environmentally-oriented participatory art or other cooperative urban projects. Our approach was design-led, and youth participated in evaluating games that we proposed from the perspective of motivation and engagement, both in the environmental issues in the games themselves and in the likelihood of subsequent real life involvement stimulated by the games. The findings show that ultimately, personal passion for the cause that the game represents, and not the game itself, would be the central factor in a youth's decision to engage in real life. Social embeddedness was also valued high, as well as the possibility to make a real difference.

**Keywords:** Urban youth · Participatory art · Collaborative culture · Co-creativity

## 1 Introduction

Participatory art and collaborative urban cultural processes are no longer only engaging artists and other participants in cultural productions, but are increasingly also representing ways of taking action towards improving the quality of urban life. Worldwide, people are engaging as co-creatives alongside artists and researchers, exploring ways to improve their urban environments. Ingram describes in [1, 2], how New York artists and youth joined forces to reclaim some of the Bronx riverbank, and further how a bioremediation project in Chicago and other environmentally-oriented art projects sought solutions to real life urban ecological challenges. Such projects frequently become multidisciplinary efforts, involving designers, artists, engineers, researchers and most importantly, people who get engaged as collaborators, co-designers or citizen scientists [3, 4].

Technology, and in particular the Internet, has come to play a central role in these participatory, collaborative processes. One can say that the Internet was already central to civic engagement when it comes to youth [5, 6], the Internet natives. The initial research presented in [6] finds that “... *online communities aimed at promoting civic engagement, activism, or community involvement among youth are generally facilitators*

*of the civic engagement that occurs in the offline world, but not necessarily the places where that engagement occurs*". Online communities and the tools they offer, e.g., TakingItGlobal [7], may give a valuable starting point for youth engagement, especially for those who are already civic-minded.

However, technology that youth use, or could use, in co-creative urban participatory culture processes, has evolved far beyond the Internet. Understanding the role of technology and how it can support youth when it comes to civic and politically-oriented art and culture is both timely and interesting. Timely, because the dominant discourse when addressing the role of technology has been focused on motivating an individual to be more aware of resources and to act more consciously (for example, diverse feedback and awareness devices designed to give feedback on the use of electricity [8]). Design for increased awareness has also led to re-focusing research in the direction of daily practices and how they can be understood as design material and as such, be redesigned [9]. Interesting, because many cultural institutions such as museums, libraries and theaters have increased their efforts to interact with audiences, and to support visitors' social interactions in meaningful ways [10–12], often using digital platforms. These efforts, however, are not easy to sustain over time and sometimes put the quality of an institution's offerings at risk. Cultural institutions are seeking to understand emerging practices, such as discussed in [13], where the meaning of curatorship is questioned in light of current "outsourcing" of the work to "amateurs" (and the Internet).

Understanding and producing knowledge on technology-supported participatory culture is not simple and has not been researched adequately. In particular, human-computer interaction design research, a field concerned with design of new technologies and interaction modes, had little to say until relatively recently about technologies that support sustained engagement in urban co-development, or about methods and practices for broader engagement and participation in culture or in public interactive spaces [14–16].

This paper presents our initial design-led research, conducted in preparation for a long-term European project exploring the development of participatory culture and related practices across Europe. The project links technology and culture, participation and design in urban living. It draws on a diversity of approaches as possibilities to discover successful practices and meaningful patterns. In the Norwegian subproject, we focus on youth and ways of motivating them towards increased engagement in envisioning a better and more sustainable urban life through interaction design, participatory art and other culture forms.

This paper reports from the first study in which gaming is explored as a motivating factor towards increased engagement among youth in reflection and possible action, concerning sustainability and quality of urban life. Since our approach is design-led, several tools (games) were made for use in workshops and as interview aids that simultaneously allowed us to assess levels of understanding youth had related to the complexity of balancing environmentally friendly urban solutions, economic health, and quality of life. Participants ranged in age from 7 (4) to between 10–15 (23). Although the total number of youth engaged in this study through focus groups, workshops and interviews was small (27), we uncovered clear insights into how well our methods and tools worked to understand issues of motivation and engagement, and in which way

these tools could be employed further to raise awareness around the environment, sustainability and most importantly, participation.

The paper is structured as follows: the next chapter presents the results from the use of an interactive game surface – CityCrafter, followed by a description of three exploratory workshops and short interviews where we report results of working with three open-ended games. Thereafter, we present a discussion of our findings from the workshops and interviews in the context of existing literature, ending with a few ideas on future directions and finally, our conclusions from this work.

## **2 Game Prototypes and Engagement**

A recent study [17] shows that for youth aged 16–19, volunteerism has more than doubled in the past 30+ years, while empathy has decreased. The study shows that youth participate in voluntary work primarily in response to outside pressures and requirements. For example, they are often motivated to do voluntary work in order to improve their CVs. The type of motivation that we are interested to stimulate is related, conversely, to passion [18] and creative, innovative expressions [19, 20]. Study [21] considers high school students' motivation for learning in relation to their socio-digital participation. The study indicates that for some students, levels of social activities and gaming outside of school can correlate positively with indifference towards school. Considering results of studies into gaming and its positive effects on behavior in real life [22], the passion youth exhibit for gaming [18], and that we are interested in investigating participatory culture co-creation with youth, we chose to explore the possibilities that gaming offers towards appropriate motivation for civic engagement, possibly also in the school arena. The scope or the “playing field” of the games was kept at a city-wide level to promote learning and understanding of resource allocation and consumption at a wider social or at a supra-individual level (see [9]). Our hypothesis was built on research presented in [9, 23], which shows that understanding resource consumption and allocation is best done within a broader socio-cultural context as opposed to specific actions or behaviors.

### **2.1 The CityCrafter**

The initial step for two of the authors of this paper was to make a design brief and propose and supervise a student project in an interaction design course, related to topics presented above. We did not want an online solution, but rather a hybrid or a tangible one. A group of three undergraduate students took up the challenge [24].

The students started their work by organizing two focus groups at the local elementary school. Their first focus group involved children from the first and the second grades. The children were asked to draw buildings and tell about the workings of a city. It was found this age group was too young to have a desired level of understanding. There is an organization in Norway, Miljøagentene [25], working to increase children's awareness around environmental issues, specifically in this age group. The organization works towards a cleaner environment and a better future, by engaging children. It provides

activities in nature, collection of batteries, learning about climate changes and most importantly, it motivates children to act and realize that they can make a difference.

The second focus group consisted of third and fourth grade children, age 10–11, and this group was more engaged, understood issues and was interested in more advanced games. The students also inquired about games that the children liked to play.



**Fig. 1.** The portion of the table representing an area of the city, with feedback on environmental issues. Elements to place on the table, and their design, are shown in small images on the right.

The main finding from this focus group was that a game with elements of SimCity, Minecraft and Monopoly could be understood, and could be engaging for this age group. Thus, the students made an interactive prototype based on an open city game that focused on the effects of buildings on the environment and on energy use in the city. Interaction with the designed prototype took place around a large table with tangible elements such as factories, skyscrapers, family homes, windmills, sports arenas, etc. that could be pinned to the table and given a certain amount of energy, see Fig. 1. The feedback, a large smiley face, was built into the tabletop and gave clear and simple feedback on the use of energy and the environmental impact as elements are placed on the table.

The prototype was tested at the Norwegian Technical Museum with 15 participants in the age group between 10–12. From a usability point of view, the results of the test were very positive. There was no confusion as to what to do with the tangible components, how the game was to be played, or how to understand the feedback. The prototype was sufficiently sturdy, and there were no technology problems during the testing, which would have lowered the user experience of the game.

On the other hand, we found that the prototype had serious limitations as a tool to study motivation. As can be seen from Fig. 1, the prototype consisted of numerous components and making the interactions more meaningful by adding additional components would have been difficult. At the same time, the feedback and gameplay was so

simple that it could not support the idea of sustained engagement and motivation that we describe in the Introduction and want to evaluate.

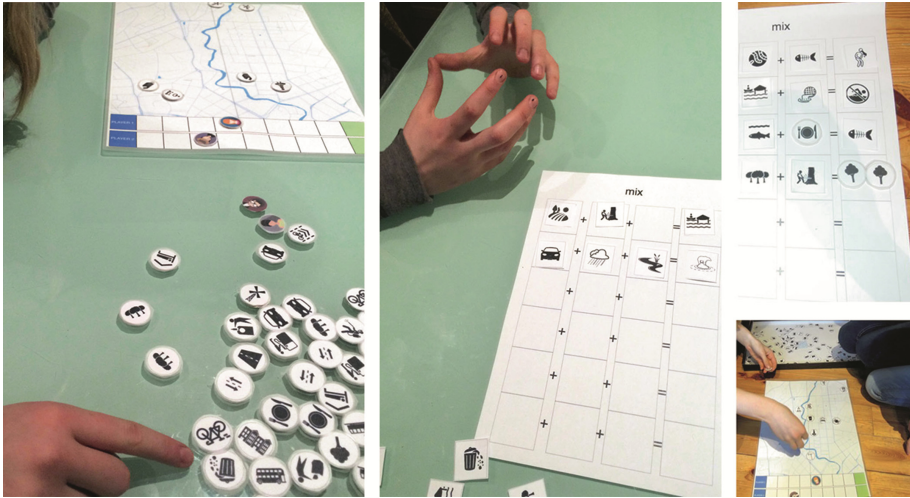
## 2.2 Open Explorations

Shifting the focus from technology towards deeper exploration of our primary objective related to understanding motivation and how it could be stimulated, we made a set of three paper-based prototypes suitable for open exploration and more in the style of traditional games. The games still explored urban living and what it entails, including reflections on balance between investments and economic health, ecological friendliness and life quality. The three prototypes were based on three types of games: co-operative, competitive and explorative, see Figs. 2 and 3. The first one was made very large, so that many participants could sit around the board. The second one was smaller and utilized point system advancement from a start position towards a goal. Both games used an actual map of an area in Oslo as the board background. Icons representing transportation (buses, trams, bikes), roads (city streets, highways), hotels, restaurants, shopping malls, food stores, houses, factories, schools, pesticide use, green areas, power from water, windmills, sewage systems, waste (with or without recycling) and so on were made (around 100 pieces, with some duplicates). Neither game was defined completely. Rather, participants could help make game rules and decide if adding apps or technology might make a positive difference on the experience of the game. The third game explored synergies between different factors, which would lead to either positive or negative results on the environment, such as how an oil spill would harm marine life in nearby waters. The icons for this game were similar to the other two games but the participants were allowed to combine them freely and in creative ways, giving them a chance to explore open possibilities.



**Fig. 2.** Making a sustainable city: goal of the game is to balance economic health, people's satisfaction and good sustainable solutions. Images are from all three sessions held.





**Fig. 3.** A competitive game to the left, awarding positive and negative points when choosing a token. The image on the right explores how different (non)sustainable elements mix.

Three workshop sessions were organized with short follow-up interviews. Two of the sessions ran between 1–2 h with 2 participants age 14 and 15 in the first, and 3 participants age 11, 11 and 14 in the second session. The third session was shorter and run with only one participant age 7, to verify the conclusions that students made during their first focus group with children age 7, before prototyping the CityCrafter.

Whereas CityCrafter was tested with participants in a well-balanced mix of gender, the workshop sessions, although planned as mixed-gender, involved only girls. The invited boys were unable to attend for various reasons. Instead of re-scheduling, we held the workshops, aware that our feedback may be gender-biased. However, the findings from these sessions were interesting, and certainly give pointers for further research.

We now give a short summary of the main findings, followed by some interesting points we learned from the interviews.

**Workshop Session 1.** The participants (girls, age 14 and 15) were told at the start of the session that this was a game in the making. The participants were encouraged to take a look at icons and ask if they did not understand what the icons represent. They could also use wooden blocks in any way their imagination would lead them, but we asked them to talk along, so that we could grasp their reasoning behind actions they took. The girls started playing as competitors, using the blocks to divide the map into districts. Very soon, they gave up this strategy, removed the barriers and started to build open city areas, cooperating on the use of resources (saying, for example, “*For this number of inhabitants, one school should do.*” and “*If it is placed mid-way and if there is a public transport from both of their areas, it is the best use of money and it is not so damaging for the environment.*”). Soon, the girls were very engaged in trying to determine which decisions would make the most sense for the city they were creating, and their arguments were growing in depth and complexity. Initially, they tried to build a

city with all the amenities. The icons concerned with types of electrical power used for houses, hotels and factories made them think about costs of producing clean energy, but also how unpleasant it can be to live, for example, near a windmill, which can be rather noisy. The discussions then considered seriously the environmental consequences of components being added to different areas. After this activity was over, one of the participants shared that she, during the game, realized that the most important factor in the city that she wanted to build was quality of life. She was interested in solutions that enabled people to have, in the long run, sustainable solutions and a good environment. Running a part of the city that is poor, for example, brings challenges, so money is important, and has to flow well. But money was not important in itself; the quality of life was more important. Additionally, both girls would have liked to have access to electronic feedback with immediate, well-reasoned evaluations of their decisions. That would add more drama, as well as learning, to the game. The participants agreed that an opportunity to cooperate and negotiate with one another made this game interesting.

The second, competitive game was experienced as simpler to play after the first one. Here, they wished for electronic point feedback each time they chose an icon. During the session, the Wizard of Oz technique was used to assign points. Participants were very good in using the previous game to evaluate their own choices based on their experiences and thoughts from the previous game, and they evaluated the sustainability impact of their decisions right from the beginning. The Wizard was almost not needed.

The third game was found to be interesting, and the participants indicated that they wanted to know reasons behind the results of mixing the components in more detail. They thought that these synergetic factors were not taught adequately at school and said that they had learned some new things during this game (the relation between de-forestation and flooding, for example). They would have liked to see combinations that gave also positive results, making a positive impact on the environment.

**Workshop Session 2.** The two 11-year-old girls were friends. From the start of the game, they wanted to co-operate. The 14-year-old girl wanted to compete against them. The dynamics in this session showed some of the same traits as the previous session. All participants were capable of understanding the task to build a city and had discussions around implications of their choices. For example, *"We need to have sewers because people need to go to the toilet."* Further, placement of a sewage treatment plant was made outside of the populated area so that a clean water supply would be assured. Discussing what they liked about the game and what they would change with it, the girls said that it was fun to be your own boss, build, plan, imagine, and consider how things matter. This group liked the tactile and personal engagement with the game and thought that a computerized version would be less appealing. One girl, 11, said that parents do not like children to use the PC all the time. They liked the face-to-face interactions and said that it is fun for people together and that two persons think better than one. They did, however, ask for a set of digital feedback "warnings" that could be either heeded or ignored. They also wanted feedback on how to build a well-functioning economy. This indicates a preference for seamless use of technology in an otherwise traditional board game. The 14-year-old suggested that the game could have

many more elements and should be bigger, too. The younger girls agreed, wishing for additional kinds of elements and more colorful game pieces.

The second game received more enthusiasm from this group and was a favorite for one of the 11-year-olds: *“Competition made it a little better, you really understood the point”*. Here, they engaged deeper in discussions such as *“We need to place the solar panels away from the buildings to avoid shadows”*, *“Windmills need lots of room”* and they linked some of their reasoning to memories of lessons learned from their school-work. They also made a point that *“It is good to see how what others do affects you”*.

The engagement with the third game was also good, and the girls expressed that it was different and interesting, but the game was nobody's favorite.

**Workshop Session 3.** This session engaged only one participant age 7. The goal was to see to what extent earlier observations that students made were correct. The first game was played cooperatively with an adult, but it became clear that while the game was fun, the girl did indeed not yet have the ability to understand the concepts behind the game. The competitive game was thus skipped. In the third game, the adult tried to explain that mixing the bacteria and the food can make people sick, or the city sewage, if dumped too close to the shore may be dangerous for swimmers, and made the first two rows shown in the upper right corner of the Fig. 3. The girl made the remaining two: cutting one tree out of three, leaves only two trees and, a fish plus the plate, makes a good meal. So, again, the concepts required for effective participation in these games were too advanced for this age group.

**Follow Up Interviews.** After the workshop sessions, we asked some simple questions, that could help us understand engagement, its relation to sustainability, and how could it lead to some real life engagement in co-design and artistic and cultural projects which address some of these issues.

We started by asking our participants what “sustainable” means to them. *“Something that lasts a long time and is stable”*, was the answer.

When asked about any practices at home that contribute to the idea of sustainability and are positive for environment, one of the girls said: *“We all recycle. I also got my parent to buy a car that pollutes less”*. Another girl chimed in: *“We use good power in our homes. Most of it comes from water, and gives good, cheap and clean energy to the whole country”*.

What is the role of the school in teaching you about these issues? *“Occasionally, here and there, we learn about them. But we do not learn about global warming and how to make things that are more environmentally friendly.”* *“Maybe, we could have more activities like this at school. They make us remember things that we should do and not do. It is actually also really good to know about small stuff that one can do, like the length of the shower one takes every day, and to take shorter ones.”*

What do you think is the most damaging to the urban environment? Here, the girls agreed that factories influence the environment most, and should be made more environmentally friendly. Next in line was transportation, and they saw it as desirable to make people take public transportation in order to reduce the amount of cars, as well as to increase pedestrian areas and bicycle paths.



Do you ever think about freshness of water or air? One girl said: *“Not water. I believe that Norway has great water and the water is still of good quality. But this is not the case with the air. I sometimes really feel the pollution. I also notice trash on the streets which I experience as pollution”*.

What if you heard about an art project, trying to engage people in participation, and the project stands for promoting a cleaner city? Would you participate? The answers here were *“Yes, if I had the time”*, and *“Yes, if I knew what to do”*.

If there were such a project, what would make you most willing to participate: financial reward, social pressure, saving the environment or something else? The participants answered this question sincerely. All of them mentioned that incentives matter. If they had to spend a lot of time, it would be good to make some money. If other friends were engaged, however, making money becomes less relevant. Ultimately, most participants indicated that passion for the cause would be most important, and even voluntary, unpaid participation would be possible if they could make a difference.

### 3 Making Sense of Motivation to Participate

Participatory art culture with youth is spreading on a global scale [1, 2] with technology and the Internet in particular [6, 7] facilitating action and activism for the civic-minded. The prototypes and workshops discussed in this paper evaluate gaming as a motivator for engagement, good decision-making and better social and environmental awareness. Through experience with the CityCrafter platform we discovered that overly simplistic gameplay is not successful in stimulating sustained engagement even though there may be significant initial interest due to interactive elements. Subsequent workshops benefited from this finding by introducing more complex and varied forms of gameplay and incorporating personal values and emotions as motivating factors. This was done by using the map of Oslo (where all the participants reside) in all the prototypes to test the effects of giving the participants a familiar situation and heartfelt problems. Initially, the emotional and social elements did not seem to create a noticeable impact on the participants' decision-making processes. But as the gameplay proceeded, we noticed that discussions and cognizance of the issues and implications of actions became much greater, particularly in the first game, which had a more complex and exploratory gameplay model. These findings were consistent with the claims of positive emotional impact and social binding in physical settings [22]. It is interesting that during session 1, one of the girls brought in the design of new practices explicitly, using even the example of showering as in [9]. The girl's expression *“the small things that we can do”* implies a willingness to engage personally in new, more sustainable practices in the hope that if everyone does it, it will make a difference. Another participant made an explicit connection between design (*“how to make things that are more environment friendly”*) and a way in which they could potentially participate in making their world a better place. Further, an explicit connection was made with a desire to learn more: *“Maybe we could have more activities like this at school that would help us remember things that we should do and not do”*. Thus, we could notice the connection between design and behavior, and how daily living practices and learning practices could be re-designed to better fit the

goal of striving for sustainability. As mentioned in [3], innovations generally come from collaborative and discussion-driven settings. We feel that complex decision-based games placed in social settings like museums and schools could serve very well as a “foot in the door” [26] for engaging youth. Simple activities, which encourage debate and discussions, could lead youth to explore possibilities for getting involved in more difficult and complex tasks. These small engagements could serve as starting points for a “positive spillover” [26]. Practice-oriented design research into sustainable practices [9] provides a concrete example of the above. Our research leads us to conclude that open-ended, decision-based gaming with tangible artifacts is most effective in social, physical settings [22]. Further, it provides an ideal scenario for all three guidelines for practice-oriented design: bodily performance (active integration of learning in practice), crises of routine (the change in routine practices brought about by debate and questioning) and variety of performances (reconfiguration of thoughts and ideas as the game progresses) [9].

In order to get feedback and possibly some further insights into what is motivational, we inquired with a young female activist (23). We engaged her in a conversation about the relation between games and how (or if) games could stimulate broader engagement in participatory art and culture with political and social implications. She is herself a gamer as well. Her perspective was the following: *“Attempts to gamify either serious or educational content often do not work at the personal level. It can somehow end up being not really new and often condescending. However, it works better in the group context of, for example, school, as it is often more fun than the usual ways of learning.”* This was in line with what we observed during workshop sessions and is also in line with the suggestions made in [22]. The games would not work, or be interesting for a single person, but the interaction, negotiation and actual learning were fun when involved with others. However, taking the desired step forward from games and engagement in games to actual, physical acts of participation in a real setting are difficult. Further, the activist shared her opinion on why it is hard to start: *“There has to be a space for meeting people. Physical, face-to-face interaction is motivating and inspiring. Online is hard. Then, there needs to be a bridge, bridging the gap of not knowing how to engage in participatory art, as a non-artist, for example. And if engaged, equally important is how to see that your contribution is actually meaningful”*. Hence, possible next steps could be to arrange for follow-up “meet-ups” and collaborative game playing sessions that also include activists and artists (or appropriate persons, depending on the project/game subject matter) and using games as experience-sharing platforms in conjunction with people who already have passion for the cause.

## 4 Conclusion

Our open exploration of games as motivators for youth engagement in urban settings had environmental sustainability as an overarching theme and additional engagement factor. Through our experiments, we learned that tangible media mixed with interactive gameplay elements serve as a strong motivator for urban youth. Trying out different models of gameplay, such as exploratory, competitive and open-ended, we sought to

evaluate the learning processes and the evolution of decision-making processes among the participants, as well as how and what makes their experiences during the game personal and engaging at deeper levels. We discovered that an open-ended model coupled with appropriate feedback led to the highest discussion and debate among the participants. The participants showed a tendency to cooperate rather than compete while making decisions, and they also debated the implications of their decisions for overall satisfaction, environmental impact and economic effects of various amenities created in the city. Moreover, their decision-making was increasingly moving towards trying to create the best possible city by balancing the aforementioned factors. A low-fidelity prototype of the game, *CityCrafter*, tested at the Norwegian Technical Museum in Oslo, furthers this argument that open-ended, decision-driven play can serve as a strong motivator towards increasing participatory culture among the urban youth. A strong caveat to this argument, however, is our finding from the workshops that engagement is driven primarily through collaborative social settings and peer-to-peer discussions and may not be as effective if used in a solo or closed setting. A second take-away was related to the use of exploratory and discovery-driven gameplay elements, which stimulated questions and increased inquiries about the consequences of different factors such as pollution and deforestation in sustainable practices. Overall, we believe that while these elements might be very effective in aiding a structured inquiry into sustainable practices in a controlled setting such as a game or a school, they do not yet serve as actual strong motivators for a city-specific context in a real life setting. Thus, while our research shows that certain gameplay elements in social settings serve as strong motivators for urban youth to engage, the door is as yet wide open to investigate ways to transpose this engagement into practical, real life urban involvement and contributions.

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