



# Ugly as a concept in craft to examine alternative futures

Ana Nuutinen<sup>1</sup> · Riikka Räisänen<sup>2</sup> · Päivi Fernström<sup>2</sup>

Received: 17 October 2017 / Accepted: 6 December 2017 / Published online: 16 December 2017  
© The Author(s) 2017. This article is an open access publication

## Abstract

Futures studies argue that the future cannot be predicted, but rather alternative futures can be explored and preferred futures can be imagined. Furthermore, our images of the futures can be a resource that informs our decision making. Understanding and imagining futures needs transdisciplinary inquiry; it calls for creativeness and freedom from prejudice. In this study, we present a design experiment accomplished in the textile teacher education at the University of Helsinki. Our aim was to explore and strengthen the skills that students will need in their future work. Expression, design and technology are characterized by open-ended and complex design problems. When solving them, a student internalizes that there are no right or wrong solutions to problems, that the path of the design process cannot be precisely defined in advance, and that the same starting point can produce different solutions. This experiment familiarized students with the interrelation between materials and the techniques for their manipulation, and guides the students to understanding the opportunities provided by manual experimentation, spontaneous invention and discovery. Carrying out these experiments entails the free, unusual or absurd manipulation of the materials. Ugly was especially selected as the viewpoint to discuss possible new futures. Data were collected from students' portfolios and analysed using qualitative content analysis. The study shows that making something intentionally ugly raises emotional debate. Ugly was understood and defined in numerous ways. Ugly experiments impacted on motivation to invent and discover by empowering or encouraging, for example. A matrix was formed to summarize the findings of the study.

**Keywords** Craft · Design · Anticipation · Experiential foresight · Alternative futures · Empower

## Introduction

In this study, we present a design experiment accomplished in textile teacher education at the University of Helsinki. The experiment showed students the connections between materials and techniques and how to manipulate them to

understand the opportunities for experimentation, inventions and discoveries. The objective was to show how working with materials using different techniques both requires but also enhances free and unconventional mindset.

The purposes of futures studies are to discover, invent, examine and evaluate. The exploration for possible futures includes trying to look at the present trends in new and different ways, deliberately avoiding conventional and traditional thinking and taking unusual and unpopular perspectives. Critical perspective to the futures focuses on a purposeful transformation and development of an existing situation. It is used to find ways to break away from the preconceptions and the built-in, unconscious beliefs and to find new perspectives and to open new opportunities to the future. Experiential foresight involves thinking of present problems as opportunities and present obstacles and limitations as transcendable. [1]

Futures studies aim to explore alternative futures, which may be possible, probable and preferable. Futurists agree that images of the future constitute a significant factor that guides human behavior and through behavior such images contribute to the creation of the shape of the coming future. Purposeful action requires the anticipation of future occurrences. [1]

---

**Electronic supplementary material** The online version of this article (<https://doi.org/10.1007/s40309-017-0127-3>) contains supplementary material, which is available to authorized users.

---

✉ Ana Nuutinen  
ana.nuutinen@ulapland.fi

Riikka Räisänen  
riikka.raisanen@helsinki.fi

Päivi Fernström  
paivi.fernstrom@helsinki.fi

<sup>1</sup> Fashion and Clothing, University of Lapland, P.O. Box 122, 96101 Rovaniemi, Finland

<sup>2</sup> Craft Studies, University of Helsinki, P.O. Box 8, 00014 Helsinki, Finland

Futures studies propose the active role of a person for exploring and imagining the future [2]. And from this point of view craft provides an interesting field of approach. Craft offers opportunities to experiment with new ways of thinking that break the boundaries. Craft makers and designers ought to have a key role through which they can innovatively renew their practices and also actively influence the public and the future in society. Future-oriented craft education increases understanding of the effects of design on people and the environment and encourages rebuilding the living environment and its products and services. [3] This agrees well with the most general and important purpose of futures studies which is to maintain and foster the freedom and well-being of humankind and all living beings. [1]

Education is preparation for the future. It is guided by the partly unknown skills and abilities that will be needed in the future. According to Hicks, teachers generally deal with the present and explicit exploration of the future is missing from the curriculum. In times of transition and rapid change, the past cannot provide an accurate guide to the future. Students need to develop skills in anticipation and adaptability, foresight and flexibility, innovation and intuition in order to become more adaptable and proactive towards change [4].

Also important are students' real-life experiences that shape their capacity to acquire knowledge from past experiences to shape future experiences [5]. The purpose of design education is to guide the student to a critical approach and to increase the proportion of knowledgeable designers, craft teachers and consumers who understand their environment and culture [3]. Design education encourages experimentation, initiative, perspective change, and sharing one's own ideas. In addition, the idea is to make design thinking and the design process as a tool for phenomenon-based learning.

It is impossible to answer the future challenges of craft and design by developing only the old ways of working. It seems that working in the conventional way is a strong habit, with a subject-based focus in lessons, for example. On the other hand, students tend to continue the ways of teaching and guiding they learned when they begin their working life as teachers. Thus, teacher education has vast opportunities when offering tools to students for creating new knowledge, raising enthusiasm and introducing innovative ideas. Co-teaching and -learning practices are best implemented when they are self-discovered and learned in an early stage of studies. [6]

It is evident that there is a need for new ways of thinking in order to forecast futures. For example, Candy argues that futures should be brought out of the realm of cognitive abstraction into experience; into the body [7]. Furthermore, Candy and Dunagan, among others, introduced new perspectives through a case study of experiential futures. As a result of a workshop, they presented the Experiential Futures Ladder, which is a conceptual model for scaffolding experiential scenarios and design fiction. [8] Anticipation benefits from more

fully acknowledging imaginative, creative, and constructionist aspects of design [9].

Within art and design education, experimentation with materials is an integral part of the learning process. However, the attention to materiality in educational studies has been rather limited. Related studies [10–12] show that rather than using sketching, novice designers explore their mental images using three-dimensional materials. For example, Malcolm Welch et al. discovered that designing simple three-dimensional forms may start from sketching, but modelling is often used when developing the idea further [10]. Furthermore, they considered materiality important when generating and communicating ideas as it provides an informal and supportive way to develop the ideas further. [13]

### Ugly, crafting and discovery

Currently, ugly seems to be a topical theme that can be seen in the contemporary craft and neo-artisanal maker movement. For example, new emerging aesthetics of production may appear in unconventional shapes and forms, unorthodox material combinations, intentionally imperfect products and visual chaos. Time, preferences, tastes, and the harmony alternate and override each other [14]. Ugliness is a recurring phenomenon of zeitgeist that can be found and re-found not only within the domain of fashion but also in art, architecture, design and theatre, to think only of creative pursuits. [15]

To meet challenges and changes in the future, ugly was a concept given to students as a perspective to be examined and interpreted during their working. By making ugly experiments our aim was to explore and strengthen the skills that students will need in their future work, i.e. enhancing flexibility, tolerating imperfectness and seeing diversity. We chose ugly contrary to the traditional beautiful and faultless heading craft [16]. From our experiences as craft teachers we knew that students usually wanted to work in a way, which promoted beautiful outcome. Hence, ugly experiments offered them an unconventional approach to experimenting and doing, also approaching which possibly required less control. The objective in this experiment was to discover new ways of doing and seeing, not controlling or mimicking.

The students were given an open-ended design assignment and five sub-tasks for ideation that encouraged reflective insights about individual and shared practices. Students executed the sub-tasks three-dimensionally by using altered techniques and materials; drawing was not allowed. Students were asked to do ugly exercises and then analyze why and how they were ugly. Like Rhodes describes, handmade can be understood to not only mean skilled, special and unique but edgy, underground and cool [15]. The students expressed their views spontaneously during their working process and later they wrote more detailed analysis into their portfolio. With ugly assignments, we tried to find out the meanings given to

ugly, its options for exploring what students knew or did not know, or what they should learn.

The ugly experiment gave students an opportunity to become familiar with learning by discovering. In discovery learning, the learner feels something new as personally meaningful and interesting. Open-ended creative tasks are not yet everyday practice in the education of crafts. [17] When students have opportunities to get the experience from open design tasks, they can gradually develop the ability to deal with uncertainty and produce creative solutions.

In the feedback discussion at the end of the course, we discussed whether teachers educate students to do things ‘right’ and perhaps even to think that there is just ‘one right way’ instead of many alternative ‘right’ ways. We as teachers had a good reason to start thinking about what students could learn by doing things in wrong and ugly ways. Would the doing wrong and ugly help students to get rid of old, familiar routines in craft learning? Would doing things wrong enhance students’ learning compared to doing things right? As futurists have argued, people are often bound to their conventional way of doing and fail to see the possibilities for change within themselves. This is because most of them have not been taught to look at the world unforeseeably and search beyond the cultural conventions and manners of their own groups for possibilities for their personal futures or for society’s future. [1]

## Research aims, materials and methods

In this study the research questions were:

- 1) How does ugly appear?
- 2) How has ugly been refined during the process?
- 3) What meanings and interpretations applied to ugly?

Data were collected during 2015–16 and 2016–17 academic years and they consisted of students’ portfolios ( $N=60$ ). First year students were exposed to the concept of ugly in a course called Material and Surface (10 credit units), which contained five minor classes: Experiential Textile Design, Dyeing, Textile Printing, Embroidery and Weaving.

Textile teacher education at the University of Helsinki educates students to teach in the compulsory years of school as well as in the adult education sector. Moreover, graduates can work as specialists in a variety of duties in the field of textiles. The degree of Master in Education comprises 300 credit units, of which half is in craft studies in which students are introduced to different craft techniques, and they acquire the skills to apply the techniques later in their own work and teaching.

The research material was analyzed using databased qualitative content analysis. In the first round of the content analysis, the data were examined according to the research

questions. The first research question ‘How does ugly appear’ dealt with the concrete personal experience and the reflective observation encountered through senses. For the first question, five categories were found: senses, colors, materials, purpose, ideas and results.

The second research question ‘How has ugly been refined during the process’ focused on experiential-verbal reflection, reflective observation, and sharing of experience with others. For the second research question, four categories were found: sharing, transformation, viewing and intuition.

The third research question ‘What meanings and interpretations applied to ugly’ discussed the meanings students brought about their world of living. At this stage, the metaphors dealing with past, present and future were important, i.e. visual, verbal and haptic conceptualization of work together. For the third research question categories, quality, speed of decision, empowerment and taboos arose.





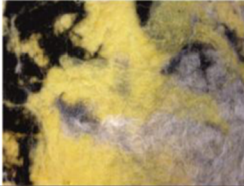




In the second round of the content analysis Amara’s postulates and the research questions were combined to create a nine-element matrix (Table 1). Amara defines approaches of the future in three ways: future cannot be predicted, alternative futures can be explored and preferred futures can be imagined. [2] Amara’s concept of futures was used to categorise the empirical findings. With postulates, we tried to identify the process of creating ugly, to understand the creative potential of the alternatives produced and to crystallize the interpretations of ugly. The first postulate ‘future cannot be predicted’ signified experiments that described the materials and methods as they appeared. The second postulate ‘alternative futures can be explored’ called for experiments in which students deliberately developed their work further and experimented with materials and methods. The third postulate ‘preferred futures can be imagined’ showed experiments, which met the obstacles of reality and the final outcome and meaning could only be seen when imagined. In [Summary of the results](#), the matrix built on the theme ugly is presented and explained by selected students’ experiments.

## Results and discussion

### Ugly and intention

In the introduction for the assignment, students became familiar with sensory channels (visual, auditory, kinaesthetic), different styles of making observations, as well as organizing and processing information in a design process. In order to get to understand the channels better, students were asked to explore their ugly experiments through all senses, especially using other than their visual and tactile senses. This was also their first encounter with intuition. Intuitive information includes all sensory information - sight, hearing, touch,

**Table 1** . The summary of the experiment built on the theme ugly

Research questions \ Roy Amara's postulates	Future cannot be predicted	Alternative futures can be explored	Preferred futures can be imagined
1) How does ugly appear?	1 	2 	3 
2) How has ugly been refined during the process?	4 	5 	6 
3) What meanings and interpretations applied to ugly?	7 	8 	9 

smell and taste - and also thoughts, feelings and memories, relevant to the situation.

One student recalled children’s ability to test everything with their mouth and tried to make form and structure with a piece of chewing gum. The use of chewing gum in this way was also a ‘wonderfully naughty act’ or an attitude against appropriate education. However, the knowledge of the flexible and sticky nature of chewing gum was not enough or was not helpful when used as a tool for creative work.

The pattern applied on the paper with Hubba-Bubba-chewing gum is ugly. It did not turn out the way I thought or felt in my mouth (Table 1: Picture 1).

The students used sensory information or informal information when working with different materials and techniques. The selected *materials or material combinations were ugly* in students’ thoughts. For example, they were too contradictory, non-ecological or the material ‘caused a headache’. The feeling of the technique or material was not appealing or it brought bad memories to mind.

I hate felting and touching the wool.

In students’ experiments, ugly also appeared as unwanted and *disliked, even ‘disgusting’ colors*. They either performed experiments randomly, mixing colors and materials or they tried to choose colors that did not fit together, colors that were ugly in their own mind or materials with ugly combinations. A beginner couldn’t anticipate how a color in mind could be

realized by dyeing, or in what way a existing color could be replicated.

It was difficult to estimate how and with which basic dyes certain intermediate colors could be obtained. And the result was always some kind of surprise. Color appeared different in dye liquor than in fibre. Once I prepared a perfect dye liquor but the fibre after dyeing appeared dull and greyish (Table 1: Picture 2).

The materials did not behave as the student assumed; the *result seemed unpleasant* or it did not match the vision in student’s mind. Moreover, the materials with which the students worked could behave unexpectedly. For example, one student wanted to make a cactus which was clear and beautiful in her mind, but the experiment with green paper and tooth-picks did not translate into the cactus at all the way she had visualized it (Table 1: Picture 3). A paper structure, which was supposed to be a seashell with a pearl inside, turned out ugly and remained ugly in the student’s mind.

Because the students were in the first year of their degree programme, they were novices in craft and design. However, they did not question or problematize their own skills. They assumed that everyone could do ugly crafts, but working with the ugly theme forced them to think about what was beautiful or aesthetic. When students tried to make *ugly on purpose*, they started to analyze more carefully how to make something technically right. That was why they started to learn craft techniques with the idea of what should not be done.

I put the assisting material [interfacing] on the top of the fabric, not under it. I used leftover yarn and did not iron the work at all. And I left it unfinished.

I used zigzag stitching everywhere, not just at the edges of the fabric. And I don't like zigzag at all.

The students had different ways of starting to work. For some students, the design process proceeded so that they began to work on the first idea and used it as if it was the root from which all the developments would come. Other students, in turn, were looking for numerous initial ideas by developing and cross-refining them.

The students often began to implement the first idea to generate good, useful and practical outcomes. Some students rejected the experiment, because they could not generate any ideas from it or see its utility for solving a design problem. They regarded it as unattractive, and as a result it was not expected to be or become 'anything'. Conventional thinking and customary habits may lead people either to *reject ideas almost automatically*, or to hesitate in expressing them. People do not wait until the vague representations trigger mental images and suggest new ideas. Instead, they tend to utilize exemplars that first come to mind or use the most representative feature of a source even when encouraged to produce novel ideas [18].

## Ugliness and learning

When the students developed the task further, they needed to analyze their experiments more carefully in order to see the outcome in new ways. The students started to retrieve problems and answers together via experiential-verbal reflection, reflective observation, and sharing experiences with others. This study showed that especially at the beginning, it was not easy to talk about highly personal experiences, partly due to the fact that students' vocabulary turned out to be limited in describing such experiences. When verbalizing was difficult, in this context students tried to search for rational, practical or tangible arguments for their experiments. However, this study showed that students' skills in describing phenomena enhanced during the process.

Laamanen has stressed that design is a social process and verbalization is an important means of communicating, reflecting on and sharing the process. Otherwise, we only see the things we want to see or do not recognize problems effectively. When we identify obstacles in our learning and doing, we can act to eliminate them. [17] *Sharing ideas and developing them together* was rewarding. Furthermore, it was satisfying to see other students' experiments and to investigate them together. Cooperation strengthened the future teachers' personal development, group identity and cohesiveness [6]. By experimenting together, students had opportunities to get

ideas from others as well as to share experiences and memories that added motivation.

In the experiential-verbal reflection, the opinions were quite subjective and caused a lot of debate. Ugly showed that the students learned to critique each other's works creatively without using only value words such as beautiful or ugly or to present opinions of success or failure. From the students' comments, it was possible to note that they were always having discussions with someone when they evaluated their own work. It was either a person present in the classroom, or a person at home, such as a family member. It could also be a person remembered, or even an imaginary person, who commented on whether or not their work was beautiful or ugly.

Students seemed to make products acceptable and comprehensive to potential viewers. Often ugly *turned out to be beautiful* and even better - more interesting for themselves also. Surrounding culture produces beautiful, nice products, and beauty is almost always seen as being superior compared to ugliness. Ugliness, however, attracts more attention than beautiful. In addition to that, it captivates our attention; it continues to linger in our minds long after the object has ceased to be present in the senses. [19] Since beautiful and ugly do not operate independently, we can purposely highlight ugliness to show beauty [20]. For example, in fashion, ugly can be used as a way to make an impact and a tool for fashion change: something useful and functional is outdated, turned ugly, to be replaced with something new and beautiful.

Through the experiments, the students gained an understanding of the properties of the materials as well as how they change. It was possible to witness the *transformation of materials and colors* during experimentation when handling materials. Material was refined by making and by playing with it.

Felting was fun! Last time I felted was as a child, and felting brought nice memories to my mind. My own wool fibre dyeing did not turn out well, and that's why I changed fibres with my classmate. The final felted outcome was not a beautiful one, but the most important thing was the feeling when the material changed when worked through my fingers. (Table 1: Picture 5).

Transformation was also observed when an experiment that originally looked ugly was eventually not ugly. Or when an experiment with mistakes was developed into a beautiful experiment. Some students wanted to make beautiful, nice and finished products for pleasure and satisfaction, whereas others wished to engage in some anarchy and breaking of boundaries: opportunities to be a little naughty. It is important to remember that experiments should not be measured only by what succeeds, since failures or unexpected and surprising turning points are often steps towards new discoveries. According to Rhodes, ugliness can help us to recognize

beauty as it highlights beauty's special qualities [15]. For example, a student transformed a vomit she saw in front of the apartment building's doorstep as a starting point. After several sketches and visual works, it turned into something beautiful and the origin disappeared. Students also noticed the transformation when they were evaluating their own experiments.

The yarn ends were just a scrap of rubbish, ugly looking, but still at the same time they looked beautiful.

This yellow wool-iron-stuff is ugly. I don't like the material combination. It was also done quickly. I was working in a discomfort area. However, I learnt to like it. (Table 1: Picture 4)

Working with ugly gave opportunities for *viewing one's life differently*. During and after the process, students viewed their lives differently, with new eyes. By means of craft, it was possible to highlight alternative realities alongside the visible reality. The imagination helped to look at spaces that were not yet there, but when imagined, in a way, they were already there. According to futures studies such clarifications are important also for the experiential foresight processes [1]. Furthermore, conflicts, differences and disagreements drove the learning process further. Viewing one's life differently also produced ethical aspects: It was ugly to treat someone badly or to be treated badly (Table 1: Picture 6).

Also, there seemed to be a focus on final outcome, as if the design process was so intimate that it *could not be publicly discussed or publicly outlined*. Behind the requirement for functionality and practicality could have been a habit of forming a fast opinion. Sometimes students wanted to rush to the task and get it done quickly. The first- and quickly-made solutions could have led the whole process in the wrong direction.

It was difficult to create a color chart, because at the very beginning, I chose 'wrong' colors, colors that were brighter than I had originally thought. On the other hand, this describes the refining and development of the process, overcoming obstacles. Wrong colors made me think that all experiments were 'wrong'. I would have wanted to make all experiments again, in which I would be more satisfied. However, afterwards these experiments now seem beautiful after all.

Sometimes students tried to *evaluate their ideas quickly, at an early stage*. However, presenting an idea too early seemed to tie the idea to a development that it would not have followed naturally. A fast-born idea is not necessarily a bad idea as Raami for example argues. Intuitive thinking is a developmental skill or ability that is useful for getting glimpses of a new idea and futures or a solution to be developed more consciously. Typically, a person thinks intuitively first and rationally

after that. In decision-making, intuition can be highly useful, accurate and in some situations superior to rational reasoning. Raami has noticed that students often fear that their intuition is wrong or that it might lead to poor decisions. These doubts may be relevant since in formal education, intuitive faculties are seldom developed. [21] This study showed that students need encouragement in trusting their intuition.

One student noticed that she should not try to solve a problem with some previously well-worked method. According to Groth and Mäkelä the students' previous material experiences strengthen their confidence in managing new materials [22]. *Past experience* could also challenge working. Some students had developed habits to implement ideas certain fixed way, which prevented the idea of free generation. Also, previous education in design affected students' habits for solving design tasks [17].

Professional designers tend to bring their own goals to an existing design context and use them to constrain design tasks, but novices may feel it challenging when there are no limits or the limits are loose [17]. *When working together*, it was obvious that students were *comparing their working methods and results*. There were conflicts with the experiences of others, their 'beautifully ugly' experiments and the students' own perception of their incompetence in front of open-ended design tasks. Students overestimated or underestimated their learning and design skills, or they compared their ideas or experiments with existing ones. Alternatively, they looked back to some past experiences. Students felt it was problematic to struggle between free imagination and experimentation, even to the extent that they could not force their creativity to flow.

I cannot. I am not able. I don't know. How to do pretty, nice, things as the classmates do. The result of all that hesitation is nice.

## Futures with ugly

When describing and defining the *meanings and interpretations of ugly* it seemed that some *concepts of quality* were seen as being important: students encountered difficulties in starting work and the fear of spoiling that work. Quality created in the process was multidimensional and relative, and thus, difficult to perceive. Garvin [23] classifies quality as product-based, manufacturing-based, user-based and value-based viewpoints. Quality can also be seen as transcendent, i.e. luxury that is incomparable [23].

The underlying difficulties faced by students seemed to have high, even uncompromising standards and high quality objectives. The requirement of high quality has a timeless and enduring character that rises above changes in tastes and styles. The product based definition sees quality as a precise

and measurable variable, whereas the user based definition is more subjective in nature and assumes that consumers have different needs and wants. The goods that best satisfy their preferences are the ones of the highest quality [23].

Sometimes *getting started* was the problem, whereas other times, the problem occurred when a student got bogged down in a small detail with a well-advanced piece of work and stopped working. Now and then, starting to do ‘whatever’ was the way to begin - or students procrastinated. Procrastination was viewed as laziness, unreliability, irresponsibility and lack of initiative, but it was also a way of getting as much time as possible to think, dream or get inspired before beginning. It was quite common to procrastinate for as long as the pressure was at its greatest, or if a deadline was approaching. After all, it seemed that the students appreciated the *speed of decisions and thinking*.

The more satisfied you are with an idea, the faster the creative process may end.

Furthermore, judgements, negative or positive, were made in fractions of a second. For example, the word ugly was used to describe a cute and childish experiment, when a student couldn’t quickly find an alternative expression. Behind this interpretation could be the first impression, which is an intuitive understanding of the phenomenon. It is an important tool for interaction that people rely on every day. Although the first impression is a very short moment, its consequences can last a long time into the future. The first impression is nearly always impossible to undo. The following comment shows that the history of the assessment was in a situation experienced a long time ago, but the memories set the tone for later situations.

My work is ugly, because of the bare-looking base and diagonally placed pictures of cats. The whole thing looks dirty. It’s like an old, dirty, and slightly broken children’s blanket found in a deserted house, which has been decorated with cats whose eyes are trying to hold on to a more enjoyable past (Table 1: Picture 7).

The student tried to visualize the experiences of her life, but the efforts to convert the ideas and experiences into material form did not succeed in the way she had expected. While the craft experiment looks beautiful, colorful and cheerful for an outsider, it turned out to be the opposite for the maker, because it was a documentary about life’s difficulties. There was an intention to make something beautiful of the burnout, but instead the outcome looked like a forest fire.

It seems that I may have not let go of the traumas.

However, the student felt that although she did not succeed in achieving the original goal, ugly helped her to see life’s

difficulties more structurally. She *felt empowered*. (Table 1: Picture 8).

Ugly experiments can be used to test out ideas that transgress as far as possible from accepted standards. The students were presented with the background and purpose of the ugly assignment, but it still caused resistance and raised questions. Why make something ugly when one could make something beautiful and useful and also make it effectively and with respect? On the other hand, resistance appeared, so that students did something to get the teacher frustrated, or students ridiculed the teacher. Sometimes students opposed the course from the beginning till the end and they performed experiments mechanically. However, by the end of the course, they understood what the question was.

Makers deliberately draw beauty and its opposites together by introducing new, unusual and radically different combinations of materials, colors and techniques. In this manner, ugly can be a conscious attempt to create and define alternative standards. In this study, this appeared for example by *materializing taboos* to experiments that involved ideas that were not appropriate, or were not usually discussed or done during lessons. Taboo is something one cannot talk about, but which can be handled by experiments (Table 1: Picture 9). Taboos can be defined as a critical design that raises awareness, exposes assumptions, provokes action, sparks debate; they can be even entertaining in an intellectual sort of way. Taboos are dissonant styles that are meant to shock as well as to encourage new reading and viewing patterns [14]. By materializing taboos students wanted to show what they can or cannot do or say in a classroom to a classmate or to the teacher.

This experiment is ugly as its color looks like menstrual blood.

## Summary of the results

The design experiment explained in this study has opened up opportunities to discuss the *different perceptions of futures* and what these different perceptions are, since people do not necessarily agree on what the future will probably or preferably be like. It is important to distinguish between probable futures, i.e. futures that we will be most likely dealing with, and preferable futures, i.e. futures that we wish the most to come about. [1, 4] In the second round of the content analysis, Amara’s postulates and the research questions were combined to create a nine-element matrix [2]. To summarize the experiment built on the theme ugly, nine examples were selected of the students’ works to crystallize the outcomes of the research.

The examples in pictures 1–3 show that students paid considerable attention to making, technical solutions, material properties and the appearance of the experiments. For that matter, students had difficulties in placing the experiment into

any category to be evaluated as ugly. Eventually the experiment may have been rejected, because it did not provide any ideas for further development (Picture 1). Students had high expectations of the quality, but not adequate knowledge and skill, or any suitable procedure to implement the idea. Thus, they implemented ideas randomly (Picture 2). Picture 3 reflects a perspective in which the work was evaluated as ugly, because the goal did not succeed in making an exact replication of the imagined idea.

At this stage, students focused more on the preferable futures, because they had challenges to articulate explicitly. Students emphasized visible features such as technical solutions, material properties or appearance because as novices, they had inadequate basic knowledge, poor working practices or poor use of them. Furthermore, these may have been the reasons for the limitations in creative thinking as well as the difficulty in seeing future opportunities when developing their experiments. In addition, there were other barriers that may have prevented students from seeing creative opportunities. Applying Mika Mannermaa's ideas of making observations there could have been paradigm blindness, trend thinking and underestimation, for example. Staying in one's own paradigm limits thinking and prevents a person from seeing outside. According to trend thinking, changes follow certain patterns and the same pattern will continue into the future. Underestimation means that when something is seen for the first time, it could be viewed as a freak. Sometimes freak ideas can become important over time. [24]

The pictures 4–6 are examples of experiments in which considerable attention was paid to the functionality of the outcome and the identifiable purpose. Experiments were considered to be ugly because they were not functional and practical or one could not imagine any clear purpose or further use for them. In some cases, the word ugly was used when there was no more representational word in mind.

The experiment in picture 4 was originally defined as ugly because it had no purpose. However, the student found that the experiment was alternately beautiful and ugly. Eventually the student began to like it, because she wanted to 'give the experiment an opportunity' and explored it over and over again. Picture 5 is an example of experiential-verbal reflection, where increased knowledge and skill in handling materials and colors expanded the student's understanding of the ugly. Picture 6 is an experiment through which the student considered her life with new eyes. It was a tool for personal dialogue, and also an example of craftivism (craft + activism), silent activism used to highlight social inequality, poverty and human rights. Craftivism is aimed at getting people to think about the problems, their causes and consequences, and one's own opportunities to improve things [25].

Moreover, students' experimenting began to open up the chances of discussing the different perceptions of futures. In

experiments, the probable futures began to appear alongside the preferable futures. The students also began to perceive the negative challenges that arose with the probable futures more optimistically. Experiments included a variety of temporal dimensions for which students tried to make predictions, i.e. time to work with materials, their own work speed and the temporal nature of the material. Attention was paid to the effort to anticipate failure and avoid mistakes as well as experimenting to challenge one's skills. While working, some students were challenged by ugly thoughts and needed to silence the inner voice, which tried to convince them that something was not worth trying. Students working with the experiments in pictures 4–6 differed from those working with the experiments in pictures 1–3, particularly in that the students worked longer with ugly or unpleasant materials, looked at and touched the ugly outcomes more often, or dared to deal with unpleasant life experiences without rejecting experiments right away.

The pictures 7–9 are examples of experiments in which futures thinking is always accompanied by discussions of values that guide the choices. Students' discussions related to the experiments dealt with numerous instantly made choices which affected the future as well as the consequences of previous choices that affect the present and the future. The students' points of view underlined Amara's postulates [2], that one can influence the future with one's decisions and choices. It is therefore important to know what is likely, what is desirable and what is to be avoided.

It is important for the future teachers to understand that teachers have conventions, which they more or less deliberately transfer into their future work. For that reason, students should be given opportunities to view and discuss conventions in order to avoid continuing to work the learned ways if other options are available and are possible. In picture 7, the experiment and the related comment may seem contradictory at first glance. However, evaluation of the experimentation is not just criticism of a beautiful-ugly or good-bad scale, but the evaluation may also have an impact on the evaluator's own old experiences.

Picture 8 represents a situation in which the student realized that her experiment turned ugly instead of beautiful. The experiment helped her to distance herself from life's difficulties and to take a bystander's point of view. The changed situation helped her take the futures' perspective into account when solving the problem. Furthermore, the ugly opened up the opportunity to consider things from the perspective of the future. In particular, picture 9 crystallized the need to identify future images based on common expectations, hopes and fears. The ugly served as a tool for students to explore their own hopes and fears for the future and learn to work creatively with them. Hopes and fears for the future often influence decision making in the present. Fears can lead to the avoidance of problems rather than their resolution. Clarifying hopes for



the future can enhance motivation in the present and thus positive action for change. [1, 4]

One must accept that as a beginner it is not possible to reach the same kind of results and achievements as one could hope to achieve. Thus, I felt failure and frustration, which annoys me a lot, but I understand that this taught me to bear failure and to work in uncertainty.

The experimenting raised moral and ethical questions for consideration. It was important to discuss what the moral issue was all about and who could or could not decide on moral matters. Students often discussed the ethical values and attitudes that guided their choices and actions.

This is my last experiment, one in which I tried to combine different materials. I don't like the staples. They are contradictory. They are not ecological.

Identifying power relations was also important. For example, whose future vision did one want to make real with one's decisions and choices? When working with the theme ugly, students discussed critically the rationality in educational activities, and making unnecessary goods, even litter into an assignment. Much attention was also given to the talk of wasting time and money, doing the right things, in the right order, at the right time, sufficiently well and quickly enough. Themes in the discussion described contrary qualities, e.g. ugly and beautiful, good and bad, neat and messy, correct and incorrect, acceptable and not acceptable.

Although the future was not particularly emphasized during the teaching period, it was present in students' discussions when they wanted to make samples for their future teaching work or required their examples to last for a long time. Students also wanted to do their job with a computer because 'it belongs to the future'.

## Conclusions

The purpose of our research was to increase students' perceptions about the existence, changes and opportunities of ugly. Our analysis focused on experiments and reflections made by craft students over a period of two years. Students understood and defined ugly in numerous ways. Ugly experiments impacted on motivation to invent and discover, for example by empowering or encouraging.

Working with something that is unpleasant can finally teach more because one must become acquainted with

the unfamiliar. Learning is much more than what we understand.

In conducting experiments, students need a mixture of instinct, intelligence and discipline.

I just had to do and do. In the end, all just succeeded and I was happy with the beautifully ugly experiment.

Mistakes are important in learning. Through the exercises students learn that they do not need to second-guess in decision-making. From the intuition development perspective, failures and mistakes are important. Without making mistakes, it is hard to develop intuition to its full potential. Only if a person experiences biases can they be assimilated and can learning begin. In optimal cases, intuitions and insights lead to new knowledge, new practices and breakthrough innovations. [21]

I learned about the freedom to make mistakes, and something unexpected could come out of mistakes. The pressure for perfection disappeared.

The future cannot be chosen but our beliefs about what is possible influence all our future-oriented actions [1]. With ugly assignments, we try to find out the meanings given to ugly, the opportunity to explore what students know or do not know, or what they should learn about. When we know the obstacles to thinking, we can get rid of them. Students have realized that they have more creative ideas than they have been expecting from themselves.

From the perspective of learning, ugly experiments taught students to practice free imagination. Students observed both their learning processes and their attitudes. In addition, the aim was to become sensitive enough to the use of all senses and to discover the opportunities that arise from using different senses in learning and design. However, it was fairly rare for students to focus on smell and taste in the exercises. If used, they mainly used them in taboo themes. So, further experiments could be expanded to include senses of smell and taste.

The ugly theme could also be used to learn to critique each other's works creatively without using value words such as beautiful or ugly or to present opinions of success or failure.

When an idea is new, one may not recognize its potential. When an idea is old, somehow familiar, one cannot see anything new in it. Ugly has been one way to see something with new eyes. What is considered ugly today will be beautiful tomorrow. The future opens up the horizon of the present, and it is the source of our strength for becoming [26]. Ugly result may promote the good.

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

## References

- Bell W (2003) *Foundations of Futures Studies. Volume 1: History, Purposes, and Knowledge*. Abingdon: Taylor and Francis
- Amara R (1981) The futures field: Searching for definitions and boundaries. *Futurist* 15(1):25–29
- Nuutinen A, Soini-Salomaa K, Kangas K (2014) Käsitön tulevaisuuksia - elinikäisen osaamisen visioita, haasteita ja mahdollisuuksia (Future of Craftsmanship - Vision, Challenges and Opportunities for Lifelong Learning). In: Karppinen S, Kouhia A, Syrjäläinen E (eds) *Kättä pidempää: Oteita käsityön tutkimuksesta ja käsitteellistämisestä*. University of Helsinki, Helsinki, pp 203–219
- Hicks D (2008) A futures perspective in education, chapter 12. In: Ward S (ed) *A Student's Guide to Education Studies*, 2nd edn. Routledge, London
- Kolb AY, Kolb DA (2005) Learning style and learning spaces: Enhancing experiential learning in higher education. *Acad Manag Learn Edu* 4(2):192–212
- Nuutinen A, Räisänen R, Fernström P (2016) Material and surface - Course synergy as a channel towards a more encompassing view of learning. *Techne Ser: Res Sloyd Edu Craft Sci A* 23(1):30–48
- Candy S (2010) The futures of everyday life. University of Hawaii at Manoa, Department of Political Science. (doctoral dissertation). <http://www.scribd.com/>. Accessed 27 June 2017
- Candy S, Dunagan J (2017) Designing an experiential scenario: the people who vanished. *Futures* 86:136–153. <https://doi.org/10.1016/j.futures.2016.05.006.doc/68901075/Candy-2010-The-Futures-of-Everyday-Life> Accessed 27 June 2017
- Celi M, Morrison A (2017) Anticipation and design inquiry. In: Poli R (ed) *Handbook of anticipation*. Springer, Berlin
- Welch M, Barlex D, Lim HS (2000) Sketching: friend or foe to the novice designer? *Int J Technol Des Educ* 10(2):125–148
- MacDonald D, Gustafson BJ, Gentilini S (2007) Enhancing children's drawing in design technology planning and making. *Res Sci Technol Educ* 25(1):59–75
- Anning A (1997) Drawing out ideas: graphicacy and young children. *Int J Technol Des Educ* 7(3):219–239
- Mäkelä M, Löytönen T (2015) Enhancing material experimentation in design education. [https://www.academia.edu/12898788/Enhancing\\_material\\_experimentation\\_in\\_design\\_education](https://www.academia.edu/12898788/Enhancing_material_experimentation_in_design_education). Accessed 20 June 2017
- Heller S (1993) Cult of the ugly. *Eye* 3(9) <http://www.eyemagazine.com/feature/article/cult-of-the-ugly>. Accessed 19 June 2017
- Rhodes KL (2010) An apparent ugliness: fashion and dressing poor (master of arts thesis). School of Architecture and Design, RMIT University
- Seddiki P (2010) *Naisen kuvia: sievän ja koristeellisen merkityksiä*. (Images of women: meanings for pretty and decorative). (doctoral dissertation). Helsinki: Aalto University
- Laamanen T-K (2016) Generating and transforming representations in design ideation. (doctoral dissertation). Helsinki: University of Helsinki
- Laamanen T-K, Seitamaa-Hakkarainen P (2014) Constraining an open-ended design task by interpreting sources of inspiration. *Art Des Commun High Educ* 13(2):135–156
- Kuplen M (2013) The aesthetic of ugliness — A Kantian perspective. Proceedings of the European Society for aesthetics, vol. 5. Published by the European Society for aesthetics. <http://www.eurosa.org/volumes/5/ESA2013.pdf>. Accessed 20 June 2017
- Xue SR (2016) Research on and application of the tendency of appreciating ugliness consistent with the change of times. *Adv Lit Stud* 4:26–31. <https://doi.org/10.4236/als.2016.42005> Accessed 20 June 2017
- Raami A (2015) Intuition unleashed. On the application and development of intuition in the creative process. (doctoral dissertation). Helsinki: Aalto University, School of Arts, Design and Architecture. Media Lab, Department of Media
- Groth C, Mäkelä M (2016) The knowing body in material exploration. *Stud Mater Think* 14(5):2–21
- Garvin D (1988) *Managing quality. the strategic and competitive edge*. Free Press, New York
- Mannermaa M (2004) *Heikoista signaaleista vahva tulevaisuus*. (Weak signals are a strong future). Bookwell, Helsinki
- Kouhia A (2016) Unraveling the meanings of textile hobby crafts. (doctoral dissertation). Helsinki: Unigrafia. <http://um.fi/URN:ISBN:978-951-51-2497-5>. Accessed 27 June 2017
- Iparraguirre G (2017) Anticipation as Presence of the Future. In: Poli R (ed) *Handbook of Anticipation*. Springer, Berlin