LearnxDesign

Future Scenario Building and Youths' Civic Insights

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Abstract: *This study considers whether future scenario building in design education can serve to increase students' civic insights regarding sustainable development. A school project, 'Build Your Own Future', including 7th graders' work and interviews, forms the empirical basis for this study. The research is placed within the framework of critical realism, and the research strategy is developed and executed through the principles of action research, where the knowledge resources and changes in attitude among students are explored. The following research question is addressed in this project: Can working with future scenario building, taken from industrial and product design, contribute to meeting society's demand for empowerment and reflective citizenship? In the interpretation of the empirical material, several types of learning and insights that can contribute to this were identified. This paper explores how students showed a willingness and desire to change the future positively, and how they saw opportunities and possibilities by imagining and shaping the unknown.*

Keywords: *Design education, Future scenario building, Sustainability, Empowerment, Citizenship*

Introduction

Increased civic insight and ethical perspectives are seen as important elements in education. For many years, UNESCO has advocated the idea of citizenship education, which it describes as educating children from an early age to become clear thinking, enlightened citizens who participate in decisions of importance to society (UNESCO, 2010). Digranes and Fauske (2010) describe the term reflective citizen as a citizen who is capable of promoting a sustainable future through choices and actions. Design is increasingly seen as a tool or a way of thinking that can contribute to significant changes (European Commission 2012).

In Norway, where this study was undertaken, design is one of the main areas in art and crafts, a compulsory subject in primary and lower secondary education (KD & Udir 2006). The area focuses on citizenship in terms of understanding sustainable development and design as an integrated part of our lives. Both design thinking as a more generic exercise of problem solving and reflection and design as the production of products and artefacts are included. The goal of this education is design in the understanding of Papanek as changing something—processes or products—to a more positive outcome, either changes that take place outside in the physical world or inside humans as reflective choice making. In this framework, we will discuss how design thinking and designing in general education can contribute to empowerment, democracy, and thus, reflective citizens. This study considers whether future scenario building in design education can serve to increase students' civic insights regarding sustainable development.

General design education: from charismatic art to social responsibility

In the 2006 curriculum for Norwegian general education (KD & Udir, 2006), the idea of informed general education regarding sustainable development is a large part of the subject Art and Crafts. It reintroduces the concepts and issues relating to citizenship and a joint individual and societal responsibility for the environment that were found in the pre-WWII drawing and crafts curricula (Digranes, 2009; Nielsen, 2009). The romantic view of art and design in general education that dominated practice in the 70s and 80s, where they were seen as simply a "creativity break in between", "personal growth" or only as a "possibility of enjoyment in a theory-dominated school" is no longer compatible with the new visions for the subject. When education is arranged uniquely with an individual focus and based on a specific individual's situation and experience as well as the individual's sense security, and when self-realisation sets the parameters, it comes at the expense of subject-matter knowledge (Skarpenes, 2004). This, together with the misinterpretation of democracy as being solely individually oriented, is problematic as the reflexive critique of being part of the society that constitutes the democracy is lost (Digranes, 2009). The concept is stretched too far and the idea of education as a tool for social justice and participation for all (Freire, 1970) is lost in the consideration of individual rights.

However, design in the new curriculum relies on ideas of usefulness, lasting products, democratic participation and social responsibility through a local focus on global sustainability. The restoration of the slojd/design quality ideals of the past, such as tangible values within materials, sustainable lasting objects as the end result and workmanship and innovation in solutions, is visible within white papers and curricula from the mid-90s and

onward. The Norwegian Principles for Education, written for primary and secondary schools (6-18 years) with the 2006 curriculum, stated that the schools mandate is to 'stimulate the students and apprentices in their personal development and identity, towards developing ethical, social and cultural competence and ability to understand democracy and democratic participation' (KD & Udir, 2006).

The restoration of knowledge-based design education rather than a charismatic focus on child art promotes a focus on providing design education to create future reflective citizens through general education. Alastair Fuad-Luke (2009) sees the role of designers as an opportunity to change society, and he states that design can be used as a tool for activism. He describes this design activism as creating a counter-narrative that seeks to create and balance positive social, institutional, environmental and economic change. This counter-narrative can be created through fantasy, practice and a design way of thinking. According to Fuad-Luke, design activism can also create a change in the activist him/herself. In this understanding of what design knowledge can be, we see design as an opportunity to actively change society for the better, either through fantasy, design practice or design thinking. This paper explores how future scenario building used as a tool in design education can potentially provide a basis for possible societal changes.

Research framework, strategy and method

The following research question is addressed in this project: Can working with future scenario building, taken from industrial and product design, contribute to meeting society's demand for empowerment and reflective citizenship? The school project 'Build Your Own Future' was conducted with a Norwegian 7th grade class in the fall of 2013. Over the course of two weeks, the students worked with six main tasks. The work resulted in written and visual descriptions of society in the year 2043. The tasks consisted of interviews with elders, completing surveys about society today and in the past, information gathering/context research, future scenario development, a collage presentation, design specification development and design development and drawing. The development of the school project was based on an understanding of future scenario building as a four-phase process: 1. Finding a focus area. 2. Identifying and describing driving forces. 3. Development of the scenario. 4. Presentation of the scenario (Ringvold, 2014).

The scenario was the setting for a future product designed by the student. The school project mainly took place during the art and design classes, but the project was multi-disciplinary and also included the opportunity to work with competences in science and Norwegian classes. The students' work and the research interviews with the students form the empirical basis for this study. In the interpretation of the empirical material, several types of learning and insights that can contribute to answering the research question were identified.

Future scenario building

The term 'future scenario building' within design can be understood as a working method that describes a possible future, as well as how this work can provide fertile grounds for innovative and challenging design processes. In the professional design context, it is not the scenario itself that is the goal but rather the design process that follows afterwards (Willis, 2005). The scenarios are often a narrative, and they follow a

certain approach or form. Future scenarios can help designers to avoid excessively favouring the present (Thorpe, 2007). Through the use of scenarios, designers can free themselves from the idea of what a product is. Scenarios can be seen as an important tool in creating a better relation between products and user needs (Willis, 2005). If designers focus more on user needs and detach themselves from existing technologies, they might create possible solutions that are more closely linked to these needs. A specific example is the car. A person does not necessarily need a steel structure with an internal combustion engine and four wheels; he/she needs a method to get from A to B.

Scenarios and design can also be seen as having common qualities. They are both future directed and are attempts at prefiguration (Willis, 2005). In light of Willis, we see future scenarios as pre-figurative thought exercises that are similar to design, that is, having an idea about how something should be and actualising it. Through exercises and tools like future scenarios, students can practice pre-figurative thinking and actualising design. In a teaching situation where students get to work with future scenario building, opportunities to see products in a larger context might facilitate a greater understanding of topics such as consumption and environmental impact. We question whether this approach can provide the students an opportunity to see the challenges and problems within an overall context and whether it can prevent the alienation of issues and topics such as sustainability.

Critical realism and action research

The research framework for this study and paper is critical realism (CR). CR sees causality as generative mechanisms, and the objective of scientific research should be to describe these mechanisms of causality (Næss, 2012). In CR, reality consists of different strata (layers) where new causal powers and qualities develop with each layers emergens with lower levels (Næss, 2012, p. 5). The different layers can be connected to phenomena within different fields of knowledge (i.e. physics, biology, economy or sociology). Through this interaction, causal powers emerge from different layers. Causality does not exclude or distance the explanations for hermeneutical understanding, but rather it points to structures that will influence the causality at different strata.

The objective of this study was to describe the mechanisms and phenomena that could manifest when teaching with future scenario building as an approach. In CR, the relationship between structures and actors is seen as important. These have certain qualities and causal powers that influence each other. The acknowledgment of causal powers does not exclude human motives and reasons for acting. Causal mechanisms can also include individual attitudes and knowledge (Næss, 2012), which in turn can influence structures, i.e. traditions, consumption patterns or policies. The study aims to gain knowledge of how future scenario building with students can contribute to their insight into societal challenges and to determine whether design education can influence students' readiness for participation and citizenship.

ACTION RESEARCH

The research strategy used in this study was action research. Action research is a method to improve practice and produce evidence on how such practice can be improved (McNiff, 2013). Through the collection of empirical data, analysis and discussion, we wanted to show how scenario building can contribute to the possible content and

development of design education. The data gathered through the study included participatory observation notes/photos/audiotapes, qualitative research interviews and the students' scenario work. CR sees informants as social actors interacting with society on different levels. In this understanding, we saw the scenarios as narrative expressions that together with interviews could provide valuable information about the students' attitudes, regarding their work on the school project.

Within the framework of action research, one of the authors acted as teacher-researcher during the two-week period that the school project lasted, together with the teachers that the students normally had. The teacher-researcher has experience and a background in teaching and as a design professional and did not have any prior knowledge or connection to the school or any of the students or teachers involved in the project. To gather data from observation, the classes were audiotaped, notes were made and photographs were taken. Student work was photographed, and interviews were audiotaped and transferred into typed text. The student interviews were organised in several focus groups, each consisting of three students. The research followed the ethical regulations of individual and parental consents.

Narratives of the future

The work of 12 of the students formed part of the empirical data for the study. It consists of collages of the scenarios and product drawings with descriptions integrated into the sketches. They were created during the design process, which followed the scenario development phase.
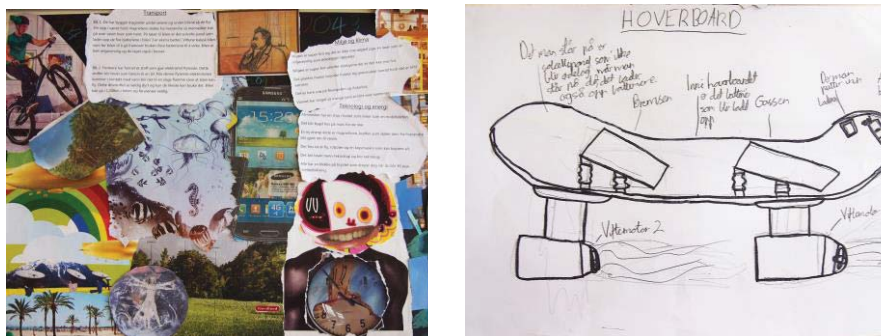

Figure 1: Collage and product drawing from a 12-year-old student

We chose to see the collected data as narratives of the future. The students told stories of the future through collages, written texts and product drawings. Narrative analysis was therefore used to isolate some of the dominant stories told throughout the classroom. In the analysis, what the students highlighted as the important driving forces in society that would contribute to or deter a better future was the main focus. We isolated how they described and displayed awareness of political agendas and actions, legislative structures and private responsibilities. This showed in their interactions with other generations, institutions and interests as they started their scenario developments. In CR, actors position themselves with regard to structures that define their everyday lives, and in this

analysis, we therefore chose to identify some *narratives of positioning* that became evident in the data.

Narratives of positioning

Through the project, we questioned whether the development of critical reflection in terms of shaping the future and their own part in could be a way to ensure an empowered youth. To promote reflective citizens for the future, we found it interesting to focus on knowledge resources, values and attitudes. The narratives of positioning that we constructed from the empirical data tell of how the project 'Build Your Own Future' led to some changes in these areas. In the study, the students expressed and displayed knowledge and insights into topics such as the environment and technology. They showed a practical knowledge of and willingness to shape the future, make decisions, change situations and solve problems. They shared reflections about their own lives and societal challenges using knowledge and insights actualised through working with future scenario building.

Insight to the challenges of today and tomorrow

Through the tasks in the project, the students worked with some of the challenges we face as a society. In the interviews with the students, the conversations often developed into discussions about environmental problems and the possibility and ability of humans to solve them. In their scenarios, most of the students told of a future with a very positive environmental and health situation. In these positive scenarios, this was described as a result of human ability to change, or technological revolutionary developments. These descriptions can be seen as a wish for a future where society has solved one of the greatest global challenges.

Environment

Many of the students showed through their work examples of knowledge and insight into how the climate crisis can be solved, either through a change in attitudes or political decisions. The students told stories about a world where the environmental threat had consequences for how we live, from individual lifestyles to global policies. In our view, the students showed in these descriptions an understanding of the consequences of today's consumption patterns and highlighted the choices and actions they think humankind should take. A solution to an individually identified environmental challenge was also included in one of the student's product designs:
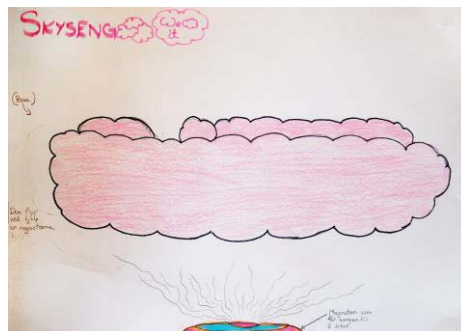
Figure 2: Product drawing from student I: 'Cloud Bed'

In general, the students portrayed a very positive picture of the future in environmental terms. 'The Cloud Bed is a bed that is good for your body. It massages, has a built-in hologram servant, burns off excess calories, has a built-in duvet and pillow, perfect temperature, promises no nightmares, comes in different colours, can be shaped by itself and is a member of the photosynthesis. It also reduces the chances of becoming ill' (Student I in the product description). The positive situation was described as a result of changes that humans had made, either political regulations or consumer choices.

Another student describes humankind's new environmental activism and love for animals:

'Everyone on earth was for a while afraid of global warming, so they did everything they could to stop it. People are REALLY, REALLY concerned about nature and love all the animals that live there. Almost everyone has a pet (because we got rid of allergies). And we try to get environmentally friendly solutions for EVERYTHING!' (Student C in the scenario description).

Figure 3: Collage from student C

Though most students portrayed a very positive image of the future, some students also raised serious concerns about how things will turn out:

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'If the polar ice cap melt, where will the polar bears live? Maybe we humans will make the polar bears extinct with all our garbage. Maybe there will be tsunamis and floods? More than we are used to. Nobody knows. What if the forests disappear? What do we do then? Then it will be harder for us to live and the air will be bad' (student G in the scenario description).

The project work seemed to be a good arena for thoughts, reflections and also dialogue between the students concerning the environment. Reflection and dialogue can contribute to possible changes in knowledge and attitudes. This was seen when, as part of the project, the students watched the film *Wall-E*. Some of the students expressed during the interviews how the project work changed their view of the film and its message about consumption and the environmental challenges humanity faces:

> Student E: I've seen the film *Wall-E* before, but then I only thought, 'It's a cartoon; the world goes under and everyone is fat'. I didn't think much about it then.

> Student D: I didn't think about how earth would look like if we continue the way are going now.

> Student E: I thought, 'It's not going to happen with us humans. We are better than that'. But we are not.

> Student F: I didn't think much about it the first time I saw it. Now that I get all this down on paper, I think it's much more important than that.

TECHNOLOGY

Many of the students described futures where new forms of energy and technological inventions play a vital role in society and in solving environmental problems. The scenarios contained imaginative solutions using a wide variety of renewable resources and new ways of capturing and storing energy. The forms of energy described included *magnetism, solar energy, lightning power, thunder power, hydropower, saline power, bio gas, cloud energy, liquid electricity, sound energy* and *wind power*. Through the focus on alternative forms of energy, the students showed insight to the scarcity of natural resources. They described how society demands energy use, but that the use of finite resources is the reason for the climate challenges we face. In the research interviews, the students voiced a wish to create a future where the use of energy sources differs from the existing situation: 'I wanted it to be environmentally friendly. I didn't want to use the same energy sources we use today. I didn't want to use oil and gas. I wanted to use more environmentally friendly ones' (student E in the research interview).

Through actively imagining alternative, non-existing solutions to a problem, the project work provided the students with an opportunity to exercise an important design competence: design intelligence. Nigel Cross defines design intelligence not as finding an existing solution or goal but rather creating new solutions to a problem (Cross, 2011). Through the project, the students worked actively on solutions to some of the biggest challenges for society today. In light of this, can the project work be compared to empowerment and the problem-posing educational concept advocated by Paulo Freire, and does this design competence contribute to the students' ability to make choices and actively influence and change their own and others' civic and social situations?

<small>HEALTH AND NUTRITION</small>

Many of the students described futures dominated by nutritious diets and plenty of exercise, all of which makes humans very happy: 'We exercise, live healthy, and we enjoy it. Because if you actually try to taste healthy food, which is well made, it actually tastes good. 57% of all the food we eat during a week is fish, 10% other types of meat, and 33% vegetables. And we love the healthy food we eat' (student C in the scenario description).

Through the descriptions, the students seem to be advocating for a future where health consciousness and knowledge about health and nutrition contribute to an increased quality of life. This optimistic description of the future was also visible in the collage presentations (figure 4). Students I and C both chose to visually compare a tired and sick present and a happy, healthy future.
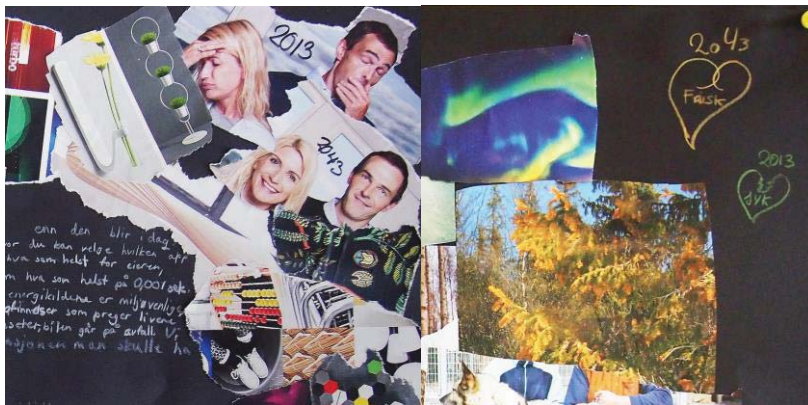

Figure 4. Sick – Healthy & Happy – Broken Hearted

The students also described how medicine and new medical developments, knowledge and inventions will do wonders for the public health: 'The doctors are the best you can get, and researchers have tested many things and have found many good solutions to problematic diseases that we would otherwise die from without the help from doctors and researchers' (student C in the scenario description). Student L tells a story about a world where a new medicine changes the world dramatically:

'We will not be very sick in the year 2043 because there will be a medicine, so you will not be so ill very often. For the medicine to work, you need to take an injection every five years. The children get the injection at school, and the grown-ups get it at work or at the hospital. In 2043, we will live long and healthy because we eat healthy and we exercise more' (student L in the scenario description).

Many of the descriptions from the children might seem exaggerated, but it can be argued that the medical developments of the last 50 years have been revolutionary. In our view, the students show insight into society and display knowledge of what is needed for future changes to happen—be it through research and medical developments, as described by student C, or through vaccination programs and increased knowledge about exercise and nutrition, as described by student L.

Shaping the unknown

Through the school project 'Build You Own Future', the students constructed future worlds in written and visual presentations and designed products set in those scenarios. Many of the students expressed a joy connected to being able to shape the future: 'It was fun to think for yourself and hoping how the future becomes and how you want it to be […] It was fun to make inventions, and thinking how to make them' (student A in the research interview). Student A describes happiness in thinking about the future, working with his own hopes and wishes and describing and thinking about how this future can be materialised, both in the scenario and in the product design. In our view, the student reflected on his own future by shaping the unknown in the scenario descriptions and by visualising and thinking out solutions in the design work.

Students F and E emphasised the importance of there not being any right or wrong way of completing the project and in being able to decide what the future might look like. They expressed joy in shaping the scenarios and making their own decisions:

Student F: 'What I liked about the project was that there wasn't…that you said that there wasn't any wrong way of doing it. That we could imagine 2043 the way we wanted to. That there wasn't any wrong way'

Student E: 'Yes, it wouldn't be nice if we had a teacher that said do this and this, and you need this and this invention'

Student F: 'It's better in a way when we can get everything out. Our views. Everything you think should be. That there is no wrong in it'
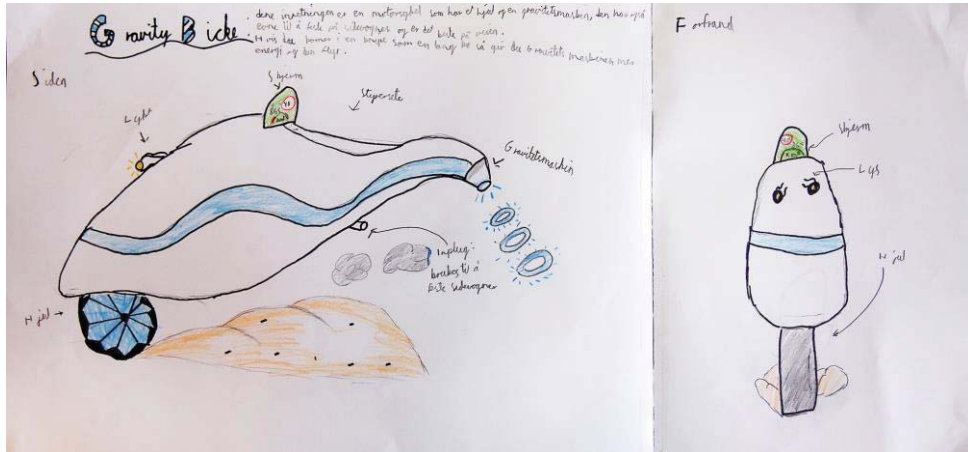

Figure 5: Product drawing

In light of this, we see the project as an opportunity for the students to reflect on and demonstrate their ethical standpoints and their own ethical choices, as well as what society should be like, what is important and what the right choices are for a better future. It seemed that the future scenario work was an exercise in pre-figurative thought, as described by Anne Marie Willis (2005), that is, having an idea about how something should be and actualising it. This design competence and pre-figurative thought perhaps

contributed to the students' ability to express their own views and their ethical standpoints. By visualising and shaping the future, it might have been easier for the students to visualise the consequences of the choices they made.

When asked what they had learned by working with this project, student I expressed that she had learned to use her imagination in combination with research: '[…] I have learned to use my imagination and see and find out things' (student I in the research interview). In a critical realistic perspective, one can see this statement as a description of the interactions between an actor/student and structure/society. She describes how she has learned to use her imagination, see/observe and gain new knowledge through the project work. We see these three actions/exercises as central to an understanding of what design competence can be: 1) To observe and research, 2) identify problems, and 3) through imagination get ideas and visualise new solutions and possibilities.

Looking back to look forward

As part of the process of working with future scenarios, it is desirable to detect the major driving forces in society. In his article "How to Build Scenarios", Lawrence Wilkinson (2009) stated that these major driving forces move the future in one direction and that by making visible these forces, one makes better decisions today. Driving forces can be understood as both internal and external. Internal forces can be knowledge and attitudes. External forces can be technological, economic or natural. Examples include globalisation, increased greenhouse effect or increased longevity. Through self-uncovering drivers and seeing them in a local context, the students can get an understanding of the challenges we as a society face.

As part of the project, the students were to interview their parents or other members of previous generations. The aim of this task was for the students to detect trends and/or changes in the way we used to live compared to today when it comes to energy use, consumerism, health, technology and transportation. The objective here was that this would help to prepare the students for the idea and scenario building that would follow. Student I described how the work helped her to see new historical perspectives: 'You learn how society is today compared to how it can be in the future. And how it's been. And it's really exciting and really creative. It's fun. It made me think about how the world is today and how it can be, and the differences of how it can be in the future' (student I in the research interview). Student C expressed how this project can contribute to the students' perceptions of the past and the future and how this can help their reflection about present challenges: 'You learned about how things where then. You realised that it's changed a lot since then. You might get more open about what can happen in the future if you don't care about nature now' (student c in the research interview).

By working on such a project, and through thinking about the future, the students also had the opportunity to think about the consequences of choices, actions and events that take place. It is possible the climate threat does not engage the media, politicians and the public to a great extent because its consequences are not yet clear and present in the daily lives of most people. Perhaps we do not see clearly enough the consequences of an increased greenhouse effect. Based on what the students in the project expressed in the interviews, it seems that these consequences became more visible through working with the project.

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The student descriptions of the world in 2043 differed, though there were also similarities. That there are different ways to look at the future was something the students pointed out as a learning outcome: 'That there are many different ways to imagine 2043. That is something I've learned. Then we can picture that 2043 can be a year that can be really good or really bad' (student D in the research interview). Another student expressed: 'Everyone has their sides in a way. Everyone sees things from another side. I doubt it that everyone sees it from the same side all the time' (student F in the research interview). This reflection about different perspectives and views expresses an increased understanding of society and the future as something that can be shaped and changed in differently.

Empowerment and participation

In the research interviews, many of the students mentioned that the project had given them the opportunity to think about their own future and what they can do to influence society. Through creating scenarios, it became more evident for the students what needs to be done to create societal change. Choices, actions and consequences were being visualised, and in some instances, the students let the driving forces that they had identified be played out. But they also stopped driving forces through choices made, such as a decrease in the greenhouse effect through changes in policies and consumer behaviours.

Through the work, the students had to make their own decisions, something many of the students said that they appreciated. Student A expressed appreciation for being able to control the work: 'It was fun to think for yourself and how you want it to be' (student A in the research interview). His own ability to influence societal change was voiced in these words: 'You can try to if you work really hard; you can when you get older. I can try to become a scientist and I can try to find out more environmentally friendly things. For cars, and that we try to find new things instead of things that pollute' (student A in the research interview). The student tells about a concrete way to change the world for the better. In light of this, he perceives society and the world as something that can be changed. Other students voiced a desire to change the world but also saw obstacles to this: 'I want to change things, but it's difficult, because we can't control the whole world' (student F in the research interview). The students expressed that it is important to influence decisions, but they acknowledge that they cannot dictate the actions and behaviours of others.

Meeting the challenges of tomorrow

In the project, the students showed engagement with one of the biggest challenges of our time: the climate threat. In several of the scenarios, the students described how a better tomorrow was created through knowledge, changed values, legislation and technology. UNESCO describes citizenship education as education that contributes to reflective and critical people who participate in decisions that are important to society (UNESCO, 2010). The students stated that working on the project gave them insights into the challenges society will face, and we read this as an indicator of increased awareness regarding their role as citizens. The teacher stated that 'The students developed a thorough insight into driving forces and what these do. It also became clear to them the challenges we will face in 2043' (Teacher 1).

Societal knowledge as a contribution to citizenship and empowerment

The article "The Reflective Citizen – General Design Education for a Sustainable Future" claims that a goal in design education is for the students to become '[...] a reflective citizen that is capable of promoting a sustainable future through choices and action' (Digranes & Fauske, 2010, p. 367). The choices and actions in future scenario building can be read as statements regarding the creation of a sustainable society. The students' hope for a sustainable future and how to get there is clearly conveyed. How can we say that this contributed to reflective citizenship? Arne Johan Vetlesen, a Norwegian professor of philosophy, states that children must be allowed to make a difference through their actions and engagement in problems and that they must be allowed to 'let the activist out' (NRK P2, 2014).

In their stories and interviews, students D, E and F described a change in their attitude and values by working on the project. They reflected on how they saw sci-fi cartoons of future society differently now that they had knowledge of climate change, food distribution and health issues. This is a small step towards what the European Design Leadership Board requests for education; however, early awareness and knowledge of societal challenges might make students more capable citizens in the future. Changing habits and consumption patterns is not done overnight, and general education can be a key factor in this. Stefano Marzano (2005) points to studies in brain research that show how consumers are influenced by thinking of a possible future. Without going further into this research in this paper, we ask if whether the insight that the students acquired might be considered what is called priming memories, an awareness that makes you observant when you meet the challenges in everyday life, and something which in the end might influence your action towards making more ethical choices.

Buch-Hansen and Nielsen describe how actors do not exist in a structural vacuum but can influence the structures around them (Buch-Hansen & Nielsen, 2005). Actors can be influenced by phenomena and structures, but social interaction and collaboration is necessary to change existing structures. One of the aims of education is to give students the tools to interact and collaborate with regard to certain phenomena in such a way as to change existing structures to new ones and change the future into a more sustainable one. Future scenarios can provide some basic knowledge of the driving forces and consequences of today's consumer choices, and as such, can make for a more reflective attitude towards future actions.

Paolo Freire (1970) describes how problem-oriented education can provide the basis for developing empowerment. Can future scenario building with students be seen as problem-oriented education? Freire claims that education has to provide a steady unveiling of reality. By identifying the driving forces, structures and values that steer our choices, students will unveil the challenges that must be addressed in the future, and as such, they can be seen as moving down a path towards empowerment. According to our findings, by addressing real life questions, students are more likely to feel an obligation to solve the challenges and problems perceived. The real life problem approach, rather than a theoretical problem of right and wrong, provided an avenue for the students to research driving forces and structures. The answers the students then provided were based on a specific context and gave rise to new questions and problems, and as such, created a new level of understanding and involvement.

Shaping the unknown: design literacy for the future

This approach to problem-oriented understanding also lead to another narrative in the interviews: the joy of creating something unknown, either through creating 'a new society' or a product to go with it. Nigel Cross claims that a good designer has a unique way of thinking: 'Rather than solving merely "the problem as given" they apply their intelligence to the wider context and suggest imaginative apposite solutions that resolve conflicts and uncertainties'. (Cross, 2011, p. 136). In our view, this description of design thinking can be compared to the process the students went through in their scenarios. They created imaginative descriptions of the future, and many of the scenarios contained solutions to major societal changes. Perhaps this work can be seen as a training exercise in design thinking, as described by Cross, identifying problems and creating and exploring new and alternative solutions. Some students chose to include these in their final product design, like student I, who designed a cloud bed fuelled by photosynthesis.

Why should these forms of knowledge and capabilities be a part of general education? Vetlesen (NRK P2, 2014) stresses that we are morally obligated to give children a chance to face the challenges of tomorrow. To create the necessary societal changes, the ability to envision and create new solutions is important, regardless of whether one is designer or not. In the article "User Participation – Real Influence or Hostage Taking?", Digranes and Fauske (2007) claim that general design education can be seen as contributing to the democratic perspective as knowledge regarding the quality and longevity of products might counter the development of a society with too much waste. Educating future consumers is also a moral and ethical obligation and a step towards empowerment for those who will ultimately inherit the sustainability problems now created. In our view, the project "Build Your Own Future" gave the students an opportunity to see solutions and products in a wider ethical context, and thus, a wider societal context.

Anne Marie Willis (2005) compares future scenario building with design as they are both pre-figurative thought exercises. We saw in the students' work how this pre-figurative thought process stimulated them towards seeking new solutions and giving shape to something as yet unknown to them. This competence is seen as a fundamental human capacity and the basis for all design, not just professional design practice (Willis, 2005). Through general design education, this important capacity can be fostered in the coming generations. Liv Merete Nielsen states that visualising ideas and solutions not yet articulated presupposes a competence to visualise these ideas. It does not happen naturally (Nielsen, 2013).

Alastair Fuad-Luke's definition of design—'Design is the act of deliberately moving from an existing situation to a preferred one by professional designers or others applying design knowingly or unknowingly' (Fuad-Luke, 2009, p. 7)—places future scenario building within the field. The students used the design thinking and design tools given to create imaginative descriptions of utopian futures, futures they hope for. We see this as a stepping stone towards providing students with awareness of existing structures and a critical approach to driving forces and possible change. If students can reflect critically on their own position and influence, their choices will be based on values and knowledge rather than trends and serendipity. The future depends on how the next generation faces the challenges we know are coming and the tools we give them to shape it.

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