

# UNDERSTANDING SUSTAINABILITY THROUGH MAKING A BASIC T-TUNIC IN PRIMARY SCHOOL

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## ABSTRACT

This paper is a Classroom Based Action Research (CBAR) project on an assignment given to 11-year-old pupils. The pupils worked together in small groups in which design technology could be applied to problems encountered in construction and operation of making the tunic. Additionally, the class had the opportunity to practise how to cooperate as a team and talk about sustainability and the maintenance of a textile product. The textiles were leftovers from, for example, flea markets or worn-out bed linens. The assignment challenged the pupils to think for themselves, work on problem solving and experience how to make a simple garment in both an environmentally friendly and economical way. They gained insights into the ancient method of making clothes; the development from simple handicrafts to industrial productions, with both positive and negative effects; and, of course, the social aspect of the task. They also documented the process using their iPads. The aim of this paper is to discuss the educational project in context of theory about fashion and sustainability as a basis for general education for coming design engineers and the general public as users of their work.

*Keywords: Sustainability, basic T-Tunic, sewing machine, syllabus, design, the subject Art and crafts, maintenance, problem solving, the Lendbreen Tunic, fashion, geometric shapes.*

## 1 INTRODUCTION

The aim of this paper is to discuss the educational project in context of theory about fashion and sustainability as a basis for general education for coming design engineers and the general public as users of their work.

According to the core curriculum for primary, secondary and adult education in Norway;

The aim of education is to furnish children, young people and adults with the tools they need to face the tasks of life and to surmount its challenges together with others. Education shall provide learners with the capability to take charge of themselves and their lives, as well as with the vigour and will to stand by others...Education shall qualify people for productive participation in today's labour force, and supply the basis for later shifts to occupations as yet not envisaged [4:5]

They empathise with spiritual, creative, working, liberally educated, social, environmentally aware and integrated human beings. In this paper, creative and environmentally aware human beings are in focus.

In 2013, the Ludvigsen Committee was designated to create a report on how the content in the curriculum in Norwegian schools should be in the future. In June 2015, they handed over the report to Kunnskapsdepartementet (the Ministry of Education and Research), strongly influenced by the international discussions about the 21st century skills and competences. They provided a scientific and futuristic evaluation and advice on the changes that should be made to the Norwegian school system and curriculum. Several of our references regarding sustainability are found in this report [5]. In the white paper NOU 2015:8, it is recommended that sustainability be emphasised as a theme in the subject of Art and crafts, including design. A subject where pupils experience joy and a sense of achievement through creative processes will educate them to be able to solve complex problems [5:12]. On 28 September 2015, the UN 2030 Agenda for Sustainable Development set a goal labelled 4.7, stating:

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-

violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development [6].

Sustainability and fashion have been the focus for several researchers [7,8,9,10], and this theme is important for both professional designers and the general public, as critical consumers of the designed clothing and their ability to design and make their own clothing. This is the background for the assignment addressed in this paper.

## 2 METHODOLOGY

The methodological approach in this research project is Classroom Based Action Research (CBAR) [1,2,3] by the Art and crafts teacher. The steps through this action research are <sup>1)</sup>Identifying the Problem <sup>2)</sup>Devising a Plan, <sup>3)</sup>Act to Implement a Plan, <sup>4)</sup>Observation, and finally <sup>5)</sup>Reflection. This is in line with Donald Schön (1983) who described the reflective practitioner as one who thinks systematically about practice.

## 3 T-TUNIC AND SUSTAINABILITY

The research question, or *Problem* in this project is how sustainability can be learned through an assignment to make a basic T-tunic using a sewing machine. This task was based on the competence aims from the curriculum Kunnskapsløftet K06 (the National Curriculum for Knowledge Promotion) after grade 7 for design. Over the years, this assignment in focus in this paper has been developed by the Art and crafts teacher, from focusing on how to make a T-tunic, the *Plan* is to focusing on the broader subject of sustainability. The T-tunic assignments development came about because of different factors, such as the different needs and levels in a class, the local framework regarding timetables and the increasing focus in our society on a sustainable future. To *Implement the Plan*, the task was assigned to pupils in the 6<sup>th</sup> grade. Ahead of the given assignment, the pupils were offered basic training and knowledge in how to use a sewing machine. They had to choose textiles from a selection of old bed linens, tablecloths and curtains – leftovers from, for example, flea markets or worn-out bed linens. Even though these were second-hand materials, the Art and crafts teacher *observed* that pupils were motivated by being given the chance to make their own decisions in choosing a textile and she discuss the observations in line with relevant literature about sustainability and clothing. Working with the basic T-tunic, the Art and crafts teacher focused on the steps for making it while emphasising the importance of, for example, being thorough with measurements, practicing what they had learnt earlier and how these would affect the garment's quality. During the project the pupils used their Ipads to make time-lapse films and photographs of the different phases and to visualize their written documentary text. This was then gathered in an app called Book Creator which is used a lot for these purposes.

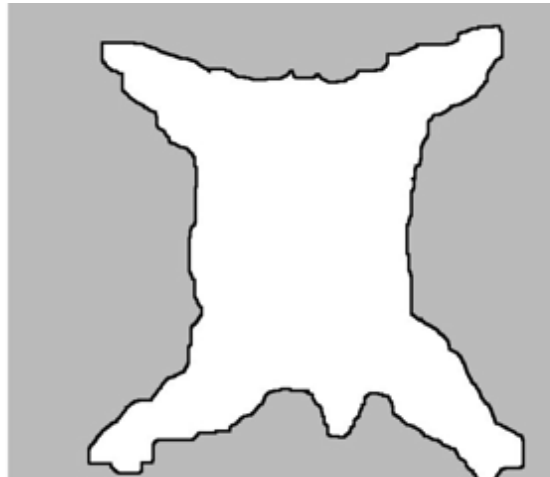


Figure 1. Taking measurements

### 3.1 First lesson

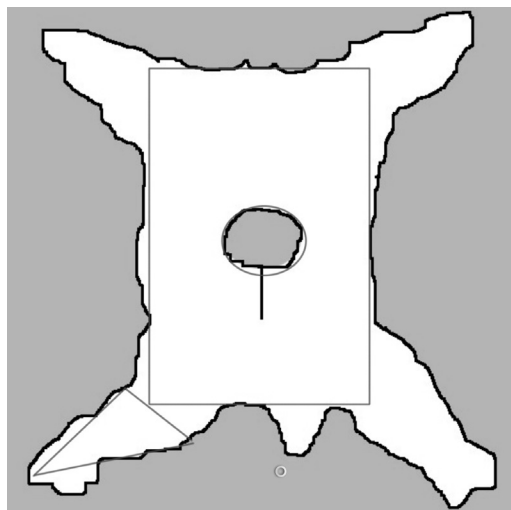
In the first lesson, the pupils were introduced to many new words and terms, which the teacher and pupils discussed and explained together. Mathematical terms in geometry were also repeated to explain and understand how and why the T-tunic can be a practical and sustainable style for a garment. Rissanen and McQuillan say, “Although the term zero waste fashion design is new, the practice is as old as dressing the body with skins and cloth” [11:11]. The introduction phase started with a simple drawing of a flattened animal skin (Fig. 1). The class imagined returning to the early Stone Age, when

people only had sharp stones and pleated straws as tools. The questions given were, “How can you turn this skin into a practical garment, cutting away as little as possible? – remembering the skin was exclusive and a hard work achievement. What geometrical shape exploits the skin best?”



*Figure 2. Drawing of an animal skin*

After several rounds of suggestions, they finally discussed the Poncho principle, i.e. a hole in the middle for the head. Given the task of saving as much skin as possible, they were asked to determine how they could cut a small hole and still get a head through it. They were asked to guess their head circumferences and after measuring their heads, they realised the circumferences were bigger than first assumed. Only a few pupils came up with the idea of making a small cut in the opening/hole (Fig. 2).

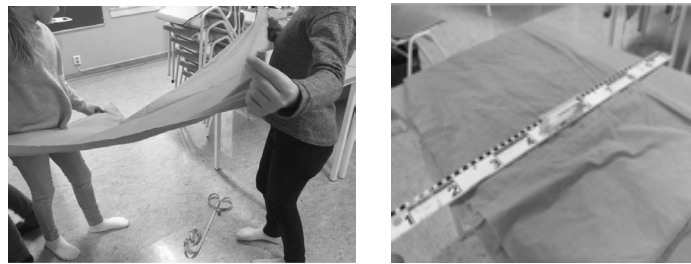


*Figure 3. Animal skin with geometrical shapes*

A documentary film of the Lendbreen Tunic was shown after. It is approximately the oldest known piece of clothing ever discovered in Norway, a tunic dating back from the Iron Age that was found on a glacier in Breheimen and was reconstructed using Iron Age textile techniques [12]. The class was shown how expensive a garment made in the old-fashioned way would be in today's value, after which they discussed the contrast with the mass production of cheap clothes. The focus was on in particular how rich countries outsource production to poor countries with cheap labour and the consequences of this for us as consumers and for the environment, the economy and health. The teacher asked the pupils what makes something sustainable. Why is it important? This motivated them to come up with their own thoughts on the theme. Rissanen and McQuillan claim,

There are two broad categories of textile waste: waste created of industry and waste created on consumers. Preconsumer textile waste is created during the manufacture of fiber, yarn, fabric and

garments. The majority is fabric waste from garment manufacture. Postconsumer textile waste is created by consumers and comprises garments and household textiles [11:10].



*Figure 4. Folding the textile for the T-tunic and measuring*



*Figure 5. Making the pattern for the T-tunic*

### **3.2 Second lesson**

In the second lesson, the teacher handed out a tutorial on how to make a basic T-tunic. They worked in groups of three to four following the tutorial and trying to solve problems that occurred on their own (Figs. 4–7). When trying the finished tunic on, any mistakes or sloppiness would reveal themselves. Through experience, they learnt why it was important to make a solid product (Fig. 7).



*Figure 6. Folding hems and pinning them and ironing the hem*



*Figure 7. Sewing the hem*



*Figure 8. Example of a finished T-tunic*

### **3.3 Third lesson**

In the third lesson, the pupils summarised the whole process, as well as explained words and concepts, such as sustainability. During this phase, the teacher received feedback on how much they had achieved and understood of the process. To ensure a greater understanding of why the T-tunic is a sustainable garment in this context and throughout history, the pupils made a miniature paper

maquette (Fig. 9). The patterns were inspired by the book *Cut my Coat* [13]. One pattern was easier than the other, both were made from geometrical shapes and all pieces should be used. The teacher varied the method in how she presented the task to them, but independent of this, there was a great variety in how they solved the task.



Figure 9. Cutting the easy paper maquette and the more advanced paper maquette

Some pupils had time to try out their own zero-waste-design paper maquettes made from geometrical shapes. In Rissanen and McQuillan's book, they state that squares and rectangles are the easiest shapes in the zero-waste fashion design context, but it is perfectly possible to design with circles and curves [11:80]. The class had another plenum summary, sharing experiences on what was challenging and why. As Rissanen and McQuillan show in their book, it is evident that some fashion designers in modern times have been influenced by the cuts of historical garments promoting less waste [11:11].

#### 4 SUMMING UP

According to the investigations in this action research project, sustainability can be learned through an assignment to make a basic T-tunic using a sewing machine working in-depth like this class did in this project. The assignment gave the pupils' time to reflect and achieve a higher level of understanding of sustainability in this given context, through making a basic T-tunic. In the beginning, they questioned why sustainability had anything to do with making a garment. However, after repeating the reasons, seeing the documentary, making the tunic and paper maquettes and engaging in continuous dialogue, the context became clearer to them. In the NOU 2015:8 report, they emphasise the relevance of working in-depth for a greater understanding of central elements, such as sustainability, as well as how they can be integrated from one subject to another. Pupils at this level often have an expectation of only the process of making things, not so much of theory and talking. Variety and creating a balance between practices is important to motivate the pupils, as well as engaging them to think for themselves and reflect on examples given to them. The textile waste from both industry and consumers or all the plastic waste influences our environment, hurting animals because of this, and air pollution tends to engage pupils easily and is therefore a gate to their motivation. In the NOU 2015:8 report, they say the education of children involves a good understanding of what the risks to our climate and environmental challenges mean and it is important to acknowledge the responsibility we all have.

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