Designing a Future City – Applying Design Fiction with High School Students

Marie Sjölinder and Jonas Söderberg

RISE, Box 1263, SE-164 29 Kista, Sweden

ABSTRACT

This paper presents insights from applying the method Design Fiction together with high school students. The students both participated in workshops where the method was used, and they also led design workshops themselves. Results from a short questionnaire and textual feedback from the students showed that they thought it was easy to start to use method. However, access to internet during the workshops might lead to ideas taken from the web instead of being based on creative thinking and discussions.

Keywords: Design Fiction, Designing sustainable cities, Design with high school students

INTRODUCTION

This work was conducted in the framework of Viable Cites, which is a national strategic innovation program in Sweden with a focus on the change towards climate-neutral and sustainable cities. Viable Cities is catalyst for new ways of collaboration between cities, industry, academia, research institutes and the civil society. The overall goal is to provide support to the cities to convert to a way in line with national and international climate goals. The work described in this paper was one project within this framework. The project consisted of the City of Enköping, RISE Research Institute of Sweden and Europan with is a Pan-European architect organization that organize a biennial competition for young architects.

As a part of this project, a collaboration was conducted together with Westerlundska gymnasiet, a high school in Enköping. The aim with this work was both to get ideas and suggestions from high school students about how they wanted their future city to be designed, and to explore how high school students could apply and use the method Design Fiction when conducting work with designing future cities. This paper focuses on the experiences from applying the method Design Fiction together with the high school students.

DESIGN FICTION

The term Design Fiction was coined in 2005 by science fiction author Bruce Stirling and is closely related to methods used by authors or film directors to create believable visions of the future. The method became widely known through the essay Design Fiction. A short essay on design, science fact and

fiction by the artist and HCI researcher Julian Bleecker 2009. According to Bleeker (2009), Design Fiction is a mix of science fact, design, and science fiction. It combines the traditions of writing and storytelling with the material crafting of objects. It is a creative process that encourages human imagination and give support in telling stories that provoke and raise questions (Bleeker, 2009). Design Fiction is a method to explore future possible scenarios or contexts. A concept could be described in several ways by using narratives and prototypes. The story can be told, and the concept can be visualized in many ways (Wakkary et al., 2013). Design Fiction is about creation of hypothetical objects and description of these with the aim to explore imaginary narratives and contexts (Candy, 2019). Design Fiction requires methods, practices and tools which allow for the creation and construction of possible future worlds. The methods, practices and tools must make it possible to use different media to visualize possible future worlds in terms of images and artifacts (Grand and Wiedmer, 2010). The outcome can be written as science fiction or a research proposal; or it can be a physical prototype. The goal is to support experimentation with possible futures and reflection on the present (Wakkary et al., 2013). The important aspect with Design Fiction is not to address functionality, but instead explore imaginability and what a thing could be if it existed. The product could be an artifact or film showing part of a story-world as if that world were real (Candy, 2019).

Lindley & Coulton (2014) have described a model for working with Design Fiction. The model is going from the factual reality of the now, that via a story or a narrative, leading to a prototyped fictional future. The reality layer describes the world, and it refers phenomena, technologies, and knowledge that exist now. Based on this layer it is possible to create a believable view of the fictional world being developed. The story layer builds upon the reality layer, extrapolating the facts, and extending them into a believable fiction. The provocation layer represents the outcome being designed. It could be a product, a service, or anything that is relevant for communicating the idea (Lindley and Coulton, 2014).

Grand and Wiedmer (2010) suggest multiple dimensions of a Design Fiction method toolbox for conduction design research focusing on the method. 1). The first dimension is "Creation and construction of possible future worlds". This dimension is about exploring alternatives to existing solutions and reinterpret the past. 2) The second dimension is "Materializing those possible future worlds". This aspect consists of creation and construction of possible futures that could be tested, evaluated, and improved during the work with concretizing central features. 3) A third dimension is "Plurality of different perspectives and approaches". This dimension is about reflecting about and complementing the possible future scenario with alternative approaches, both with regards to the ideas and to the way they can be materialized and visualized. 4) A fourth dimension is "Representing, visualizing, documenting the experimentation processes". To increase our understanding, we need tools and methods to document and visualize the design processes conducted. 5) The fifth dimension is "Experimentation as being generated through an experimental system". This dimension has been interpreted as the interplay between research and design and making

use of research and insights from research areas relevant for the topic that is being addressed. The sixth (6) and final dimension is "Changing the design research practices themselves". This dimension addresses evaluation of this method toolbox for researching Design Fiction described in the fifth dimensions.

Design Fiction can be used commercially to develop marketable products and services, but can also like speculative design and critical design, be used to create a discussion and gain understanding of social and technological change. Design Fiction can describe the future not only by extrapolating the present, but also opens the possibility of future disruptive stages of development. The method might lead to a commercial product or service that can be sold in the future, but can also lead to examples of societal changes, new social behaviors, new paradigms, new political, philosophical, or religious directions.

METHOD

In the project there were about 20 students from the school's technology program. They had all chosen architecture as their special focus during their last year. At the first two meetings, the students got the opportunity to meet researchers and experts in climate change, architecture, and sustainable construction to gain relevant and current background knowledge. On the third meeting, a first session was conducted where Design Fiction was applied. The students were divided into four groups with 4-5 participants in each. They were given a specific year, 2050, by the workshop leaders. They were also given a geographic place, their own hometown Enköping. An additional condition was that their work should take place in the direction of climate neutrality and a sustainable society.

The work with Design Fiction method consisted of three steps. In the *first step* the groups were given the task of inventing a product or service that does not exist today, but which will exist in 2050. As a *second step* they were asked to describe the product by e.g., produce an advertisement, commercial video, newspaper article or anything else that markets or informs about the product in a way that people living in 2050 can understand and be attracted to. As a *third and final step*, the students were asked to describe the path from today's conditions to a time when the product can exist. They were asked to answer questions such as: What steps must society, science and technology take to make the product possible? The identified steps were then be placed in a credible way on a time scale that started in the present and extended to 2050.

Of the 20 students that participated in the project group, six final year students decided to write their finishing Grade essay within the project. The aim with their work was to suggest novel solutions to environmental challenges. Beside conducting background research about environment and sustainability, the students themselves organized Design Fiction workshops were first-year students participated. The Design Fiction workshops that the final-year students led were conducted during a half school day.

After the student-led workshops, 62 of the first-year students filled in a questionnaire about how it was to participate. The answered the following questions on a 1-5 scale:

- How was it to work this way (very boring/very fun)
- How was it to get started (very hard/very easy)
- How was it to achieve the results (very hard/very easy)
- Would you like to use this method in the work that you will conduct your last year (not at all/ to a great extent)
- Did you gain an increased understanding for the climate and sustainability issues (not at all/ to a great extent)

At the end of the course, the final year students were asked to write a short text about applying Design Fiction in this way, and about how they thought it had been to lead the workshops with the first-year students.

RESULTS

The insights from this work consist of three sub parts, insights related to the Design Fiction workshop that were conducted with the final year students, feedback from the first-year students regarding participating in a Design Fiction workshop, and finally, the last year students' thoughts about leading a Design Fiction workshop.

Insights From Conducting a Design Fiction Workshop With Final Year Students

The first workshop with 20 students resulted in several creative ideas despite its limited duration. However, within the time frame it was not possible to go through the final step, describing the path from today's conditions to a time when the solution could exist.

Further, it was the students' experiences from this workshop that led to that they suggested to arrange own Design Fiction workshops with first-year students. This idea was completely their own idea, and it seemed like this experience also had generated a foundation for being able to lead own Design Fiction workshops.

First-Year Students and Participation in a Design Fiction Workshop

The first-year students thought it was fun to use the method. They thought it was quite easy to get started to use the method, and to gain results by using the method. The first-year students were also positive to use the method themselves when conduction their work during their last year. The question that got the lowest score was to which extent the work during the session contributed to an increased understanding for climate and sustainability issues (see table 1).

Final Year Students About the Method and About Leading a Design Fiction Workshop

The students that held the workshops thought that it went over their expectations, and that they gained much knowledge by having this experience. They

Table 1. Answers from first-year students about using the design fiction.

Question (scale 1-5)	Mean
How was it to work this way (very boring/very fun)	3.97
How was it to get started (very hard/very easy)	3.68
How was it to achieve the results (very hard/very easy)	3.55
Would you like to use this method in the work that you will conduct your last year (not at all/ to a great extent)	3.60
Did you gain an increased understanding for the climate and sustainability issues ((not at all/ to a great extent)	3.37

thought that the workshops were well-conducted, both by themselves and by the first-year students that participated. It was easy for the participants to get started, the discussions in the groups started immediately. The final year students also reported that first-year students were very good at creating ideas and to develop these further. The final year students got new ideas and found new perspectives that they could use in their reports. The new ideas also gave the final year students inspiration for their final reports and encouraged them to expand on new approaches that they had not thought about before.

Most of the first-year students were engaged and contributed in a productive way, but some students in some of the groups did not contribute. However, the impression of the last year students was that this was due to lack of interest, rather that they thought the task was difficult, and that they just tried to come up with cool things they found on the internet. In some of the groups, the participants found ideas on Internet right away instead of first trying to come up with something themselves.

Videos were a part of the material that each group should generate during the workshop. The final year students thought these videos were valuable input to their work and to the report they were about to write. The recorded content contributed with new perspectives that it had been hard to grasp when just walking around and listening to the discussions in the different groups.

With respect to lessons learnt, and if the last year students were going to do this again, they would provide the participants with more information before the workshops to support them in start thinking about the topic before the actual workshop. A further suggestion was to set of more time for the workshop, and to have a more flexible division between the different parts of the workshop. The first part with the ideation did not take that much time and it would have been good if the participants had been allowed to start immediately with the next parts since defining the steps to achieve the ideas were quite time consuming. Finally, the last year students suggested using a room without access to internet or other digital media, this to avoid taken already existing ideas from the web.

DISCUSSION

The outcome of this work must be considered at three different levels, which also correspond to the project's three different purposes and three different goals. Transformation of society, Educational results, and Research results.

Transfromation of Society

Since the activities at Westerlundska gymnasiet took place within the framework of the national research and development program Viable Cities, one must ask whether the students' activities contributed to making Enköping climate neutral? Can some of the students' concepts and prototypes be used "for real" in the city's planning and development? The answer is that this is not likely. Developing realistic proposals for urban planning requires background knowledge and education from many disciplines on a completely different level. Developing original and disruptive ideas that become useful also requires long experience. Ideas developed by young people often tend to have their origin in things that they have already heard or seen. Ideas that have no scientific basis (e.g., flying bicycles) also often appear. Disruption is good and desirable, but the concept must not completely lose touch with the possible. Design fiction is originally a method of creating Science Fiction - not Fantasy. If we are self-critical, the students' ideas and design concepts were largely a mixture of the predictable and the unrealistic.

If the researchers and the experienced workshop leaders have had the opportunity for more continuous contact with the students during the year, they might have come further. With regular contact and feedback from researchers, the students could have gotten past the first stage, and reach a more genuine creativity and innovative ability. In Westerlundska gymnasiet and within the framework of Viable Cities, this was not possible in terms of project funding and the school schedule. The pandemic also added further restrictions to the work.

Educational Results

The second level has to do with the students' own development. Has their participation in the project given them knowledge and experience that they will benefit from in life? Has the work affected their other study results and graduation grades positively? The use of the method supported experimentation with possible futures and reflection on the present (Wakkary et al., 2013). The students were very happy with their choice of special-work work, and they also thought that that they had gained experience in leading and conducting design workshops. Their two teachers in Architecture and Digital Media perceived it as very valuable that the students got possibility to work dedicated and ambitious with themes around their own and the city's climate-neutral future.

Research Results

Has the project increased the knowledge about how to use Design Fiction in a school environment? It was clear that the method immediately aroused the interest and ambition of the students. The six students who worked with the questions throughout the whole year did so with great enthusiasm. The first workshop with 20 students resulted in several creative ideas despite its limited duration, and in the workshops with younger students the final years students had the possibility to gain knowledge about leading design workshops. However, it is beneficial to have enough time for the workshops so

that the steps between the present scenario and a future scenario (Lindley & Coulton, 2014) can be worked through properly. Generously with time will also increase the possibility to work closely in an iterative way with the students.

CONCLUSION

The main purpose in using Design Fiction with students at high school level was not primarily to come up with realistic proposals for urban planning, or for gadgets that will facilitate Enköping's transformation towards climate neutrality. The real purpose was thus to spread knowledge and awareness of the great changes that society must undergo to respond to the Paris Agreement.

The overall goal with working with high school students was to spread knowledge and insights, which also happened. The small group that chose to work within the project for their grade essays spread the visions to 100 younger students. The teachers that facilitated the event were very enthusiastic and impressed by the collaboration between the students in the different grades. Both the teachers and the students thought it was an educative experience and that they had gained new insights. However, the most important aspect was that the students had the opportunity to work with their own city and their own future.

ACKNOWLEDGMENT

REFERENCES

Bleecker, J. (2009). Design Fiction: A short essay on design, science fact and fiction. Near Future Laboratory

Candy, S. (2019). Design Fiction, In: Universal Methods of Design Expanded and Revised: 125 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions (pp. 82–83), Publisher: Rockport, December 2019.

Grand, S., & Wiedmer, M. (2010) Design Fiction: A Method Toolbox for Design Research in a Complex World. In: Durling, D., Bousbaci, R., Chen, L, Gauthier, P., Poldma, T., Roworth-Stokes, S. and Stolterman, E (eds.), Design and Complexity - DRS International Conference 2010, 7–9 July, Montreal, Canada. https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/47

Lindley, J. & Coulton, P. (2014). Modelling Design Fiction: What's The Story? Conference: StoryStorm Workshop at DIS 2014, Vancouver, June 2014. doi: 10.13140/2.1.5047.8085

Wakkary, R., Desjardins, A., Hauser, S., & Maestri, L. (2013). A Sustainable Design Fiction: Green Practices. ACM Transactions on Computer-Human Interaction, Vol. 20, No. 4, Article 23, Publication date: September 2013.