

**DESIGN  
TO IMPROVE  
LIFE  
EDUCATION**

**TEACHER'S  
GUIDE**

# HUMAN BY DESIGN: THE FUTURE OF STEM EDUCATION

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Every day, we encounter complex challenges that are irrevocably shaping our world. Globalization, digitalization, and climate change are worldwide trends impacting us collectively and individually; as a global society and as local communities. While these trends represent great challenges for the 21st century, they also represent promising opportunities for human development.

Education plays a key role in preparing students for a future of change. We believe that high-quality STEM education is a global prerequisite for individual development and participation in a technology-driven world, which is why Siemens Stiftung focuses its education program on science and technology. Additionally, skills such as critical thinking, problem-solving, and the ability to innovate are increasingly important for openly embracing change and responsibly shaping the future.

The design thinking method is a fitting approach for developing these skills, and by incorporating it into schools, we emphasize our talents and abilities as humans. Students are also encouraged to address challenges by developing a sense of empathy and by exploring an alternative point of view. From early on in the process, interdisciplinary teamwork inspires ideas and approaches that are turned into tangible prototypes for testing and evaluation.

We are certain that within every human being lies creative potential, a characteristic strongly embedded in the very nature of a child. Design thinking can help nurture creative confidence in students, allowing new ideas to take root and grow.

Our project “Design Thinking in STEM” seeks to adapt the design thinking method for use in science and technology lessons.

For any successful shift in education, teachers play a key role, which is why the collaborative project between INDEX: Design to Improve Life and Siemens Stiftung provides educators with new perspectives, tools, and approaches. As “agents of change”, it is teachers that create conditions for encouraging creativity. This empowers learners to develop meaningful solutions in the classroom and enables them to solve newly-emerging problems.

In addition to bringing a creative approach to STEM subjects, “Design Thinking in STEM” introduces the UN Sustainable Development Goals to the classroom. The 17 goals established by the United Nations for sustainable development provide a thematic structure for classroom lessons. They include the economic, social, and environmental challenges of the 21st century, which are growing in their local impact alongside their global relevance. This approach applies complex STEM topics to specific challenges, such as clean drinking water or sustainable power generation, and uses design thinking to find solutions to real-world problems.

Beyond understanding the social relevance of what they learn, children also experience that their ideas matter. This is the human touch to these lessons: our focus is on a student’s potential and talents in subjects with direct relevance in their lives. While children need to be prepared for an uncertain future, we are also committed to helping develop the whole person and to unlocking a young learner’s full potential. It is our belief that everyone can help change society, create a better future, and improve lives.

**Dr. Barbara Filtzinger**  
Head of Education  
Siemens Stiftung



**Charlotte Høeg Andersen**  
Education Director  
INDEX: Design to Improve Life®



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# DESIGN TO IMPROVE LIFE EDUCATION A REGIONAL BORDER PROJECT

■ **INDEX**  
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# DESIGN TO IMPROVE LIFE EDUCATION



## A DANISH MOVEMENT

INDEX: Design to Improve Life® is a Danish NPO with global reach. We *Inspire*, *Educate* and *Engage* people in using Design to Improve Life skills to develop sustainable solutions to global and local challenges.

We do this by means of the biggest design award in the world (INDEX: Award worth €500.000), a world touring exhibition, education programs, city collaborations and investment initiatives.

We *Inspire* by showing people how their personal lives and the lives of people around them can be improved by Design to Improve Life. We do this through INDEX: Award and INDEX: Award Exhibition, showcasing the positive outcome and effect of the world's best examples of Design to Improve Life.

We *Educate* by using real-life challenges as learning resources in schools and the talents of school as a resource in society. We educate students, teachers, educators and decision makers to create sustainable solutions through a certified education curriculum, summer schools and design challenges.

We *Engage* by using top-down and bottom-up approaches to involve governments, organizations, companies and people in long-term, valuable network collaborations – ensuring economic, social and environmentally sustainable solutions. Design to Improve Life Cities is a great example of this.



## INTRODUCTION

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### DESIGN TO IMPROVE LIFE IS TOO IMPORTANT ONLY TO LEAVE TO DESIGNERS

If the world's most pressing challenges – the big and the small – are to be solved, it will not be done by a few experts, but rather by entire populations who together are capable of thinking creatively and coming up with new and better solutions.

Thus, we all need to become better at finding out how we can provide clean drinking water for the 1.3 billion people who are currently without this luxury, at building services that ensure that our elders do not die alone feeling obsolete, at creating top-class welfare that is financeable, and at solving the big environmental challenges we have e.g. within transportation.

In the process of creating Design to Improve Life solutions to these challenges, cross-disciplinary, user-centered and sustainable processes, methods and techniques are used. And they are all effective, effect full creative and fun. And these processes – that celebrate mistakes and are tightly controlled and solution oriented – are simply too important only to leave to designers. They must be applicable for everyone.

Two other competencies are necessary, however, in order to be able to translate the “language” of Design to Improve Life into education, namely the competency of process and the pedagogical, didactical competency.

To accommodate this need for additional competencies, INDEX: Design to Improve Life® teamed up with the process consultants of Go' Proces, Malmö University (educates and trains educators in Malmö, Sweden), UCC (educates educators in Copenhagen, Denmark), The City of Malmö, The City of Copenhagen, Danish Ministry of Children and Education, Stadsdelsförvaltningen Fosie, Stadsdelsförvaltningen Limhamn-Bunkeflo, the primary schools Sundsbroskolan, Sønderbro Skole and Østervang Skolen, as well as the high schools Malmö Latinskola, Mediegymnasiet, Roskilde Katedralskole and Ørestad Gymnasium.

Throughout the project, education material consisting of the Design to Improve Life

compass and a teacher's guide (this book) to the Design to Improve Life processes has been developed. The project is named Design to Improve Life Education.

### DIDACTIC PRINCIPLE CONCEPT AND METHOD

With the didactic principles underlying Design to Improve Life Education, our wish is to develop education that relates actively and solution oriented to the 21<sup>st</sup> century's global society and its challenges by celebrating and developing children's and young people's abilities to (in cross-disciplinary teams) create sustainable solutions to real-life challenges.

The children and young people are at the very center of the education and are thus given the opportunity to influence their surrounding world in a positive way through an education format that empower them creatively and teaches them to participate democratically in becoming world citizens. The target demographic is children and young people who feel joy in and have the courage and commitment to explore, experiment and learn about the world – with the aim of changing it to something better.

The didactic principles of Design to Improve Life Education include learning environments, organizational framework and social context, and the principles are the base of an education format that creates new ways of participating, thus fostering opportunities for new learning. This is done by making the school a resource for society, and by viewing society (global and local) as a learning resource for the schools – as well as a basis for new understanding, insight and innovation.

Holistically, the schools' many subjects are put into use when the students develop and design solutions to real-life challenges for people – locally, regionally and globally.

And to meet the aim of creating well-designed solutions to these challenges, a series of didactical approaches are brought into play.

These are techniques, methods, tools, materials and expressions and are inspired by the thinking behind Design to Improve Life and are thus design-based and creative. They are based on the fact that we as people do not only create and understand with our heads, but also with our hands, and the approaches are very intensive and feature a clear and – at times – rigid framework to ensure a calm environment for energetic creativity.

The well-planned, design-based approaches yield professionally strong results when taking into account identifying, researching and solving real-life challenges, because they create a clear structure and at the same time a complex flexibility in the processes. Processes that contain joyful play, creative activity, flow and dynamics – which combined produce concrete results.

Based on this, the approaches generate room for the teacher to enable the students to bring different learning strategies into play, to ensure that the students work in a user-centered manner and become able to create design-based solutions that both improve the lives of people and are socially, economically and environmentally sustainable.

### **THE DESIGN TO IMPROVE LIFE COMPASS AND THE TEACHER'S GUIDE.**

The Design to Improve Life compass is a new planning-, process-, and management tool which ensures that you and your students are guided well and successfully through the education process.

Using the Compass will give you an overview of the four primary phases of the Design to Improve Life process – *Prepare*, *Perceive*, *Prototype* and *Produce* – and the actions and techniques that are related hereto.

At the same time, the Compass is a tool for you and your students showing you where you are and how to navigate in the process, and with the Design to Improve Life compass as the central element, supporting material has been developed for Design to Improve Life Education.

#### **The Teacher's Guide**

You have one book: The Teacher's Guide that you are holding in your hand. In this book, you will find an overall introduction to Design to Improve Life. Also, you will find a short introduction to the didactical and procedural foundation, upon which Design to Improve Life Education is built. The design phases are reviewed, explaining the individual phases thoroughly, and the book ends with a series of techniques which are immediately applicable in your own teaching. Some of the techniques belong in specific phases, and some can be used whenever you feel the need to.

The Teacher's Guide also works as a log, where you can write down your reflections, experiences and wishes for development or changes, benefitting both your own teaching process and your students'. Your guide was made for writing in, for drawing in and for you to develop your very own and very useful teaching material.





Design is the human capacity to shape and make our environments in ways that satisfy our needs and give meaning to our lives.

**John Heskett**  
Chair Professor of Design  
Hong Kong Polytechnic University  
INDEX: Award Jury Member



## DESIGN AND DESIGN TO IMPROVE LIFE

### WHAT IS DESIGN AND WHICH PERCEPTION OF DESIGN ARE WE USING?

Is design a noun or a verb? Is design luxurious, beautiful clothes and elegant chairs? Is a submarine a design and how can a service for senior citizens be a design?

Design is generally viewed in terms of its aesthetic form. However, a growing number of theorists and practitioners adopt a broader perception of design, where everything man-made is considered design.

Does this mean that the broader design-perception makes everything design, thus making nothing “special” design? Or does it rather mean that the design and the design process earn their rightful place and significance in regard to the actual (practical) design work?

John Heskett, Chair Professor of Design at the Hong Kong Polytechnic University, uses this definition of design:

*“Design is the human capacity to shape and make our environments in ways that satisfy our needs and give meaning to our lives.”*

In this sense design becomes something everybody is capable of. It is an ability similar to our ability to understand music and language. Those who become designers are those who sharpen their ability to design, just like those who sharpen their ability to play music become musicians, and those who study a specific language become language scientists or language teachers.

Generally, design is closely linked to the development of society. In the industrial society people predominantly designed concrete, tangible, physical products. In today’s knowledge society people are now also designing intangible, non-physical products such as services, systems and processes.

### DESIGN IS ALL AROUND US BUT MOST OF THE TIME WE DON’T EVEN NOTICE IT

Design is furniture, kitchen utensils, citizen services, mobile phones, bank services and systems for electrical cars and MP3-players. New design is constantly produced, and existing designs are continuously improved. All of these designs help us in various ways and become an integrated part of our everyday life. Because the designs are such an integral part of our lives, we often don’t even notice them and don’t question why they are there or why they look and function the way they do.

Design as a noun is a tangible or intangible solution to a specific demand. Design as a verb is an action, a carefully prepared process that leads to the solution of the specific demand.

Design is commonly linked to expensive brands such as designer clothes and furniture – stuff that we use to express and advance a specific style, identity or connection to a group. However, design and Design to Improve Life processes embody much more than that.

### WHAT ARE MODERN DESIGN TO IMPROVE LIFE PROCESSES AND WHAT DOES IT MEAN TO DESIGN SOMETHING?

Most of us are used to working with linear processes. Thus, the first difference you will notice when you start working with the Design to Improve Life processes is that they are not linear, but instead repetitive and closely connected to the context they eventually have to function within. In addition, they are focused on the end user of the design.

To design is to plan and shape an idea – to make it real. A designer is a person who has been taught methods (by others or by him-/herself) to analyze and understand complex problems. A designer is also a person who has developed specific skills for ideas devel-

opment, innovation and for realizing actual solutions to relevant challenges.

The Design to Improve Life processes progress through various phases starting from preparing, researching and analyzing, to prototyping and testing and eventually to producing and final usage.

Modern Design to Improve Life processes are intense, organized courses, which predominantly take place in interdisciplinary design teams. This means, that the designer is not working on his/her own, but instead in close collaboration with people who possess diverse competencies and knowledge e.g. technicians, sociologists, investors, engineers and manufacturers. In Design to Improve Life processes, the design team makes conscious choices on how their design will best satisfy the specific need it addresses.

These choices hold reflections about shape, function, and ergonomics and about what is practically, economically and technologically possible. However, occasionally focus will be on the creation of new commercial needs.

When Design to Improve Life choices are made, the design team focus on the end user’s needs and on the challenge the design addresses. At the same time, they make sure that the design is environmentally, socially and economically sustainable.

The way the Design to Improve Life processes progress through the various phases and the clear focus on the user and challenge at hand, is what separates Design to Improve Life from traditional design.

### HOW CAN DESIGN IMPROVE PEOPLE’S LIVES?

Design and design thinking are first and foremost concerned with solving specific challenges and adapting our surroundings according to our needs. In this sense, design is not only about things and objects but more so about ideas and thoughts. Design to Improve Life is also concerned with these

things – but predominately it focuses on how a specific design can improve important aspects of people’s lives.

The teachings of Design to Improve Life enable all of us to become better at producing sounder solutions to improve people’s lives. This also means that Design to Improve Life does not only address large-scale global challenges, but also concentrates on significant challenges in the individual person’s life in a local context.

The solution reached from Design to Improve Life processes does not have to be an object; it can also be an intangible solution such as a service, a system or a process.

#### WHY IS THE END USER THE CENTER OF ATTENTION?

Most designers would say that design has always been focused on the end user because design unlike art is a commercial activity aimed at the user.

However, Design to Improve Life processes are not only dedicated to the relationship between the design and the user. They also focus on how to determine who the user really is and on how to understand the users’ needs by actively involving the users in the Design to Improve Life process.

Throughout the last 30 years, big changes have been made to the way designers perceive and understand their users. Today, designers are increasingly utilizing other, more foreign disciplines and methods in their design processes such as anthropological research and user-involving processes, where communication and facilitation are key elements.

The ways designers identify, communicate and understand the users are thus still evolving – and they are also strongly linked to the general development of our society from industrial- to knowledge society.

The traditional perception of the role of the end user in a design process is that the user is a person of interest simply because he/

she needs to like the design in order for it to sell. This traditional role of the end user is closely linked to the mass-production of merchandise, which took off in the 1920s.

In today’s knowledge society we are experiencing a rising demand for holistic, sustainable and innovative design solutions that can tackle complex challenges, and satisfy individual needs. This is why we need new ways to understand and collaborate with the end user.

#### WHAT IS SUSTAINABLE DESIGN?

Today, the world as we know it is struggling with challenges such as water shortages, poverty, pollution, child mortality, mega cities and climate change. At the same time, we now have access to more knowledge, resources and technology. We also have more experience to tackle these challenges than before and increasingly more people are engaged in reaching sustainable solutions to these problems.

Designers are also increasingly using their skills to create products in acute demand, and they now realize that the choices they make have great impact on the future. A designer who designs to improve people’s lives is not only taking responsibility for his/her design; that designer is also taking responsibility of the choices involved in the design process in order for the design to become socially, environmentally and economically sustainable. This awareness and responsibility is what makes a positive difference, and what essentially will make the world a better place for all. A designer who “designs to improve life” is not producing yet another white cup, as the world already has enough of them. A Design to Improve Life designer designs solutions that improve people’s lives!

#### HOW IS DESIGN TO IMPROVE LIFE EVALUATED?

Traditionally, design is evaluated on the basis of its shape, surface, colors, materials, interface and aesthetics – what is normally considered the “design” of a product. INDEX:

Design to Improve Life® evaluates a design a little differently using three parameters: *Form*, *Impact* and *Context*. Thus, the designs are not only assessed on traditional design parameters such as aesthetics and materials (*Form*), but also on how economically, socially and environmentally sustainable it is (*Impact*), and if it fits into the culture and geography that it is intended for (*Context*).

#### Form

When the form of a design is evaluated in relation to Design to Improve Life, the surface, material, interface, color, coherency, and aesthetics of the design are assessed.

This means that INDEX: Design to Improve Life® is not neglecting the traditional design values. However, *Form* cannot be a stand-alone parameter, and needs to be accompanied by a design’s *Impact* and *Context*.

#### Impact

The parameter *Impact* focuses on the actual and potential importance of the design – the impact of the design and, thus, the number of lives improved by the design, the distribution, and the economic and environmental sustainability of the design. When the impact of the design is evaluated, one question is asked: “How does this design improve people’s lives?”

When the parameter is evaluated, INDEX: Design to Improve Life® focuses on the design’s function, relevance, propagation, potential, level of innovation, its economic, environmental and social sustainability as well as the usability of the design. Combined, these parameters deal with the design’s possibility of improving people’s lives.

#### Context

The parameter *Context* focuses on the framework within which the design is intended to fit: the challenge, the relevance of the challenge, the culture, and the geography.

*Context* includes the nature of the challenge and how acute the situation is. Hence, the *Context* parameter’s primary focus is on the kind- and standard of life people live where the design is intended to be used.

#### INSPIRATION

[www.designtoimprovelife.dk](http://www.designtoimprovelife.dk)  
[www.treehugger.com](http://www.treehugger.com)  
[www.informinc.org](http://www.informinc.org)

- [www.youtube.com](http://www.youtube.com):
- Changing the paradigm, Sir Ken Robinson
  - Green school in Bali, John Hardy (2)
  - Design for Change, Kiran Bir Sethi (1)



**EXAMPLES OF DESIGN TO IMPROVE LIFE**

An example of Design to Improve Life is LifeStraw™ – a simple straw with a filter that cleans dirty water. For only \$6, one LifeStraw™ can secure clean drinking water for a person for an entire year (approx. 700 litres). LifeStraw™ is one of numerous necessary solutions to the severe problem of dirty water affecting 1.3 billion people worldwide. (img 2, 3)

Another example of Design to Improve Life is the ambitious electrical vehicle system Better Place – a complete infrastructure for electrical vehicles, which includes storing of wind energy above their patented EV battery switching stations. Better Place is doing for electrical vehicles what Thomas Edison did when he invented the light bulb AND the entire electricity distribution system required in using electrical lighting. (img 1)



**Other examples of Design to Improve Life**

- 1 The High Line
- 2 Imagination Playground in a Box
- 3 Elemental Monterrey – 70 Incremental Housing Project
- 4 See Better to Learn Better – Verbien
- 5 Shokay
- 6 Solio

(For more examples, see [www.designtoimprovelife.dk](http://www.designtoimprovelife.dk))



## DIDACTIC PRINCIPLES INVITATION TO DESIGN TO IMPROVE LIFE EDUCATION

When Design to Improve Life is combined with process facilitation and didactic principles, Design to Improve Life Education is created. And Design to Improve Life Education adds something new to the didactic – something that we want to invite educators and students to participate in. But what is new?

Well, the overall goal is that the people involved will learn competencies to participate in the democratic society and feel committed and engaged to create solutions to the real-life challenges that people are faced with in their lives. The Design to Improve Life didactic is focused on a process based on the people participating in the learning process and is about what the participants are going to develop, what they are going to learn, why they have to work with this content and what goals they want to achieve. Based on this, the learning process and the related results are subsequently evaluated.

### WE BEGIN IN A NORMAL CLASSROOM

In all classrooms every day, there are interactions between teachers and students, and the teachers know that the students who participate in the learning process have different backgrounds, experiences and preconditions when it comes to their skills and knowledge compared to the students who do not participate.

In the class, there are thus students who are more or less self-sustained, and these students seem happy and content, and everything seems easy for them. On the other hand, there are students who do not find their school work as interesting, important or fun.

Maybe some of these students need extra help reading and writing, while others struggle to even understand what is being said in class, as they are from countries with different languages.

Then there are the students who are doing everything else but paying attention in class. Their mobile phones are on, and they are tempted by Facebook at all times. And then there are students who are not doing as well outside of school as you might wish.

All the way in front of the class is a boy who the teacher feels deserves a little extra attention, as he is having a hard time concentrating and therefore needs to walk around the classroom sometimes. And finally there is the shy girl who is reluctant to participate in group work with the others. She does not say what she wants and the other kids do not invite her to participate when they are doing group work. And all these kids are exactly the central element of Design to Improve Life Education, no matter how you combine them.

Because no specific combination of student types makes up a standard group, and this places great demands on the teacher who – at all times – must make didactical evaluations based on the specific group that he/she is working with.

Besides practical activities, there are documents (reading plans and teacher's guides) which the teachers must familiarize themselves with and deal with. And adding to that comes the physical framing for the school work – the collaboration with colleagues, time frames, equipment and classrooms.

And sometimes, teachers find out through the media that his/her school is not reaching its goals, in comparison to other classes, schools, cities and countries. As a teacher, you can thus be told that your results are not good enough and that too few students progress to higher education. In today's society, most people have an opinion about how the teacher's job is done best.

All of the above mentioned combined is an important starting point, because it can have great influence on the participants' perspective on their surroundings, and these different perspectives are not seen as static, since re-evaluations of them can become necessary.

### WHOSE PERSPECTIVE?

The didactic issues are about who is going to learn. They are about what to learn, why a specific topic is chosen, and how you can do the work. The Design to Improve Life didactic highlights and emphasizes the importance of a teacher that bases his/her education on the life experience, knowledge, interests and problems of the students.

Instead of talking about the life experience of the students, you could say that we are seeing things from the perspective of the child or youth. And when we assume such a perspective it entails that we gather a lot of knowledge about the childhood and upbringing of students, and about their position in society in general. This means that the teacher on an overall level must take students' different upbringing, childhood, experiences and needs into consideration, thus making room for the students to express themselves and make a personal impact on their own education.

The Design to Improve Life didactic sees children and youth as competent builders of their own lives – provided they are given the power to act as active (team) players in society. The young individual must see himself/herself – and others – as part of a bigger community to which we all hold a responsibility. An overarching goal is therefore that the students, who contribute with experiences and perspective, also will develop their own skills in assessing other people’s experiences and perspective as being just as important as their own. And in the same way as the student’s perspective plays a big part, we will emphasize the teacher’s perspective – both in teaching and in learning. Because the institutional framework, the teacher training, competencies, evaluations and basic view on knowledge/learning also influence the learning that the students’ are expected to develop.

We who work with Design to Improve Life Education are interested in combining the designer’s creative processes with the teacher’s didactic principles, because we see great advantages in this. And therefore, we want to invite teachers to take part in a creative collaboration, which entails that you as teacher reflect upon the didactic issues in relation to your students – keeping a focus on Design to Improve Life.

#### Let us begin with a few questions

- Which starting points can you base a didactic decision on?
- Do these only exist, because the individual student needs to become good enough to pass exams in different subjects, or do we want something more?
- What can the students excel at together, and what can you use it for?
- If you have a class with such different prerequisites, skills and experiences as described previously, how can you take advantage of the practical school work, and which common goals can you set?

A classroom is part of a bigger world, where demands of better solutions to complex problems are made every day. Earlier in this book, we have discussed different types of design and how Design to Improve Life

is based on users’ needs whilst focusing on the actual challenge the design addresses – making the design environmentally, socially and economically sustainable. Also, we are emphasizing the difference between how choices are made and on what grounds a design is shaped in traditional design as opposed to Design to Improve Life .

We claim that the same applies to didactic choices, because we know that a part of the teaching is based on what we call “traditionally communicating traditional content”, which usually revolves around thoroughly tested professional experience and communication methods. And on the other hand, we have a way of teaching where you – as an educator – ask questions about, why the students you are teaching should work with specific content, and how the teaching can be used to improve the lives not only for the individual, but also for people outside the private sphere.

In the following, we will present the thoughts we have had about the Design to Improve Life didactic: Real-life challenges, democracy and learning in social, communal settings.

#### REAL-LIFE CHALLENGES, DEMOCRACY & LEARNING IN SOCIAL, COMMUNAL SETTINGS

The Design to Improve Life didactic focuses on humanism, social understanding and democracy, and schools are institutions created to prepare children and youth for participation in the global society.

As individuals, we can be a part of world’s society whilst still having both local and global perspectives, but we are always a part of the common humanism where people stand together to solve common challenges. This means that we can have different opinions as to what the challenges are, and how we can solve them, but we all share a need to address them.

Design to Improve Life Education aims towards giving the students competencies enabling them to participate in democracy

as seen from a diversity perspective, and therefore the principle task of the didactic must be to create a multi-voiced space, where all participants can meet with mutual respect, with equal value and with equal resources. Everyone’s contributions are in demand.

Acknowledging and taking into account everyone’s experiences from different cultures and social conditions, the Design to Improve Life didactic is fundamentally solidaric. This solidarity is expressed by not putting oneself above others, but rather by putting yourself in other people’s place. And precisely for this reason, the students’ own experiences, culture and social heritage must be used in class as a substantial resource towards making the project a success.

Talking about the validation perspective refers to not only the self-image and social skills of children and youth, but also to their prerequisites for entering into meaningful, social communities and fellowships. The validation perspective is thus lying behind immediate communities and fellowships and is comprised of the individuals or groups of people whose lives we believe we can change. And in this, lies a solidaric and validating perspective.

#### ROLES AND RELATIONSHIPS IN LEARNING PROCESSES

The Design to Improve Life didactic perceives professional skills, theories, methods and terminology as means and resources which we use functionally in order to develop sustainable solutions to real-life challenges for people. And for this reason, we believe that there is an advantage in working both thematically and cross-disciplinary. The didactic focuses on the end goal and content of the teaching; often in a way that the individual goals illustrate which dividend the students should receive – both professionally and collaboratively.

At the same time, there is a long tradition of different teacher- and student role models and of the different relations

between teacher and students in a school context. We would like to add a perspective where teachers and students participate in society on equal terms, with a common responsibility and where content and goals comprises real-life challenges for people. And therefore, it becomes natural to also view the learning processes themselves as creating and shaping processes with potentially life-improving and life-preparing qualities.

The most important thing is that the students themselves are a part of identifying and formulating the challenges alongside the people who are affected by the problem(s) – which will affect roles, positions and relations in the learning space.

Furthermore, the traditional relation between student and teacher is added another dimension, when they together address important, real-life challenges and when they together plan how they methodically will execute their research and also how they will find and assess source material as well as find actual solutions to the challenges.

Instead of viewing the multi-faceted classroom with all its diversity and different knowledge as a problem, we believe that differences can contribute to the working process of the entire class. Every student should participate as an active, experimenting and curious member of the group and as a co-creator in developing new knowledge and new solutions. And for this to happen, the Design to Improve Life didactic must support the teacher’s role as a guiding and supportive educator who contributes in both creating framework and in developing creative learning processes.

Both the physical, psychological and aesthetic environment affect wellbeing, learning, health and sense of security and the Design to Improve Life didactic places new demands on how you – in the best way possible – can make use of framework elements like rules, laws, financing, organization, buildings and equipment.





The whole world is the space where learning and creative activities happen, and this causes people outside the school's walls to also become part of the learning environment, and the school itself to become a creative resource for society – it's a two-way street.

### SPACE AND LEARNING

The Design to Improve Life didactic involves both the school's learning spaces, its media spaces and the public spaces outside of school. And in these spaces, students and teachers can work actively to ensure that the spaces they work in can inspire when working with/in life-improving design processes.

The spaces should provide the possibility for working and learning in varied ways and they should make students want to explore and try things. For this reason, the learning spaces should not be static, but rather changeable – relative to the activities that are underway.

The media space is an important resource, as it holds great value in relation to the design process' research phase. Learning is broadened when the students activate the media space (both local and global), making it work as a communicative link between closely linked social media. At the same time, the presence of the media enables political, economic and societal perspectives to flourish.

The public space is important because here, children and youth (and everyone else) meet, interact and position themselves against each other. When you move around the public space you are faced with different challenges, and the interaction with your surroundings can generate learning – especially when you are forced to look at challenges in society from a life-improving perspective. In the public space, children and youth create their own cultural spaces, e.g. via aesthetic production in which they experiment with different sub-cultural styles and identities and where their own bodies are often used as means of expression. In this context, a part of the teacher's role is to pay attention to these expressionist activities and their meaning for the children and youth

– AND to evaluate how and if the activities can be included in a didactic perspective.

### WHY IS CREATIVITY NECESSARY IN A SOCIETY FULL OF CHALLENGES?

The following is an attempt to build a perspective upon the Design to Improve Life didactic which is inspired by learning theories, involving creativity and aesthetics. Overall, these terms should – in this context – be seen as a reflecting and co-creative way of relating to society and to your own subjectivity.

In creative processes and in aesthetic learning processes, the body, emotions, space, play, imagination and shaping are key factors. These factors are – in the Design to Improve Life didactic – connected to solutions to societal challenges and so, we are trying to move aesthetics and creativity from their traditional position in school as “recreational free spaces” to a more centralized position. This way, aesthetic and creative approaches are to be seen as an opportunity to shed light on all school's subjects in a new way in order to open up to new connections and collaborations between school's subjects, school's everyday life, the surrounding society and the world we are a part of.

In order for the students to maximize their output from working with life-improving design processes, their imagination must be trained and strengthened. Imagination is the foundation for creative activity within many different areas – e.g. technology, science and art – and creativity has become a much debated term in recent years.

The concept of creativity can overall be defined from many different perspectives, but is essentially about remaining curious, searching, experimenting and co-creating towards life and the world – about daring to enter unknown territory and imagine that things could look different. Creativity feeds off subjectivity, life experience and not least professional insight, and thus becomes a very necessary competency in our time and in our culture.

Submitting yourself to seemingly uncomfortable choices in a creative process might prove profitable, and the unexpected might happen when you start walking on thin ice. Something that might prove very useful, e.g. when looking to establish new connections/links between the different school subjects, areas of expertise, work methods and presentation styles.

Play is also an important factor in this context, in the sense that an aspect of play must be present, because for children, playing is natural and in play, the child creates his/her own world. Children thus use everything within reach and see opportunities in the everyday environments surrounding them – and in play, the child's creative processes really shine through. Furthermore, playing is multimodal and an approach often used by children in a playing context is random testing of different options. The teacher should – in the process – be open to working with the random and to use the possibilities that will inevitably surface. To do this, the teacher needs time and space, and not least clarification about an altered teaching role.

In the Design to Improve Life didactic, students and teachers have goals that they want to reach, but there are many ways to reach them. Playing can be linked to creative work processes and many people in creative professions are (daily) proofs of the necessity of a playful element in creative and shaping processes – giving shape to the shapeless and capturing the unobtainable. In a creative process it is all about finding new solutions, and the teacher's job thus becomes to encourage the student to shape and concretize his/her thoughts, feelings, imagination and ideas.

The concepts of innovation and social entrepreneurship are also important elements in this didactic thinking. Innovation is about generating new thoughts, solutions and products, while social entrepreneurship occurs when you act upon and shape things based on possibilities and good ideas – and when these are transformed into something that is valuable to others. An economic, cultural or social value.

## AESTHETIC LEARNING PROCESSES

Aesthetic learning processes can mean different things when operating within different theories and traditions. We believe that it is about giving shape to your thoughts and feelings, but it is also about reacting to experiences that touch us on a personal level. In the Design to Improve Life didactic, the goal is to get the students to reflect and produce in a dynamic interaction where both reflection and production can be about aesthetics as well as function. Therefore, a didactic that moves freely between practice and theory is needed. A didactic that moves between the abstract and the concrete, between the whole and the details and between the known and the unknown. In aesthetic learning processes, you don't work with one right answer which requires students and teachers who are not afraid of making mistakes.

In the aesthetic reflection, we try to understand other parts of the skill development process than the pure conceptual. The skill development process appears when you have confidence in your own ability to see and comprehend, and later, you learn to translate skills into action and form which implies that you have gathered a lot of knowledge, experience and insight – and also that you have taken a standpoint and made decisions. Furthermore, you develop your ability to use different creative tools for exploring, life-improving and communicative purposes.

The teacher can sum up the pedagogic process in collaboration with the students and this way show how the students have worked – from first impression to action and from idea to execution.

## QUESTIONS RATHER THAN ANSWERS

Today's cultural expression is characterized by the concept 'cross-over' where traditional boundaries are somewhat blurred, and related to this fact the Design to Improve Life didactic attempts to work with learning

and with school subjects in a boundary-crossing way.

If we e.g. turn our attention towards contemporary art, we see tendencies illustrating that today's artists are more preoccupied with asking questions, than with giving answers. The open works of contemporary art thus place demands on the beholder, as these works require interaction because it is embedded in their character to be open and inviting. The contemporary artist does not – as in the past – try to construct truths or Utopian realities, but instead tries to develop behavioral methods within the existing reality. Work is thus conducted in a way that is similar to that of investigating journalism and activism, where the aim is to investigate and change society.

In school, one can therefore view the relevant life-improving issues from this didactic perspective – namely as open processes. The goal is thus not to reach definitive solutions, but to develop alternative possibilities, i.e. the best solutions at a given time in a given context.

## EVALUATION

Evaluation is a central element in schools, and this is also the case for the Design to Improve Life didactic. We evaluate the students' learning in relation to goals, objectives and learning processes and also in relation to the possibilities they have created and the results they have achieved. We expand the evaluation to also include an assessment of whether the created design solution improves life – and how. The students – and other people involved from school and outside school – actively participate in the evaluation of both the processes and the results.

In the cross-disciplinary method, the focus is on having solid, professional skills behind the design solutions and therefore, the Design to Improve Life didactic is also based on precise goals and objectives for the school subjects included. The process must contain a clear amount of professional knowledge,

wherein professional theories, concepts and methods consistently have been used to develop the durable and sustainable solutions.

The evaluation is complex and should involve all participants and we ask questions about how the individual processes and construction-/production solutions contribute to fulfilling intents and achieving goals. At the same time – in the Design to Improve Life didactic – it is evaluated (in the context) how the academic goals, project goals and design solutions are achieved. And simultaneously with considering the shared academic and project goals, the individual student's learning goals must also be evaluated.

We especially focus on the students' self-evaluations from a forward-looking perspective. The self-evaluation, along with the students' mutual evaluations, is part of the development of the students' general learning competencies, and this evaluation thus touches upon both the process itself as well as the result/product of the process and therefore, its characteristics are both formative and summative. When focusing on the formative evaluation, we evaluate how we can make the process and the result/product better in the future, and when focusing on the summative evaluation, we evaluate how good the actual process is and how well the result/product met the set goals.

The result – in the form of a design solution – is just as important as the process itself, and when we evaluate the finished design solution, we use criteria that show to which extent the design is solving a challenge in a sustainable way, and if the design could potentially hold value for people in a given social context. Furthermore, the design solution is evaluated from aesthetic criteria and these criteria are developed and created – much like other relevant evaluation criteria – in collaboration with the involved participants.





# DESIGN TO IMPROVE LIFE EDUCATION

## - THE PROFESSIONAL PROCESS

Design to Improve Life is design that is aimed at improving people's lives, by focusing on meaningful, sustainable and innovative solutions to local and global challenges. The movement from problem or challenge to solution can be described as a process, which moves from one place to another via a series of interactions between the involved people and their design.

The thought behind Design to Improve Life Education is that you as teacher facilitate this process. To facilitate means to 'simplify', to help the students with a given challenge. At the same time, the facilitation also changes the position or role of the teacher – from being the academic expert to becoming the supporting and structuring process manager. In other words, the facilitation is not about you, but about how you can create the opportunity for the students to find a solution to the challenge on their own. It is also about how you as facilitator help your students by using a series of constructive tools during the process.

Keeping this focus, a number of key terms are presented. These key terms are attached to process facilitation as an academic skill, which along with Design to Improve Life and the didactics make up the threesome that becomes Design to Improve Life Education. With continued focus on process facilitation and your new position as facilitating teacher, we hereby present a series of relevant attentions.

### KEY TERMS FOR THE PROCESS FACILITATING TEACHER

Most often, processes are run by various structured dialogs, and your role as process facilitating teacher is to make sure that the students focus on what is most relevant according to the challenge they have chosen to work with. Even as leader of the process, you might not know everything about the challenge, and it will therefore often be advantageous if you deal with the subject in an examining fashion without meddling in the students' process (cf. 'neutrality'). It is crucial at all times that the students control the contents of the process, as they are the ones who have to use it in their work. This does not cancel out your role as teacher or your academic position, but means that you need to be aware of the two roles and clarify when you assume which role. Thus, you need to continually reflect on when and how you create space for the necessary academic input, and when you take on the role of curious and neutral process facilitator.

We will now present a series of theoretical guidelines in working with process facilitation from a systemic and acknowledging perspective. The theoretical guidelines can be used as tools to achieve better understanding and insight when facilitating the processes. They can also be used as 'points of awareness' in your practice as facilitator of Design to Improve Life processes.

### Positions and positioning

The position or role as process facilitator will for some teachers be a somewhat new experience. Therefore, it can be useful to reflect upon and create awareness of which position the teacher assumes in relation to the students.

From a social constructionist perspective, positioning is a continuous act for you and the people you interact with. Via our non-verbal communication and our understanding of each other (e.g. through experiences/knowledge), positions are constantly negotiated – subconsciously as well as consciously. For example, as teacher you can consciously position yourself by asking questions instead of providing answers (i.e. through words or

actions), while others might position themselves by asking for answers. As the process facilitating teacher of Design to Improve Life Education, you create the opportunity of strategic overview and the relationship between the teacher and the students via awareness of different positions.

This context and the relationships help create a specific discourse within which various positions become visible, and thus possible to take on. How can I alternate between the knowing/guiding/academic position and the facilitating/"neutral", asking position? Which considerations do I make in relation to the disturbance it can be for the students when I change position/role?

### The world as a social construction

The fundamental inspiration to how we practice process facilitation stems from the idea that the world is a social construction – that we collectively create an understanding of our world, the social space we are a part of through relationships and communication. This belief is built on the perception that meaning is created through constant interactions with people. In this view, everything of meaning is born out of relations with other people, and it is within these relations that we create our understanding of reality, and thus our future opportunities.

### Systemic thinking

Systemic thinking originates from the perception of the world as a social construct, as well as from biology and anthropology. It puts great emphasis on co-creation and social construction. In the Design to Improve Life Education processes, the approach thus becomes an alternative to the more classic approaches, where the teacher is always the expert. Systemic means something which functions in the entire system. The fundamental thought behind systemic thinking is to view social phenomena, individuals and groups as complex and connected. In the systemic approach, it is important that the members of the system are defined by and within their communication and relations. Thus, the process facilitating teacher should focus on the entity and not just the individual parts of the occurring process.

### The appreciative inquiry

‘The appreciative inquiry’ is an examination of how things or processes work, with the purpose of repeating the good practices. This means that traditional problem solving is turned upside down by shifting the focus from problem orientation to resource orientation. Hence, appreciative inquiry focuses on finding the best qualities in humans and their surroundings. Appreciative inquiry is also built on the belief that the world is a social construct, and thus implies that examination and change are inseparable. In Design to Improve Life Education this means an elaborated reflection of how you as process facilitator consciously can create the environment within which the students will bring out the best in themselves and each other. Simultaneously, appreciative inquiry is also concerned with how you, together with your students, can create a space that both embraces and practices the acknowledgement of the fact that we all have different views of the world.

### Multiverse

The concept ‘multiverse’ covers the perception that we individually consist of a closed system (autopoiesis), where creation of meaning, thoughts and reflections are not accessible to others than ourselves. This means, that we need to view the world as a multiverse consisting of many worlds or realities, instead of one world with one reality. This affects the concept of reality – there is not only one reality or truth, there is a multiverse of truths. The process facilitating teacher consciously works with the multiverse perspective in mind, thus making sure all of the students are heard in the process.

In connection to the multiverse perspective, renegotiation becomes a crucial tool for you as process facilitator, because renegotiation becomes a term within the students’ group work. Frequently over time, you will experience that the existing meaning will be subject to change, making continuous renegotiation important. When this happens, it is your job as process facilitator to make sure that the groups meet, renegotiate and coordinate their multiverse – their collected

understandings of what they are doing in their Design to Improve Life processes.

### Disturbance

A central concept of understanding from systemic theory is ‘disturbance’. Humberto Maturana uses the concept to explain how organisms change. In his perspective, an adequate disturbance is what makes an organism change. If the disturbance is too small, it will not lead to change because change is not necessary. Similarly, if the disturbance is too big, it won’t lead to change either, because the organism will not be able to handle the large scale of the disturbance.

Transferred to your work within the process, this means that the students need disturbance in the form of knowledge or experience, as these can lead to positive changes of our mental image and perception of the world. Disturbance within the process can be of different nature, but it is important to carefully choose within which part of the process the disturbance occurs and how. This is because the disturbance has to relate to the specific task, participant assumptions and form of communication.

Adequate disturbance means that you are conscious of which context is being disturbed. By context we mean both the students, the goal of the process and its environment. It means that you have to think about the disturbance in connection to the students’ relations and the duration of the disturbance, to make it a constructive contribution to the students’ work process.

### Meta-communication and meta-reflection

In short, meta-communication means that you communicate (talk) about communication.

In the Design to Improve Life process, examples of meta-communication can be: How is your dialog regarding the challenge going? Are you listening to each other? Are you maintaining focus? How can you improve the dialog? How will your dialog change if you move it into another room? A useful tool to implement meta-communication is the ‘time out’. Through time outs you create

the opportunity for a break in the students’ dialog, and can assess the progress of the students’ work form and the overall goal. In the same way that meta-communication is communication about communication, meta-reflection is reflection over one’s own reflections.

### Neutrality

The concept neutrality should not be understood as an attempt to achieve an objective, neutral position. Instead, neutrality refers to the understanding of how the systemic practitioner (in this case you, the process facilitator) has to strive to be impartial and irreverent towards his/her existing knowledge of both the individual student and the group as a whole. Working with the neutral position is, thus, linked to facilitating and curiosity.

### Curiosity

‘Curiosity’ within the facilitation practice means that you, with the use of various open questions, help the students view a certain situation from various perspectives. This way, it becomes possible for them to see new possibilities for action in the specific situation, such as when they are stuck on something or to help them see the possibilities of developing more than one idea. As process facilitator, the neutral position is a place where curiosity and questions take up more space than answers and assumptions of how something should be explained and solved.

### Context

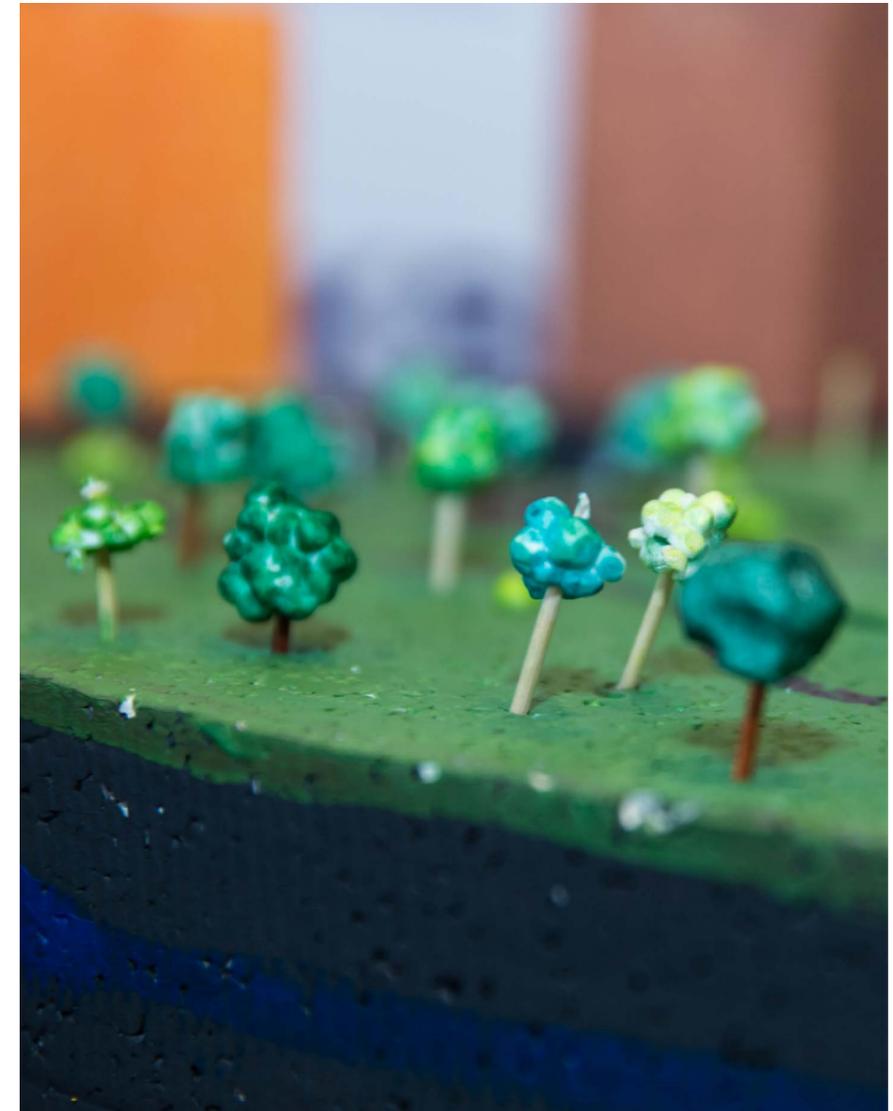
The context is the framework we find ourselves within. It is the environment within which something takes place; frame, action and communication. The context helps decide which opportunities we have for understanding, interpreting and giving meaning to an action or a situation. Thus, the context is the key to understanding the communication we are a part of. It becomes meta-communication – our surroundings or environment “speaks” to us. An example could be when you say “don’t forget the football”, when you are talking to your football coach. This would not make sense to say if you were talking to the stranger standing next to you at the bus stop. People’s rela-

tion to you is the context, which decides what makes sense or not. Hence, the message of the context represents a meta-communication, which plays part in determining what makes sense. Through this understanding we distinguish between three types of context markers in the process facilitation: *Time*, *place* and *relation*.

**Time** as a context marker means being aware of the time, as it affects both the frame and the content of a process. The amount of time allocated to a process affects what makes sense to work with and how. Communication about time helps create the frame that makes it possible to understand and negotiate the time available, in the way that makes the most sense for the work process.

**Place** is the context marker that indicates our physical whereabouts. Teaching in the classroom or in carefully selected locations creates a new context for the conversations taking place. Considerations regarding the interior and the use of space in the room can have great impact. Therefore, it is, among other things, the physical surroundings that dictate how far the students can take their ideas.

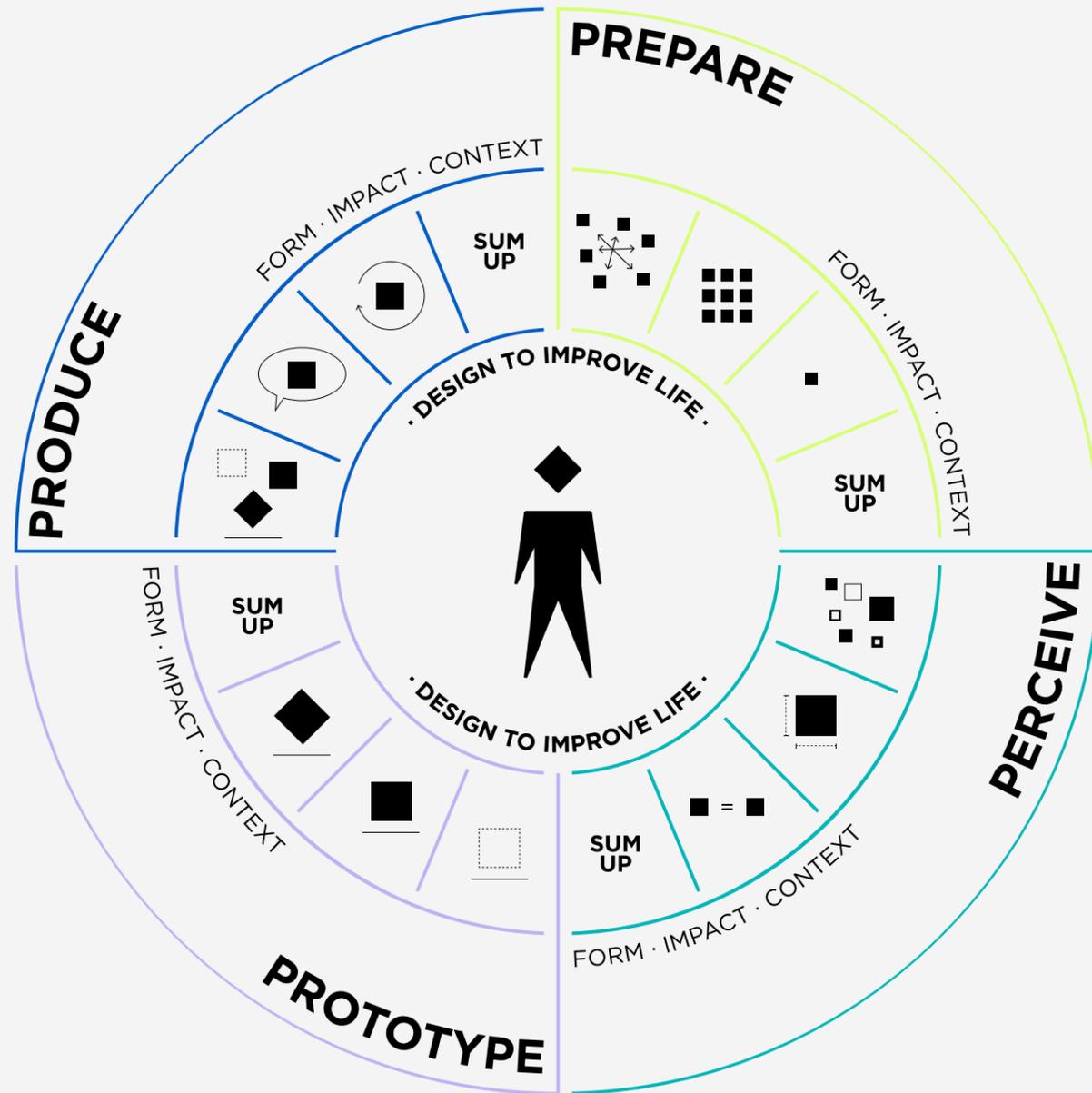
**Relation** as context marker relates to the process facilitator’s relation to the students, and the relations between the individual students. Relations are affected by gender, position within the group, age, interaction, etc., and a wide variety of relations can exist between the teacher and the students and among the students. All possible relations affect the process and the communication.



# THE DESIGN TO IMPROVE LIFE COMPASS



# INTRODUCTION TO THE DESIGN TO IMPROVE LIFE COMPASS



The Design to Improve Life compass (the Compass) is a tool that integrates the three fundamental competencies of the teaching: Design to Improve Life, Didactics and Process.

The Compass is designed to help you and your students navigate, focus and stay on track in the Design to Improve Life process.

The Compass manages the process by offering a clear structure of the process's and the teaching's various levels and elements.

At the same time it encourages curiosity, engagement, creativity and innovative thinking, in order to increase both the teacher's and the students' spontaneity.

The Compass acts as the structure of the Design to Improve Life Education material, and supports the overarching goals for the teaching with concrete actions, methods and techniques, to help the students work through the design process. Thus, the Compass cannot be used without the accompanying education material.

The Design to Improve Life compass consists of four primary levels:

#### The user

The "target market" negatively affected by a specific situation, who will benefit from the design solution.

#### The four phases

*Prepare, Perceive, Prototype and Produce* – the four main phases in the design process.

#### Twelve concrete actions

Three actions plus a final Sum Up of each of the four phases. The actions in each phase are relevant for and support the educational goals of each phase.

#### A series of techniques that support the actions

Several of these techniques are familiar process-tools, which are combined into a new holistic and creative form of teaching.

The Compass guides you and your students through the Design to Improve Life process phases. In the *Prepare* phase, the students choose a challenge they wish to design a solution for. In the *Perceive* phase, the students research and familiarize themselves with the challenge and how it affects people. After that, the students design, visualize and test possible solutions to the challenge in the *Prototype* phase. Eventually in the *Produce* phase, the students finalize and produce their final designs (the final solutions) to the challenge, which are then described and presented in the classroom.

After each phase, the students present their output from the individual phase in a Sum Up, where they receive feedback from their fellow students and you, their teacher. Through this process, you secure that the students are at the same level in the process after completing each phase.

#### HOW DO YOU USE THE COMPASS?

In order to use the Compass – as either teacher or student in the Design to Improve Life process – it is necessary to be taught how to use it and then practice how to use its different levels and techniques.

This acquisition process consists of three steps:

#### 1. Understand the structure, levels and contents of the Compass

The primary purpose of the Compass is to handle the complexity of the Design to Improve Life process in a simple way, by providing a clear overview of the individual levels of the process, and offering appropriate techniques to support it. The Compass helps you and your students keep track of where in the Design to Improve Life process you are. In the Compass, the various levels are visualized through symbols that make it easier to navigate the different layers, as soon as you have familiarized yourself with them through repetition.

You can compare the process to maneuvering through traffic: You have to know the graphic symbolic meanings of road signs, in order to be able to orientate on the road. When you and your students have gotten acquainted with the symbols, it will simplify the way you navigate and communicate in the design process.

#### 2. Apply the structure, levels and contents of the Compass in your teaching and in the process

It is important to complete the Design to Improve Life process with the presented techniques and actions. The first time you work with a Design to Improve Life process, it can be an advantage to complete the process through a short-period over a couple of days, where the students (and the teachers, when they are the ones being taught) work with a pre-chosen challenge in their local environment, e.g. life in the school yard, loneliness among seniors, etc. As process facilitator, you choose how visible the Compass will be in the process, depending on how much focus you want to put on the actual process.

If the Compass is visible in the process, it is important to include a solid introduction to it. Under all circumstances, it is important that you provide the students with introductions to the individual techniques, and that these are linked to the overall design process – i.e. why they have to use the specific techniques. The Design to Improve Life compass, and the actions and techniques it contains, can be used in design processes ranging from two days to month-long processes.

### 3. Redesign the Compass to target specific grade levels, themes or processes

When you as a teacher have completed one or more Design to Improve Life processes, the structure of the Compass will start to become an integrated platform for education, which will provide overview and coherence of the teaching and of the process.

If the Compass and its various levels shall continue to be useful and inspiring for you and your students to apply, it is important to make it dynamic and vivid. This means that you have to start redesigning the contents of the Compass, i.e. uphold and apply the structure and the levels, but reorganize or introduce new actions and techniques to target the Compass towards a specific group of students or subject matter (e.g. climate change), which the teachers wish to work with in future Design to Improve Life processes.

Just like the actions and the techniques can be redesigned, the different phases of the Compass can have different levels of importance within the process. This means that you can choose to focus on a specific phase, because you think the students will benefit from a deeper understanding of the different methods and techniques used to complete that particular phase.

When you understand and master the Design to Improve Life compass, you will discover that it is useful in many ways:

#### Understanding and overview of the levels and elements of the design process

The Design to Improve Life compass manages the interaction between the levels in

a complex and holistic teaching-/design process. Adjusted to the specific grade year, the Compass can be used to create an understanding and overview of the levels and elements of the process, and of where the students are in the Design to Improve Life process. For the older students, INDEX: Design to Improve Life® has developed an introduction video to the Compass and for the younger students, a DIY Compass will be developed.

#### Planning of the concrete Design to Improve Life process

When you as Design to Improve Life teacher master the Compass and the attached actions and techniques within your teaching, you can start using it as a planning tool for future Design to Improve Life processes – this is where you have the opportunity to redesign the Compass, and direct the design process at a specific target group or challenge.

#### Facilitation and management of the process

The Design to Improve Life compass and the linked actions and techniques are all part of the holistic Design to Improve Life process, which you support by taking on different teaching positions. (see page 27). Supported by the structure of the Compass, the actions and the techniques, you are able to control the design process, which in itself can be and should be chaotic, thus giving your students the necessary calmness and safe environment to work in the process.

#### Communication in the process

The Design to Improve Life compass can also be used as a communications tool, as you can choose to focus on and adopt the way communication is used in the design process. The Design to Improve Life process is sustainable and focuses on resources and opportunities instead of problems and limitations. The Compass includes techniques that should initiate collaboration in interdisciplinary teams. The process is built upon an acknowledging approach and positive communication. Through the reoccurring Sum Ups, the students are encouraged to give and receive feedback and reflect on academic and procedural learning.





## THE LEVELS OF THE DESIGN TO IMPROVE LIFE COMPASS

The Design to Improve Life compass consists of four phases that can unfold into six layers, where you start by moving from the outer layer, focused on the user and the four phases to the inner layer, where you find concrete techniques that support the actions your students go through in the different phases.

The Compass represents a holistic and non-linear process that alternates between repetitions and progressions related to the goal, form and content.

### The User

The user is always the center of attention in the Design to Improve Life process. The users are the people you design solutions for, thus the interest in and the study of the user are the starting point and purpose of the collected design process.

### The phases

The Design to Improve Life process covers four defined phases (*Prepare*, *Perceive*, *Prototype* and *Produce*). Each phase is finished off with a Sum Up which summarizes and evaluates the finished phase. Here the students reflect and give each other feedback on their work.

In the *Prepare* phase, the students are introduced to Design to Improve Life and are divided into resourceful design teams where they distribute responsibility and roles. They then identify possible challenges to work with and concretize the specific challenge, they want to work with. This phase focuses especially on the *Impact* parameter, which focuses on challenges that have a negative effect on people's lives.

In the *Perceive* phase the students are taught to refine and understand their chosen challenge and the potential users and target groups – what their needs and wants are, and which challenges should be solved through the design. This phase focuses on the *Context* parameter – on the environment the design has to work within, the people who are affected by the challenge and in which way they are affected: How the culture, geography and infrastructure are in the local context.

In the *Prototype* phase the students should develop ideas on how to solve the chosen challenge, and they should start to develop and visualize their designs using models and sketches. They should test their ideas and solutions on the users, make mistakes and possibly start over, while they evaluate and reflect in their development and learning. The phase focuses on the *Form* parameter, since the students are now working with developing and shaping their ideas.

In the *Produce* phase the students gather all the material they have produced in the previous phases in order to gain an overview of the process. Based on the students' material, they prepare a presentation of their design process and their design solution. The teacher should by this time have communicated the framework of the presentation, based on the overall focus and goal of the process. In the last Sum Up of the process, the individual design teams' work is evaluated based on all three Design to Improve Life parameters: *Form*, *Impact* and *Context*.

### The actions

The Compass includes twelve different actions – three in each phase. The actions are developed to make them as relevant for the work the students have to do, and for the learning goals attached to the individual phase. In the Compass, the actions are visualized using pictograms.

### The techniques

Every action is supported by different types of techniques, e.g. Open Space and Idea Poker, which help the students explore, analyze, develop, reassess and improve their designs. In addition, several Joker techniques can be used when/if the students get stuck in the process or need new approaches for their projects.

### The Design to Improve Life parameters

Within the process, the students will analyze, assess and choose the challenge they wish to develop a solution for based on the three parameters: *Form*, *Impact* and *Context*. As described in the *Produce* phase, the students focus on all three parameters to enable evaluation of the process, while focus is on the individual parameters in the three previous phases.

(Read more about *Form*, *Impact* and *Context* on page 14)

### The Jokers

During Design to Improve Life processes the students (or the teacher) will experience, that they get stuck in the process because they lose focus, get set on a single idea or challenge, or disagree and become frustrated with

the process. This is completely normal and an inevitable part of the process. The Jokers provide a series of tools and techniques to deal with such situations.

### The logbook

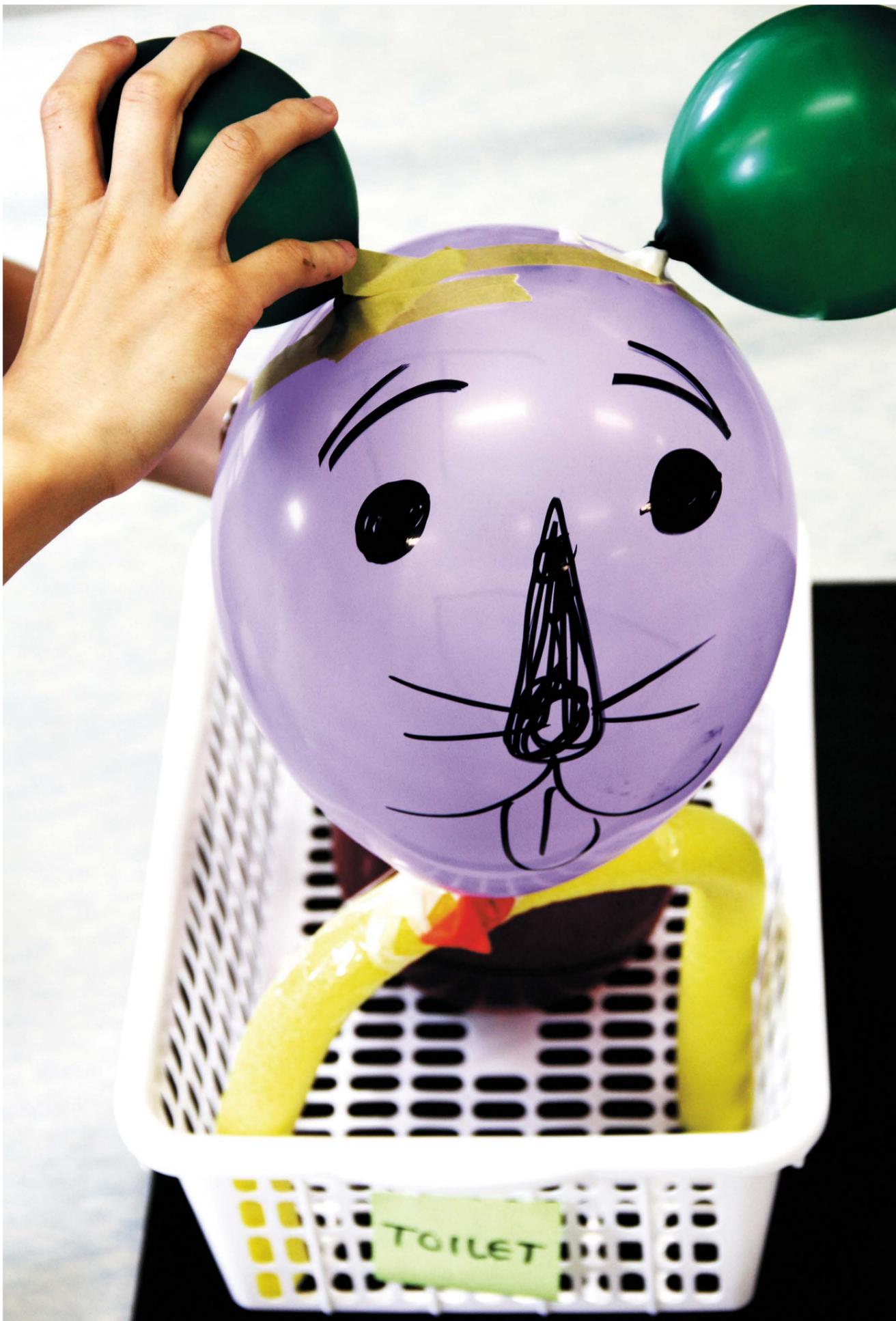
While the students complete a Design to Improve Life process, they have to keep a Logbook that includes their reflections and learning. The Logbook could for instance be a notebook, where the teacher has written several questions for the students to think about. The teacher develops the questions, which should focus on the procedural progress the students experience in the design teams, reflections of learning and the quality of the design team.

Examples of questions for the Logbook could be:

- What have you and your design team learned in this phase?
- Have you experienced strengths and weaknesses when working in design teams?
- Can you use what you have already learned in the next phase?

The Logbook is the students' personal tool, but it is mandatory that they reflect over the questions prior to each phase's Sum Up. The reflections of the Logbook are actively used in connection with the Sum Ups and the final presentation in the *Produce* phase.

The teacher can choose to collect the logbooks during the process to gain insights into how the students work.



## THE PHASES

The top layer of the Compass consists of four phases: *Prepare*, *Perceive*, *Prototype* and *Produce*. In each phase, there are three actions and a Sum Up, where the students take stock and reflect upon their work. Each action is supported by various techniques, helping the Design to Improve Life process along. The phases presuppose each other, and therefore each phase contains components that cannot be left out of an authentic Design to Improve Life process.

In the didactic context though, you can easily choose to organize a process that focuses specifically on one of the phases and the actions, techniques and specific learning objectives attached. Or you can zoom in on the individual components in a phase, depending on the learning objective(s) you are aiming towards. Similarly, you can organize a shorter or a longer process, depending on the frames you are working in. Just keep in mind that the students need to know exactly which phase they are in and what they are learning in this phase.

The Sum Up actions between each phase should provide maximum support for the students' academic and process-related reflections.

As a teacher, your role in the process is to frame the phases, estimate time frame and time consumption as well as to facilitate the different activities of each phase – activities that constantly alternate between expanding and narrowing the students' possibilities. You must assess which (changing) position you – as facilitator – will assume, both in relation to the entire process but also in relation to the individual design teams' need of support and guidance. Does a team need to dwell in the open sea of the *Prepare* phase and discover new aspects of a sub-theme, before they commit to a specific challenge? Or do they need an 'obstruction' (see Exploration Jokers, page 159) that can narrow the theme and concretize the challenge?

Also, you need to be able to see when a design team is self-propelled, when it is stuck and what it takes to get it moving in a constructive direction.

The Techniques Catalog of this guide (page 51) and more specifically the section about Jokers (page 153) will provide you with tools to both narrow and expand the students' scope – to keep them in a certain place in the process and help them move forward. At the same time, it is important that you – as you go – develop new techniques and obstructions to accommodate the specific mix of people and their specific design challenge (see the Design to Improve Life compass, page 31).

Before you start facilitating the Design to Improve Life process, you must decide upon an overall theme for the project. You can either let the students decide which overall theme they want to work with, or you yourself can determine it (e.g. if the school subjects involved limit the theme scope).

### Overall themes could be

- The eight UN Millennium Goals.
- The evaluation parameters: *Form, Impact, Context*.
- The INDEX: Award categories: *Body, Home, Work, Play* and *Community*.

On the following pages you will find a thorough introduction to the individual phases.



## THE PREPARE PHASE

The objective of the *Prepare* phase is for the students to plan and understand the process ahead of them and that they identify, select and concretize the challenge they want to design solutions for.

### Learning objectives

- To form cross-disciplinary, resourceful project groups.
- To define different roles and areas of responsibility in a project group.
- To match expectations and find common ground.
- To prepare, overview and plan extended project processes.
- To grasp and use the Compass as a process tool – including learning different actions and techniques.
- To develop ideas.
- To screen large topic areas.
- To identify complex challenges.
- To ask questions.
- To structure large quantities of material.

In the *Prepare* phase, you introduce the students to the overall frame and theme of the project – if the overall theme has been decided upon from the beginning. You introduce Design to Improve Life processes – including the Compass – as tools to create and control a process, and you provide the students with an overview of the entire process and the different phases.

It is important that they from the beginning learn about the key principles of the Design to Improve Life processes: Triple bottom line (social, environmental and economic sustainability) and the three evaluation parameters – *Form*, *Impact* and *Context* – so that the students are properly equipped to work in a solution oriented and user focused way to create sustainable solutions that improves life for people.

The introduction to the overall theme and to Design to Improve Life can happen in many different ways, for example as:

- Inspiration and knowledge (inspirational material is available on [www.designtoimprovelife.dk](http://www.designtoimprovelife.dk)).
- Personal experiences and sensory experiences (museum visits, storytelling, etc.).
- Reflection on the overall theme: “Which design(s) changed my life?”

In the beginning of the *Prepare* phase, the students explore their options – both socially and in relation to the overall theme. As their teacher, you must facilitate the composition of strong design teams (keeping diversity in mind) based on competencies, resources and learning profiles. At the same time, it should be defined which expectations, roles and areas of responsibility a design team is comprised of – and how these are distributed.

In the *Prepare* phase, it is also important that you set aside time for the students to get to know each other and for them to strengthen team spirits and find common ground. Forming design teams can happen before the actual process begins or in connection with generating ideas (brainstorming) and choosing a sub-theme.

When choosing a sub-theme, the students explore a wide array of ideas as to which challenges they could potentially work with in the Design to Improve Life process. This is an expanding process where ALL ideas are welcome and the overall theme is explored thoroughly. The students must be open to each other’s questions, ask curious questions and change perspective/angle.

After this uncensored brainstorm, the students must together start organizing, structuring and categorizing their suggestions for challenges they can work with in the process. In this process, sub-themes will appear and these (over-arching the challenges) are now given headlines. As facilitator, it is your job to ensure that the different sub-themes are good enough to use. The group/class ends up with an overview of possible project themes (sub-themes) in play.

The students must then prioritize in the volume of ideas and select which of the possible sub-themes they want to work with henceforth. They look at the ideas again and concretize which of the challenges and problems lie within each sub-theme and how these ‘set the stage’ for sustainable solutions. The different challenges are compared to each other and systematized, before the teams choose the challenge they want to work with.

The final decision/choice is based on the level of negative impact the challenge has on people’s lives (and thereby potential to create a positive impact) and on the possibility of exploring the challenge in a local perspective.

### Actions in the Prepare phase

#### Explore

The students explore their own human resources and diversity and form strong design teams. They also explore different challenges within the sub-theme.

#### Organize

The challenges are unfolded, systematized and grouped into sub-themes with different headlines.

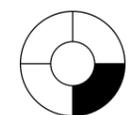
#### Choose

By grouping and organizing the challenges it becomes possible to choose one that is to be worked with in the Design to Improve Life process.

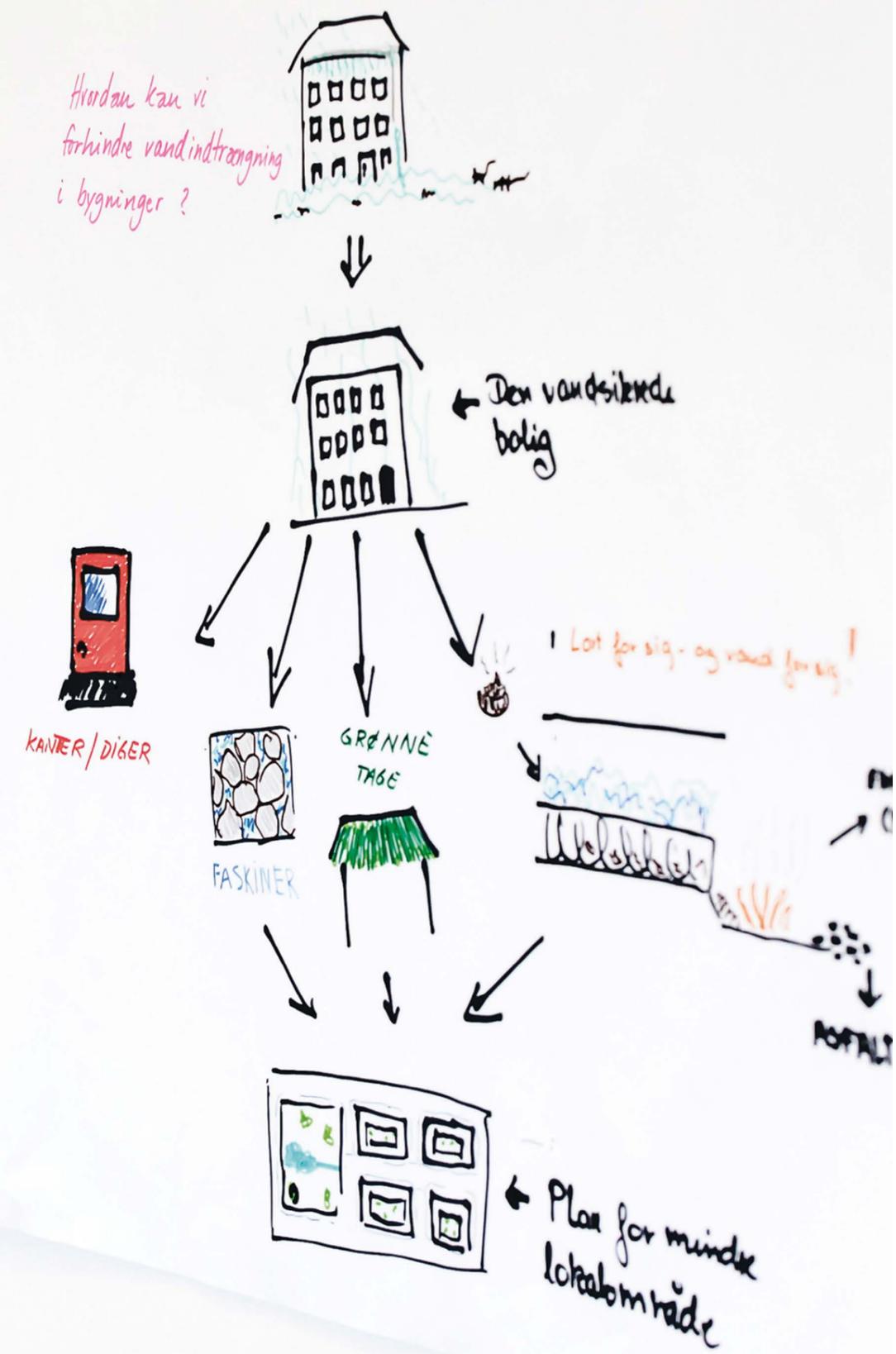
### The following techniques are recommended for the Prepare phase,

1. Timeline
2. Winners’ Review
3. Portrait and Interview
4. Open Space
5. Formation of Design Teams
6. Mindmap and Focus





# ARBEJDSPROCES



## THE PERCEIVE PHASE

The objective of the *Perceive* phase is for the students to identify what they think they know and what they want to know about their challenge. They visualize and concretize users affected by the challenge and then they narrow down the focus of the solution that they are going to work with.

### Learning objectives

- To understand and describe the problems which were identified in the *Prepare* phase.
- To identify and explore the user and the target group.
- To empathize with other people's/culture's/groups' needs and expectations.
- To find inspiration and knowledge.
- To be open and accepting towards new knowledge and new understandings.
- To ask both open and closed questions.
- To add focus to the work by using the acquired knowledge.

In the *Perceive* phase, you (as facilitator) focus on the students understanding the task, the users and the target groups they are facing. What needs and wishes do the users have compared to the selected/chosen challenge and how do the users view the challenge the students chose to solve?

The *Perceive* phase is centered around *Context* – the surroundings, challenges and needs which the design team's chosen/selected challenge is targeting: Who is affected by the problem in question? How are they affected? And what is the culture, geography and infrastructure like in the area?

The first thing the students have to do is to prepare their research and field work. What questions do they need to ask – and who they need to ask? Then they need to go into the field and look for the information they need and subsequently deal with the output. They will use research sources and research techniques to identify the users of the final design and this research work will give the original challenge a new perspective, enabling the students to combine several relevant ideas.

The students will now need to analyze everything they learn in the *Perceive* phase, in order to be able to transform their challenge into a concrete task. What is usable and what can be left out? In which order is the material best used? How can it be put together? There are many decisions to make and this decision-making process helps sharpen the focus in relation to sub-theme and target group.

The *Perceive* phase is concluded as the team – based on the field work and analysis – thoroughly describes the challenge and its user(s): Who are we dealing with? What are the hopes and wishes for this person? In what context is the person situated?

This user profile is a part of the project description that the design team in detail draws up. Besides the user profile, this includes a description of the challenge, a project description and a description of success criteria, team roles, collaborators and a time schedule for the process. This plan will form the basis

of the development and production of a design solution in the final two phases of the Design to Improve Life process – and will keep the team from veering off track.

### Actions in the Prepare phase

#### Search

The students determine what they know, what they think they know and what they want to know. They use sources, seek out information and ask questions. Everything is usable; sorting and prioritizing comes later.

#### Analyze

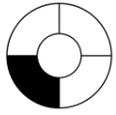
The design teams examine all the knowledge they have gathered about the sub-theme so far. Based on this, they formulate a concrete task that they will work with from this point on.

#### Describe

The phase is concluded as the team write up a project description containing a description of the precise challenge, of the user, of relevant knowledge and of collaborators. The team also writes up a time- and work schedule for the process ahead.

### The following techniques are recommended for the Perceive phase

- 7. Knowledge Mapping and Central Themes
- 8. Research Strategy
- 9. Field Work
- 10. Persona and Heart Diagram
- 11. Form the Challenge
- 12. Design Task and Project Description



## THE PROTOTYPE PHASE

The objective of the *Prototype* phase is to get (many) ideas about how the challenge can be solved and then actually shape these solutions. Prototypes of the final design solution – which is tested thoroughly and assessed in relation to user(s) and surroundings – are developed.

### Learning objectives

- To visualize a challenge/problem.
- To think all the way around a challenge.
- To physically shape an idea.
- To learn about a material and understand its possibilities and limitations.
- To experiment with different solution models.
- To generate ideas.
- To collaborate and listen to others in the team.
- To understand how team members can take advantage of each other's resources.
- To clarify and visualize new knowledge.
- To actualize new knowledge.

In the *Prototype* phase, the design teams start by generating ideas about how to solve the selected/chosen challenge. Then they build quick, visual models of more ideas. This is similar to the brainstorming process in the *Prepare* phase, only now the focus is on an actual solution.

With the idea models as a starting point, the teams choose one or two ideas that they want to develop further. Then, they form a simple prototype which is cross-referenced with the work in the earlier phases: Is the design's basic idea relevant to the challenge? Will it work for the user? And does it live up to the evaluation criteria of *Form, Impact* and *Context*?

The design is then improved through feedback from the user and by testing, testing and testing. This way, the design team gains valuable information about the design and learns whether or not other strategies, techniques or materials need to be included to improve the design solution. Luckily, you can always go back to previous phases and get new ideas, if the project is veering off track.

### Actions in the Prototype phase

#### Develop

The team develops ideas and small idea models which are tested and evaluated afterwards.

#### Shape

Based on this work, one or more prototypes are formed using different materials.

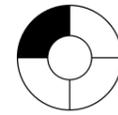
#### Test

The design solution is tested and evaluated in relation to user(s) and surroundings. Adjustments are made and the prototype is tested again until the product lives up to all the set criteria.

### The following techniques are recommended for the Prototype phase,

- A. Blind Drawing
- B. Associate and Build
- C. Walk the Dog
- 13. Persona Models and Role Play
- 14. Rapid Prototyping – 1,000 Ideas
- 15. Talking Waterfall
- 16. Idea Poker
- 17. Material Testing
- 18. Mock-up
- 19. User Test





## THE PRODUCE PHASE

The objective of the *Produce* phase is to finish the product enough for it to be communicated to others. Therefore – if it is possible – work is done to try and turn the product into reality. The design teams' individual processes and their design solutions are presented and evaluated in the final Sum Up.

### Learning objectives

- To complete and finish a task.
- To assess and evaluate your own and others' work in relation to specific products and suggestions for solutions.
- To evaluate and reflect upon your own and others' learning processes.
- To give and receive feedback.
- To acquire methods and tools to present and communicate suggestions for solutions.
- To analyze and evaluate the process, the results and the context they exist in.
- To experience the joy of completing an entire design process with others.
- To create useful Design to Improve Life solutions.

In the last of the four phases, the *Produce* phase, the teams need to make everything from previous phases come together. They sort through all used material and decide what to include and what to leave out, when they tell the very best story of their Design to Improve Life solution.

The team must decide how to organize an ambitious and focused communication/presentation so that the project is brought to life for everyone not involved in the project. Each team must communicate the challenge and the solution as clearly and holistically as possible, and the solution's (the design) strengths and weaknesses must be compared to each other by focusing on *Form, Impact and Context* and on the overall objective of the project: Are the produced solutions useful? Are they socially, environmentally and economically sustainable compared to the problem at hand?

Finally, in the *Produce* phase, each team produces material for the final presentation in Sum Up. As teacher, you set the framework for what the students need to present. It can e.g. be a model of their design solution – even though their solution might be a campaign or a service. Also, the students can make posters describing their process, their challenge and the knowledge they have gained through working in the field as well as visualizations and descriptions of their design solution.

Each team rehearse their presentation until everyone is comfortable with the situation and last but not least, you celebrate that you succeeded in creating a solution that improves life for people – a Design to Improve Life!

## Actions in the Produce phase

### Collect

All material is collected and sorted in a clear and coherent manner. The students consider what to include and what to leave out, when they tell the good story about their design solution.

### Communicate

Each team prepares the final handing-in and presentation of their work. They describe the challenge and measure its sustainability and explain why it is relevant to the user(s).

### Produce

Each team considers which type of presentation is best for communicating their design solution – the teacher sets the framework for what they need to present. They rehearse and plan their presentation, including who is responsible for the future implementation of the product.

### The following techniques are recommended for the Produce phase

- 20. Design Overview
- 21. Storytelling
- 22. Production of Material for Final Presentation



SUM UP

SUM UP

The objective of the Sum Up is for the students to stop and reflect on their work process and product development. There is a high level of learning concentration in the Sum Up action, since it is here the students become aware of which academic knowledge and which methods to use – in order to achieve the best possible design solution. The students observe and communicate collectively about the process and they give and receive feedforward and feedback.

Learning objectives

- To stop in the middle of a process and determine how far along you are, and what new knowledge you have gained – knowing full well that it might not be the knowledge you expected.
- To share knowledge with others, thus making your knowledge available to all.
- To be aware of which knowledge and which methods to use in the individual process in order to achieve the best possible design solution.
- To adjust to the fact that the process is going in a new direction.
- To listen to others' knowledge and perspectives, thus becoming aware of other routes to take.
- To acknowledge and celebrate yours and others' obtained knowledge.
- To strengthen dialogue and reflective questions in a process.
- To develop a metalanguage around interaction and process.
- To break patterns.

It is a recurring practice in the design processes that each phase is concluded with a Sum Up, which simultaneously form the transition to and prepares you for the content and activities of the next phase.

In Sum Up, you take a step sideways, take stock and reflect upon your work: How far along are we? What do we know, and what don't we know? What are we having doubts about? Where do we need help? Where are we going? Do we maybe have to adjust the direction we are going in? Here, design teams present their work to each other – both the process and the design solution.

Sum Up is a method to convey and share knowledge and to watch, learn from and communicate about the process. The students learn to communicate and present their project while it is still in an unfinished state. They learn constructive communication about interaction and process and they are given an opportunity to mirror themselves in each other which is a good foundation for reflection, growth and desired change.

Also, the students give and receive feedforward based on focal points they set up themselves as well as give and receive acknowledging and constructive feedback. They learn to mirror the feedback and thus they develop a meta language about learning, communication and process – and based on this feedback, they re-evaluate and organize their work to fit content, method and process.

There are many ways to sharpen the students' reflection: They can reflect in pairs, they can keep individual logbooks, where they regularly reflect on the work process (see the levels of the Design to Improve Life compass on page 36), or they can have reflective conversations in a group, while the rest of the team listen, learn and subsequently comment and reflect constructively on what they heard.

As facilitator, YOU create the framework for the reflection(s) by – in advance – asking the students questions for them to think about and discuss with each other. The questions correspond with the learning objectives that

you set up for the design process the students are going through. Is it process skills and team roles that the students are going to reflect upon? Or is it about which part of the subject math is a part of the design development? Depending on the teams' age and preconditions, you can also choose to let the students formulate the reflective questions themselves.

The Sum Up actions typically proceed in the same way after each phase, except after the *Produce* phase where Sum Up acts like a final presentation and evaluation.

After the presentations in the *Produce* phase, a final evaluation of both process and design solution takes place. The latter is evaluated based on the criteria *Form*, *Impact* and *Context* and also according to social, environmental and economic sustainability. Furthermore, it is important that the Design to Improve Life process is evaluated as a whole and that the learning points are emphasized and made visible to all participants.

For Sum Up, the following techniques are recommended

- 23. Presentation, Feedforward and Feedback
- 24. Oracle Round
- 25. Preparation and Presentation in Final Sum Up

# TECHNIQUES CATALOG

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In this catalog, a number of techniques and diagrams are presented, which represent the twelve actions of the Design to Improve Life compass. The techniques are linked to specific phases and actions. For the experienced teacher, the techniques can be used freely where and when the teacher sees fit to aid a Design to Improve Life process.

In addition to techniques designed to support the actions of each phase, the catalog also includes techniques to support Sum Up (see page 139) and Jokers (see page 153).

The Jokers embody a series of tools and techniques for the teacher to use if the design process somehow stalls. The Jokers help make the Compass more flexible and dynamic, as they allow the students to use the various techniques of the Compass when they need it. The Jokers are used when the teacher or the students feel the need for some sort of disruption, in order to get new ideas or perspectives, move focus, concretize points, shift directions, etc.

The techniques are presented as recipes that describe what the students should do, why they should do it and how they should do it. In addition, you will find descriptions of which props are necessary for completing the techniques, as well as instructions for how to arrange the classroom to secure the best outcomes of the various techniques.

Each description of a technique is completed with a guiding time schedule to provide the teacher with a sense of how long completing the specific technique is supposed to take. Some of the techniques can be applied both as quick exercises and longer lasting assignments for the students – this is made apparent in the description of each technique.



## DIAGRAMS FOR EVALUATING FORM, IMPACT AND CONTEXT

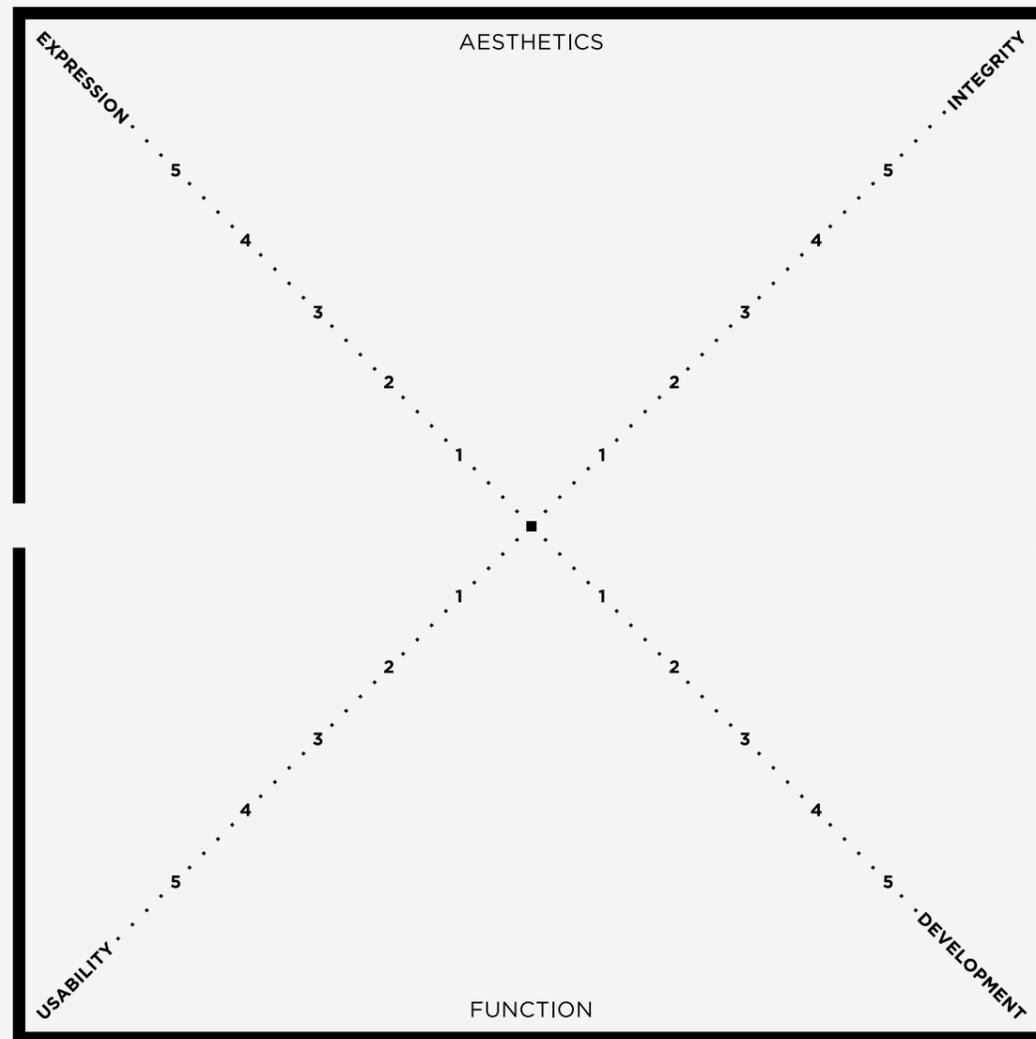
In Design to Improve Life processes, you evaluate challenges and solutions in relation to the three INDEX: Design to Improve Life® parameters *Form*, *Impact* and *Context*. As you can read in the introduction (page 13), the emphasis on the three parameters in a Design to Improve Life process is an essential prerequisite when you are evaluating how well a design solution improves people's lives.

To help you (as teacher) and your students in this process, we – the people behind Design to Improve Life Education – have designed three tools that support the evaluation of your process and the solutions the students design in their design teams. The tools are designed based on our knowledge and experience as designers, teachers, architects, process consultants and anthropologists.

These three tools (diagrams) visually support the students' explanations, when they analyze others' and their own designs – both during the process and in the final phase, when they have designed their final Design to Improve Life solution.

The diagrams are useful in each Sum Up, when the students finish a phase, evaluate their own process and/or receive feedback from the other design teams. The diagrams provide an easy overview of the design teams' process and make the outcome of the design teams' work at the end of the process more concrete and understandable. And when the design teams finish the *Produce* phase, they can use the diagrams to present a common thread of their work from start to finish, and thus create an easy overview of a complex and interdisciplinary Design to Improve Life process.

**FORM DESIGN  
IMPACT TO IMPROVE  
CONTEXT LIFE**



## INTRODUCTION TO THE FORM DIAGRAM

INDEX: Design to Improve Life®’s parameter *Form* focuses on a design’s aesthetic appearance and function.

The parameter *Form* is used to evaluate Design to Improve Life based on a design’s shape, aesthetic appearance, materials, colors, surface, interface, etc. The design’s functional abilities, ergonomics, legibility, accessibility and utility are also evaluated using the *Form* parameter. In short, all the traditional values of design are evaluated here.

The *Form* diagram is used to assess and evaluate a design’s form and function, and to generate reflections and debate among the students about what makes a design good or bad. This discussion is often a question of taste or preference. Through examination, discussion and evaluation of the design’s form, the students’ abilities to assess and reflect on the world from a visual, functional and aesthetic perspective is strengthened. Furthermore, the *Form* diagram will strengthen the students’ abilities to include more facets in their assessment of Design to Improve Life – not just the looks of the design, but also how it communicates to the user and how functional it is – when they evaluate others’ and their own Design to Improve Life solutions.

The *Form* diagram is divided into two dimensions – an aesthetic dimension and a functional dimension. When you are evaluating a design, you have to put an equal amount of emphasis on both dimensions. Each dimension includes two criteria, which are important when evaluating a design’s form. Within the aesthetic dimension, these are expression and integrity. Within the functional dimension, they are Usability and Development. As teacher, you are welcome to attach other or additional words to the evaluation.

### The aesthetic dimension

When you are evaluating a Design to Improve Life solution from an aesthetic point of view, you should assess two criteria: Expression and integrity. Both criteria focus on the aesthetic abilities of the design.

Expression (appearance) focuses on the user’s first impression of the design. If it is a physical design, the expression will concentrate on the surface; shape, colors and texture. Which visual tools/measures are used and how does the design sell itself? How is the surface? E.g. does the design have a nice feel – is it soft or hard? How and why does/doesn’t it appeal to me?

If the design is intangible – e.g. an automated voice mail for an emergency medical service – the first impression will be based on the voice, the words and the phrasing.

Integrity focuses on a more holistic evaluation of the design and concentrates on the deeper meanings of the design’s aesthetic expression. The Integrity criterion is used to evaluate how a design’s shape is in balance or if it seems irregular or disharmonic. An example of this could be; how do the colors match the shape – Is there anything that is displeasing to look at or seems disconnected?

Integrity in relation to an intangible design (e.g. voice mail) could focus on the connection between the tone of the voice and what is actually said.

### The functional dimension

When you are evaluating a Design to Improve Life solution from the functional perspective it is important to assess two criteria: Usability and development. These criteria concentrate on the understanding of the design and the durability of the materials or elements being used.

When assessing a physical design, usability focuses on the design’s ergonomics, understandability and accessibility/availability. E.g. how do you handle the design? Do you immediately understand its function and

how to use it? Is the design accessible when it is needed? The last question also takes economic accessibility into account.

If the design is intangible, usability focuses on the immediate understandability and actual content. Using the example with the automated voice mail for the emergency medical service, this then means the information the caller gets from the machine and how it can be used. E.g. is the caller re-assured, and do you get alternatives in relation to waiting time compared to the severity of the inquiry?

The development and the development potential of the design focuses on the design’s materials/elements and durability. For material designs: How does it age – does it become more beautiful/ugly, or does it stay the same? Does it get out of style or is it timeless? Does it become more or less valuable in time? Is the design fragile? Do the materials and form match the function(s)? Does the design show potential for advances of its form and aesthetics?

For intangible designs development focuses on the elements, which are included in the design and e.g. if the solution is part of a bigger strategic picture and thus durable for a longer period of time. Again, taking the example of the automated voice mail for the emergency medical service, you could look at whether the voice mail is part of a strategic and communicative design created to secure that the citizens get the best instructions in the fastest way, and if there is potential for future developments e.g. by improving the voice mail to include various language alternatives.

### How do you use the Form diagram?

The *Form* diagram includes a scale of 1-5 on each axis, where 1 is the weakest and 5 the strongest. Start by presenting the overall dimensions: Aesthetics and function. Hereafter as a warm up, the design teams can collaborate on using a Design to Improve Life example to discuss and evaluate the example’s form based on the four criteria: Expression, integrity, usability and development.

Thus, the students evaluate the design in their design teams using all four criteria and make a mark on each axis, where they feel the design fits. The students can choose to connect the dots to see which figure the dots create and potentially use the figure to compare with the other teams’ figures. The larger the figure is, the “stronger” the design is in its Expression, Integrity, Usability and Development. The figures often vary and the students should discuss how to improve the design in the areas where they think it is weakest.

It is important that the students try to argue for why and how they have evaluated the design, and that they present their *Form* diagrams.

The other students should then give the design teams feedback and afterwards the students collaborate on developing an overview of how the design’s form can be improved to create an even stronger example of Design to Improve Life.

### The following technique uses the Form diagram:

- 2. Winners’ Review

### How is the Form diagram used in Sum Up?

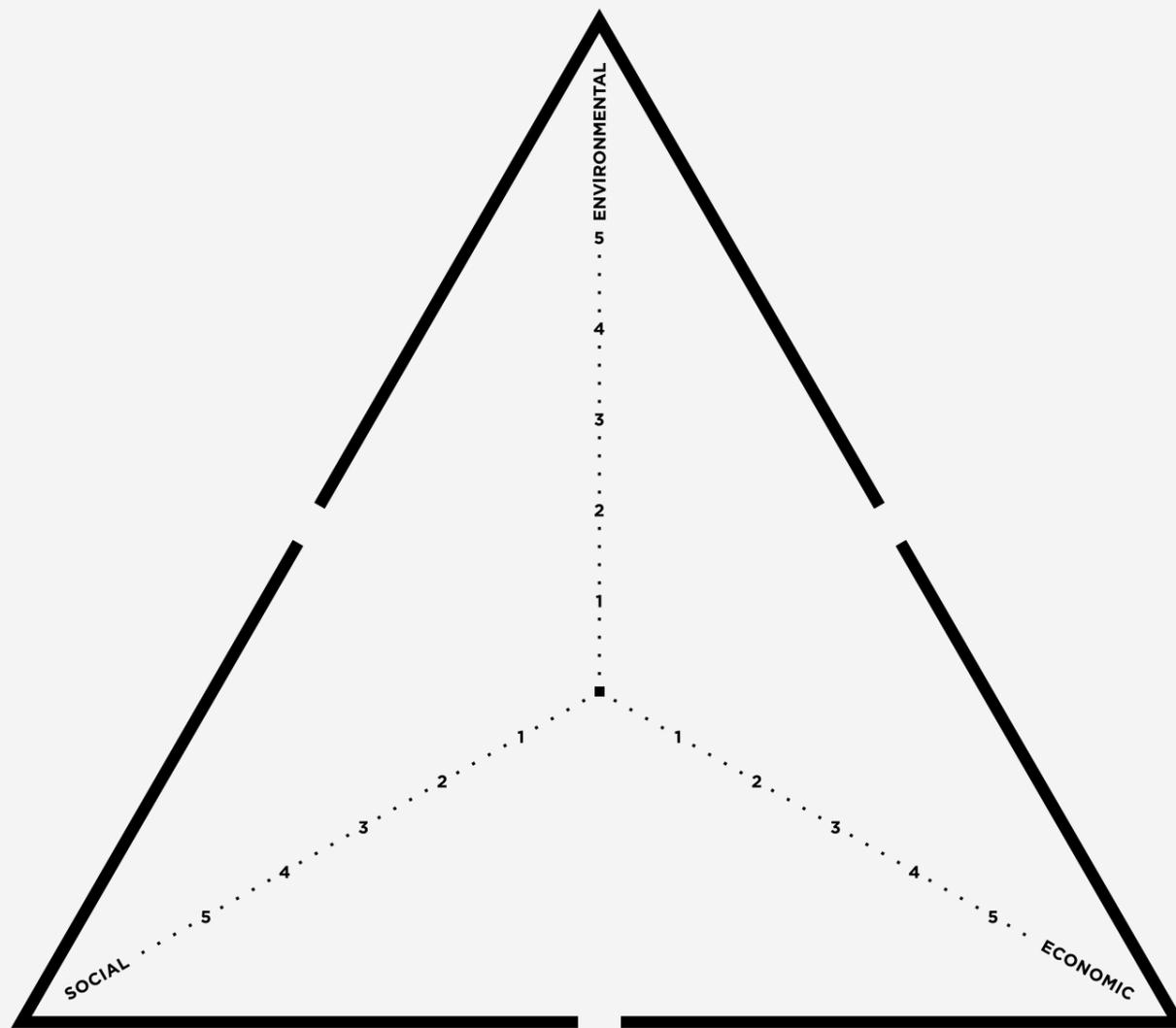
We suggest that the diagram is used in connection with the design teams’ preparations for and completion of Sum Up in the *Prototype* phase.

The design teams examine and assess their different design solution ideas using the *Form* diagram and discuss how they can strengthen their ideas based on the four criteria. The diagram can also be useful as a priority-tool when the design teams are choosing which idea they want to further develop as their final design. The completed diagrams are presented and discussed in the following Sum Up.

The diagram is also useful in the final presentation of the *Produce* phase.

### Template

See *Form* diagram page 167.



## INTRODUCTION TO THE IMPACT DIAGRAM

When we talk about the *Impact* parameter within Design to Improve Life, we are referring to how a design affects its surroundings, e.g. the positive and negative consequences it has on its surroundings and users. In short, the part of the design that is developed with the intention of improving people's lives.

However, *Impact* also focuses on the challenges that the design should address; how and to what extent the challenge negatively affects people's lives and surroundings based on the three sustainability parameters: Social, environmental and economic. An assessment of the negative impact of a problem or challenge is an important benchmark when the students are designing positive Design to Improve Life solutions.

The *Impact* diagram is developed to assess and evaluate Design to Improve Life challenges and solutions from the perspectives of the three sustainability parameters.

The equilateral triangle diagram symbolizes how all three sustainability parameters are equally important and should thus be valued equally when you are evaluating a design. You have to be aware of several facets, when you are evaluating a design or a challenge,

and we will now recommend a few subjects the students can discuss:

### Environmental sustainability

How does the design affect its natural surroundings and the environment? Is it reusable/recyclable or is it easily composted? Does the design contain toxic materials? Does it protect biodiversity (plants, animals and people)?

### Social sustainability

How does the design affect the society and its people? Is the design meant for a local area or for global use? Does the design change the society locally/globally? Can others benefit from the design? Does the design focus on human rights?

### Economic sustainability

How does the design affect the local or global economy? Does the design generate profit?

Does the price of the design match the target group's economic capability? Does the design have potential for systemic development? –How? Is the design economically stable?

### How do you use the Impact diagram?

The students can use the *Impact* diagram in two ways:

1. In the *Impact* diagram the students use the axes to mark the strengths/weaknesses of a Design to Improve Life solution (1=weak, 5=strong). When they have made a mark on each of the three axes, they connect the three spots to form a triangle. This triangle can vary in size according to how the students evaluate the design. The larger the triangle, the stronger the design is within each sustainability parameter. A design is not necessarily bad just because it is not strong on all axes; however it is important that the students discuss how to improve the design to make it as strong as possible within each parameter.
2. Using the *Impact* diagram, the students have to vote on a design's sustainability principle. Instead of discussing the design immediately, the design teams reflect individually (on post-its) on where they believe the design is strongest. If a person thinks the design focuses more on the environmental principles e.g. through sustainable materials, the person should write this on a post-it and place it in the environmental corner of the triangle. When all the teams' members have placed their post-its with accompanying arguments on the triangle, the students jointly discuss the placements, and if one of the sustainability parameters has more votes than the others they discuss why. Ultimately, the students can discuss how to strengthen the areas where the design is weakest.

### The following techniques use the Impact diagram:

- 1. Timeline
- 2. Winners' Review

### How is the Impact diagram used in Sum Up?

The diagram can be used in connection with the preparation and completion of Sum Up and has several additional purposes:

- Assessment and evaluation of the negative impact a challenge has on people and their surroundings in the *Prepare* phase.
- Setup of *Impact* goals for how the design teams' future solutions should change negative impacts to have a positive effect on people's lives and surroundings in relation to the three sustainability parameters from the *Perceive* phase.
- Assessment and evaluation of the final solutions in relation to the established *Impact* goals in the *Produce* phase.

### Assessment of the negative impact of a challenge

In the *Prepare* phase the *Impact* diagram is used to assess challenges. At this stage the students discuss to what extent a challenge negatively affects the three sustainability parameters. The assessment is used when the design teams are prioritizing the challenges they have covered in Open Space (technique 4) and Mindmap and Focus (technique 6). A challenge could potentially be assessed to have a large negative effect on the environment, while another challenge might negatively affect the social sustainability. Based on these assessments, the design teams discuss which challenges hold the most potential in relation to the design teams' interests and resources.

### Setup of Impact goals for the final design

In the *Perceive* phase the *Impact* diagram is used to establish goals for how extensive the positive outcome of the final solution should be on all three sustainability parameters. The goal is not necessarily to create maximal positive impact on all three parameters, but the teams have to justify why their *Impact* goals look as they do.

The *Impact* goals are hung on the wall and should be visible throughout the design pro-

cess, as they should be used as benchmarks in the *Prototype*- and *Produce* phases during the Sum Ups.

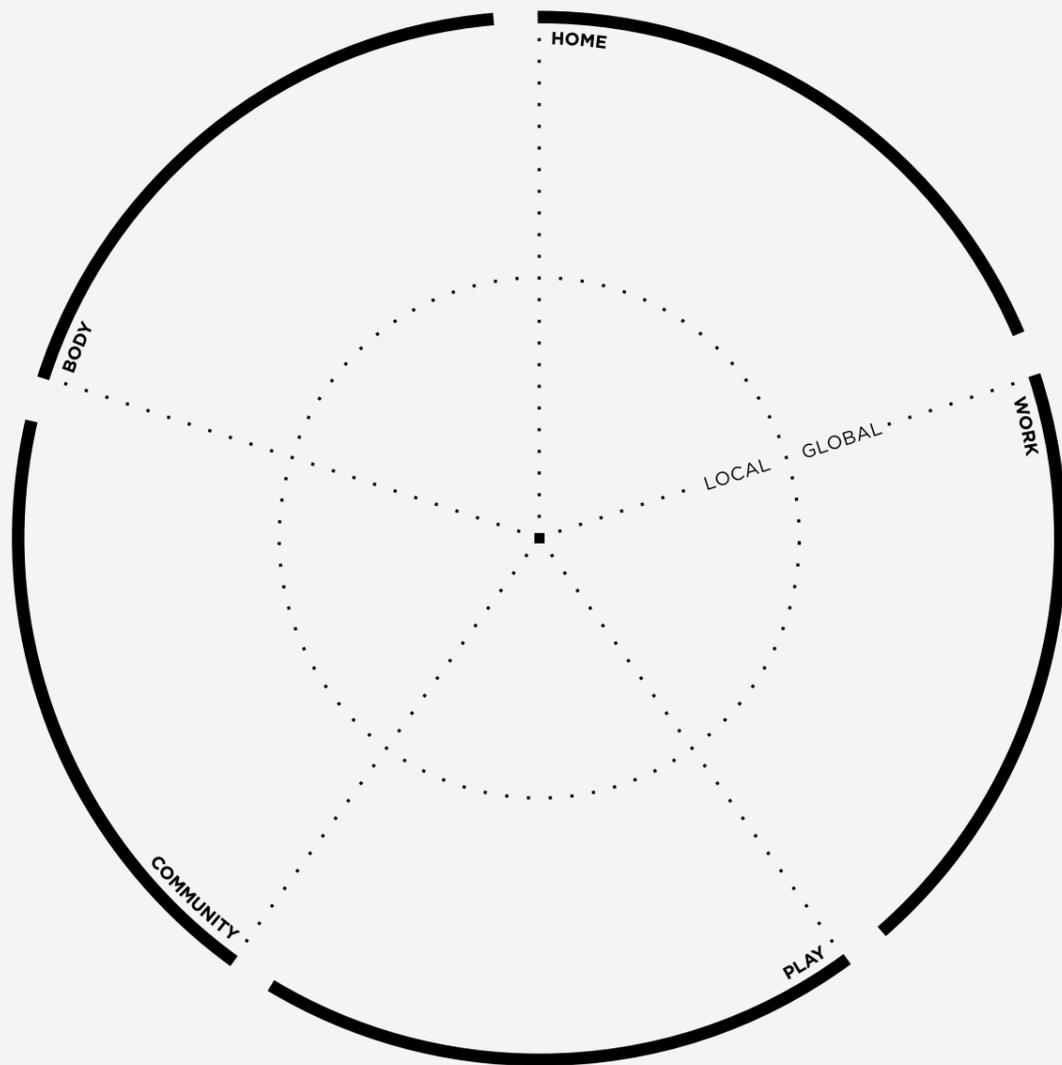
### Assessment and evaluation of the final solutions

In the *Produce* phase the diagrams, which the design teams have developed in the earlier phases, is used to assess the Design to Improve Life quality of their solutions. In the final Sum Up, the design teams present their diagrams and a joint *Impact* diagram is developed.

After a design team has presented their process and design solution, the other students brainstorm on what they think is good/bad/missing in relation to the three sustainability parameters. They write their arguments on post-its, which can have different colors depending on whether they are good or bad comments. The post-its can also include suggestions. When the students give their individual feedback, they place their post-its on the presenting design team's *Impact* diagram and verbally justify their arguments. When Sum Up is completed, the design teams should have received feedback on their Design to Improve Life solutions' positive impact on people and their surroundings, and should have gained new ideas for how to strengthen their designs' sustainability.

### Template

See *Impact* diagram page 168.



## INTRODUCTION TO THE CONTEXT DIAGRAM

The *Context* parameter focuses on the context the students' final designs are designed for, and is the foundation of why the designs were developed in the first place.

Context includes the challenge the design is addressing, the amount of people affected by the challenge(s) and how critical the challenge is. When you assess based on the *Context* parameter, you also assess how the design fits into the culture, geography and ethics of the society the design is intended for. In short, *Context* focuses on the life people live where the design is needed. *Context* is about "Life".

The *Context* diagram is developed as a tool to assess and evaluate Design to Improve Life solutions based on the Design to Improve Life parameter *Context*. To evaluate a design based on *Context* means that you assess and evaluate the design in relation to the local and global context within which the design has to function.

The *Context* diagram is created using the five INDEX: Award categories: *Body*, *Home*,

*Work*, *Play* and *Community*. By using these categories, it is possible to examine and refine the design's context and assess whether the design is suitable for the purpose and the target group it is developed for. The diagram can be used throughout the Design to Improve Life process to assess and evaluate existing solutions to any challenge, and to examine and assess the design teams' own designs. The diagram can act as a frame for in-class discussions about the connection between a challenge and its context and the applicability of some solutions within various contexts.

### What do the five INDEX: Award categories represent?

**Body** This category includes all types of design that are related to the body; clothes, footwear, devices and aids for treatments and care, tools to help fundamental and sophisticated needs and body shaped techniques such as hearing aids. In addition, the category includes services, which are related to illnesses and health issues, strategies that focus on vital processes, public care and democratic development.

**Home** This category includes all types of design that are related to the home; architecture, interior design, lighting, furniture, tools, household appliances, software, communications hardware etc. In addition, the category includes services and processes for the home and strategies for new ways to live and coexist.

**Work** This category includes all types of design that are related to work and education; architecture and design, tools for work, machines for production, communication, control- and management systems. In addition, the category includes services for work and education environments and strategies related to these, plus strategies for organization and management development.

**Play** This category includes all types of design that are related to sport, play, leisure and culture; play facilities, tools, games and sports equipment, cultural events and other types of recreational activities. In addition, the category includes design of strategies, services and concepts related to the mentioned areas.

**Community** This category includes all types of design that are public; roads, public spaces and areas such as parks and plazas, cities, infrastructure, transportation, signage, mass media and communication. In addition, the category includes design of strategies, services and concepts for society, network and community.

### How is the Context diagram used?

The *Context* diagram is divided into five equal sections. The diagram includes an

inner and an outer circle. The inner circle represents the local context, and the outer circle represents the global context. When you are evaluating a design using the *Context* diagram, we recommend that you as teacher or the students find existing Design to Improve Life solutions, to use as warm up examples before they evaluate their own projects.

First, the design teams discuss the chosen solutions. Hereafter, three colors of post-its are used to write down reflections on. Each color represents a level of strength. E.g. pink is strong, blue is medium and green is weak. If the design team feels that a design is mostly related to the *Work* category, they place a pink post-it in *Work*. The design could also be relevant in the *Play* category, and the students will therefore place a blue post-it in that category. The design teams have to discuss and assess whether the design fits best into a local or global context. If the answer is both, they place a post-it on the border between the local and the global circle. It is important that the individual design team discusses and assesses the design in relation to all five categories, to ensure their assessments become as qualified and substantiated as possible.

There are no right or wrong answers during the discussion – the important thing is that the students go into depths in their discussions and analysis of the design, that everyone is heard and that they write their arguments on post-its.

### The following techniques use the Context diagram:

- 2. Winners' Review

### How is the Context diagram used in Sum Up?

When the students use the *Context* diagram in their Design to Improve Life process, we recommend that they use it in the Sum Up of the *Perceive* phase, where they have defined the challenge they want to work with in the *Prototype* phase. By using the diagram in the preparation of the Sum Up, the students can specify and present their challenge, target group, context and task. The diagram functions as a visual part of the students'

presentation, and helps them gain an overview of their entire process.

In addition, the diagram can be used in the final Sum Up in the *Produce* phase, where the design teams present their final solutions to their challenges. The *Context* diagram represents their choices throughout the Design to Improve Life process and ultimately shows which category their design fits into and whether they focus on the local or global context.

### Template

See *Context* diagram page 169.



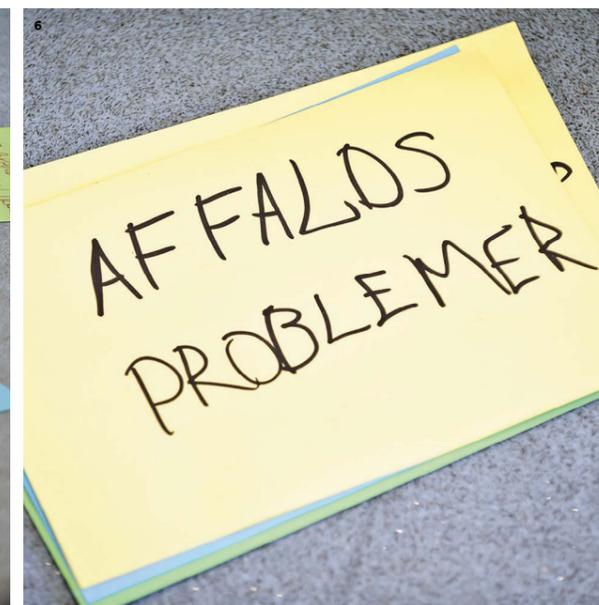
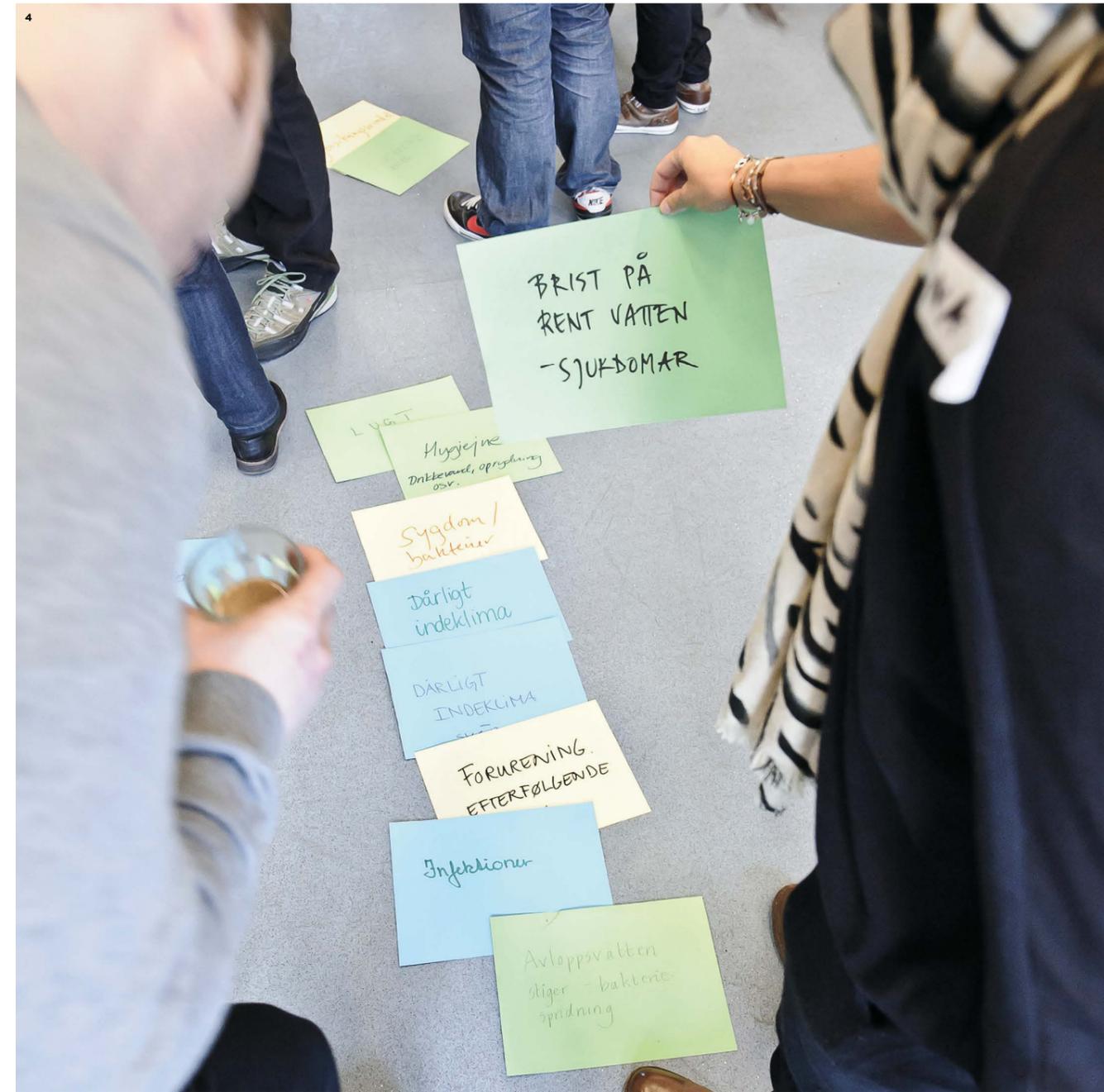
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**THE  
PREPARE  
PHASE**



**IMAGES FROM  
THE PREPARE PHASE**

- 1 Portrait and Interview (technique 3)
- 2 Open Space (technique 4)
- 3 Mindmap and Focus (technique 6)
- 4-6 Open Space (technique 4)



# 1. TIMELINE

## OBJECTIVE

That the students – by developing a historical timeline of the Design to Improve Life theme – gain an overview of the theme’s development. That the students are provided with tools to explore and evaluate the theme using sustainable principles to discuss their investigations and assessments with each other.

## APPROACH

When the teacher has introduced the students to the overall theme of the Design to Improve Life process, the students should create a historical timeline – as seen from sustainable perspective. Timeline is meant as a warm up technique to equip the students for Open Space (technique 4), where they have to explore which challenges are “hiding” within the overall theme.

If the overall theme is e.g. transportation, the students must (in groups of 4-5 people) do research on various types of transportation within a given period of time, e.g. from 1850-2050. They should then evaluate the types of transportation based on their level of sustainability (social, environmental and economic sustainability). In other words, the students must investigate transportation in the past, present and future using the Internet, the library, interview experts etc.

## Example

After the introduction of the overall theme, the students are divided into temporary groups where they discuss the theme; which period of time they want to work with, how they will approach the theme, who will do what etc. The individual groups draw up timelines on white A1 paper (or 4 pieces of A3 taped together) and divide the timeline into past, present and future. The students then divide the research assignments among them and try to gather as much information and documentation as possible. When they return to their group tables, they attach the gathered information to their timelines, cut out pictures and glue them onto the paper. At the bottom of the paper, the students draw three *Impact* diagrams (one in each column), to which they assign one transport design they find interesting for each time period. For more details, please see How to use the *Impact* diagram on page 56.

Finally, the groups present their timelines to each other, and the contents and *Impact* evaluations are compared and discussed between the groups.

## Plan

- Preparation and setup.
- Introduction to the process: Objective and approach.
- The students are divided into temporary teams, discuss the theme and draw up timelines.
- The students divide the tasks between them and start researching.
- The individual teams gather their work and make thematic descriptions on their timelines.
- The teams choose designs and evaluate them according to the *Impact* diagram on their timelines.
- The teams present their timelines to each other.
- Discussion about significant solutions and needs, and what it means to the students’ further work.

**Execution time**  
2 lessons + research-based homework for the students.

## Props

A1 paper (or 4 pieces of A3 taped together), computers, post-its in three colors, glue and scissors.

## Setup

The students work in temporary groups at group tables and research using the Internet, interviews, the library etc.

## Template

See Timeline template on page 170.

## 2. WINNERS' REVIEW

### OBJECTIVE

That the students – by developing an outline of chosen Design to Improve Life examples – gain experience in reflecting over, analyzing and assessing examples of Design to Improve Life.

### APPROACH

In the technique Winners' Review, the students (temporarily divided into groups of 4-5 people) must choose Design to Improve Life examples from INDEX: Design to Improve Life®'s website or the book "*INDEX: 100 Stories of Design to Improve Life*".

After an introduction to the assignment and the *Form*, *Impact* and *Context* diagrams (please see the three paragraphs that explain the diagrams on pages 53-58), the individual groups draw the Winners' Review template on a white piece of A1 paper (or four sheets of A3 taped together). Next, the students search through all the good examples of Design to Improve Life on INDEX: Design to Improve Life®'s website or in the book, and choose one or more examples, which they then review.

After further researching these chosen examples, the students analyze the examples using the three diagrams for *Form*, *Impact* and *Context* and explain their evaluations on post-its, which they attach to their individual group templates. Hereafter, the groups present their templates in front of their classmates and discuss the strengths of the chosen example of Design to Improve Life in relation to the three parameters.

There are no right or wrong answers in this technique. What is important, however, is the students' reflections, analysis, assessments/evaluations and discussions about the designs' strengths and weaknesses in relation to *Form*, *Impact* and *Context* and thus, the designs' potential to improve people's lives. The students need sufficient time to review and assess the examples in order to come up with their own contributions to how the designs function best in relation to the three Design to Improve Life parameters.

### Plan

- Preparation and setup.
- Introduction to the process: Objective and approach.
- The students are divided into temporary groups of 4-5 people.
- The groups choose one or more Design to Improve Life example(s).
- The groups discuss the example(s) and draw up their Winners' Review templates.
- The tasks are divided within the groups and the students start researching.
- The groups gather their work and review the chosen examples.
- The groups evaluate and analyze the chosen examples according to their *Form*, *Impact* and *Context*.
- The groups present their Winners' Reviews in front of each other.
- Joint discussion of the strengths and weaknesses of the examples in relation to *Form*, *Impact* and *Context*.

### Execution time

2 lessons + research homework.

### Props

A1 paper (or four sheets of A3 taped together), computer, Design to Improve Life examples, post-its, glue and scissors.

### Setup

The students work in temporary groups of 4-5 people at group tables with computers.

### Template

See Winners' Review template on page 171.

### 3. PORTRAIT AND INTERVIEW

#### OBJECTIVE

That the students get the opportunity to view each other from other perspectives and that group formations take into account all of the students' different resources.

#### APPROACH

The students are divided into two same-sized groups and positioned on chairs facing each other in two circles, so that the students can see and draw each other. First, the students positioned in the outer circle draw the students in the inner circle and afterwards they switch.

The students in the outer circle each have a drawing clipboard, a crayon and a folded piece of A3 paper. The students should (if possible) not use the same color crayons and they should also keep their individual crayon throughout the drawing exercise. The drawing process starts with the students positioned in the outer circle writing down the name of the person they are drawing on the front of the folded piece of A3 paper.

When everyone is ready, the teacher signals when the students should begin to draw. The students in the outer circle start by drawing the person sitting directly opposite them. After about 40 seconds, the teacher asks the students to put down their clipboards and drawings on their chairs and move to the chair placed to their left, where they are now facing a new person – still holding on to their crayon. When everyone is ready again, the teacher signals that they can continue to draw on the drawing the student to their left has left for them. Again, they have approximately 40 seconds to draw in. Hereafter, they move to the next chair again and the process continues until the students have moved all the way around the circle and are sitting on the chair they started from.

Now, the finished portraits are placed under the chairs, and the students in the inner circle switch positions with the students in the outer circle, and when everyone is ready, the drawing exercise is repeated, so that everyone gets to draw and be drawn.

When everyone has been drawn, the students pair up, exchange portraits and interview each other to determine, which type of student they can be characterized as (see examples below).

In other situations, the teacher can formulate other types of questions or switch roles. The important thing is that you try a new kind of interview technique. Blind Drawing (warm up technique A) can also be used in this exercise, if you think portrait drawing is too time-consuming.

#### What are your resources and interests?

##### The Detective

- Likes to investigate facts.
- Is a good researcher.
- Keeps an objective perspective.

##### The anthropologist

- Is interested in people and how they interact.
- Is good at seeing connections and analyzing situations.
- Is interested in people's environments/surroundings.

#### Execution time

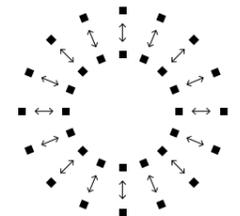
1-2 lessons, depending on the number of students participating.

#### Props

Drawing clipboards (one per every two students). A3 paper folded into A4 – one sheet per student. Inside the folded A3 paper, three to five questions about the students' personal and academic strengths, interests, dreams, etc., are written.

#### Setup

Tables are removed and chairs are placed in two circles with an equal amount of chairs in each circle (the number of students in the class). The students sit facing each other in the two circles to form pairs.



»



The architect

- Is good at getting ideas.
- Is good at getting an overview and producing simple solutions.
- Believes that things and situations could or should be different.

The craftsman

- Is practical and turns ideas into solutions.
- Is results-oriented.
- Is good at finishing projects.

**Plan**

- Preparation and setup.
- Introduction to the drawing process.
- The students draw each other as described in the approach.
- The students interview each other based on the pre-written questions (5-7 minutes per interview).



## 4. OPEN SPACE

### OBJECTIVE

To give the students an opportunity to explore the overall theme or a specific problem, and thereafter structure suggestions and select a focus for their further work.

### APPROACH

The first part of Open Space works as a brainstorming technique, where the overall theme of the design process (chosen by the teacher) is mapped out. The students are placed in a large circle and are given 3-4 pieces of A4 paper and a crayon/pen. All the students write down challenges – one on each piece of paper, related to the overall theme. As the students write down challenges on paper, these are placed on the floor, and this part of the technique is conducted in silence (5-10 minutes).

When all pieces of paper have a challenge written on them and are placed on the floor, the students walk around and read all the written challenges. They then help each other to structure and group the challenges into sub-themes. Each challenge can be moved around between sub-themes, until the teacher and the students together assess that the structure and sub-themes are meaningful and sufficient. This part of the process can both be done in silence or in discussion.

Each sub-theme then gets a title that represents the challenges it covers. Additional time can be given to allow the students to get a better overview of the various challenges in each sub-theme, and last placement changes can be made.

After this process, the different sub-themes are presented in plenum. During the presentation rounds, the students physically move between the sub-themes as they are presented.

Now, the students choose the sub-theme they are the most interested in working with. Then a negotiation to secure equal resource levels and versatility in each design team takes place, and design teams are formed – hopefully ending up comprising 5-6 students who represent different resources. The teacher can also choose to form the design teams by him-/herself (see technique 5, Formation of Design Teams) and holds the power to include, exclude or combine certain sub-themes.

Open Space is useful with any number of students and at various points in the process, where new ideas, questions or subjects are needed. The technique can also be used in the phases *Perceive* and *Prototype*.

### Plan

- Preparation and setup. The overall theme is written somewhere visible to all the students.
- Challenges are written on sheets of A4 paper.
- The sheets are placed inside the circle and the students examine them.
- The sheets are structured and grouped under sub-themes (optional break after this point).
- The sub-themes are given titles.
- Last changes to the grouping of challenges are made.
- Presentation round in plenum (optional break after this point).
- Formation of design teams. See description in technique 5, Formation of Design Teams.

### Execution time

2 lessons. It can be advantageous to stretch the lessons over two days, as this gives the teacher time to get an overview of the number of sub-themes and the challenges they include, before the students choose which ones they want to work with.

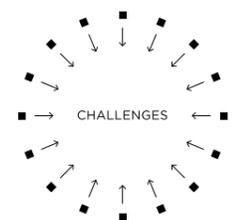
### Props

A4 paper (preferably in various colors) and crayons/pens. 3-4 pieces of paper per student and 1 pen/crayon.

### Setup

The students form a circle with their chairs and sit facing towards the middle of the circle. The circle/room needs to be large enough for the floor in the middle to be used to spread out the papers on.

The overall theme is written on a blackboard making it visible to all students.



## 5. FORMATION OF DESIGN TEAMS

### OBJECTIVE

That the students share the responsibility of forming design teams, and that these are put together in a way that ensures they include a broad spectrum of competencies and resources.

### APPROACH

The teacher pre-arranges how many students each design team should include (4-6 people recommended). Use the portraits from Portrait and Interview (technique 3) and place them between the drawn circles on the floor. Place the side with the students' answers to the question "Where are your resources and interests" facing up, to make sure the students cannot see the portraits inside the folded pieces of paper.

Jointly, the students now help each other form versatile design teams that consist of different student resources by placing the portrait sheets inside the circles.

When all the portrait sheets are placed in the circles and all the teams are resourceful and diverse, the folded sheets are opened to reveal the portraits. Then, the students find their individual portraits, enter the circle their portraits have been placed in and see who they have been grouped with in their newly formed design teams.

### Plan

- Preparation, creation of circles.
- Formation of the design teams using the answered questions on the portrait sheet.
- The students stand inside circles and meet their fellow design team members.
- If a sub-theme has not yet been chosen, the design teams choose a sub-theme from Open Space (technique 4) to work with in Mindmap and Focus (technique 6).

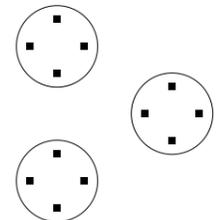
**Execution time**  
1 lesson.

### Props

The sheets from Portrait and Interview (technique 3) and chalk, string or masking tape.

### Setup

Using chalk, string or masking tape, circles are created on the floor corresponding to the number of design teams wanted. The circles need a diameter of approximately two meters. The technique can be completed in a large room or in one of the school's common areas.



## 6. MINDMAP AND FOCUS

### OBJECTIVE

That the students through the mapping process are trained in gaining overview and developing structures of larger issues, and thus learn to concretize the challenge and the target groups they want to work with.

### APPROACH

The mapping process is based on the sub-themes the individual design teams have chosen to work with during Open Space (technique 4), and the work is carried out as group work.

The teacher begins Mindmap and Focus by providing examples of how to make mindmaps.

The design team places a large piece of A1 paper (or four taped-together pieces of A3 paper) at the center of the table, draws a circle on the paper and writes the sub-theme the students are working with inside the circle. Hereafter, the students reflect individually about which challenges the sub-theme brings about, based on the students' own experiences and which people (target groups) that are affected by the issues related to the sub-theme. The students reflect individually, and write down challenges/target groups/related issues on post-its. It is important that they only write one "subject" per post-it, which is then presented and placed on the A1 paper. During this process, the students help each other structure their post-its into meaningful clusters. When all the post-its have been presented, structured, and grouped, the design team discusses the groupings and tries to concretize them further.

Mindmap and Focus is a technique designed to help the students in their work process, and it is important that the structuring makes sense to the design team. Therefore, the teacher acts as adviser in this process.

When all the sub-themes have been revised and concretized, the design teams choose and define the specific challenge within their chosen sub-theme that they wish to focus on in the design process. The selection is built on the mapped out sub-themes, which are assessed in relation to their impact on people's lives (e.g. use the *Impact* diagram at this point), and in relation to the possibility of the students exploring and working with the chosen challenge in a local context.

The chosen challenge is written on a piece of A4 paper and taped to the table to ensure that the students always keep their focus.

The completed Mindmap is hung on the wall for use in the further design process.

### Example

The overall theme "flooding" can bring about sub-themes such as destroyed belongings, accidents, tsunamis, diseases, warnings, elderly people, families, businesses, etc. and a challenge could for example focus on communication in relation to floods, such as warning systems.

### Plan

- Preparation and setup.
- Introduction to Mindmap and Focus: Objective and approach.
- Individual reflection on post-its.
- Presentation of post-its on Mindmap and joint structuring into sub-themes.
- Revision and concretization of sub-themes.
- Evaluation and selection of specific challenge.

### Execution time

1 lesson.

### Props

A1 paper (or 4 taped-together pieces of A3 paper), pens and post-its.

### Setup

The students work in their design teams at their stations.

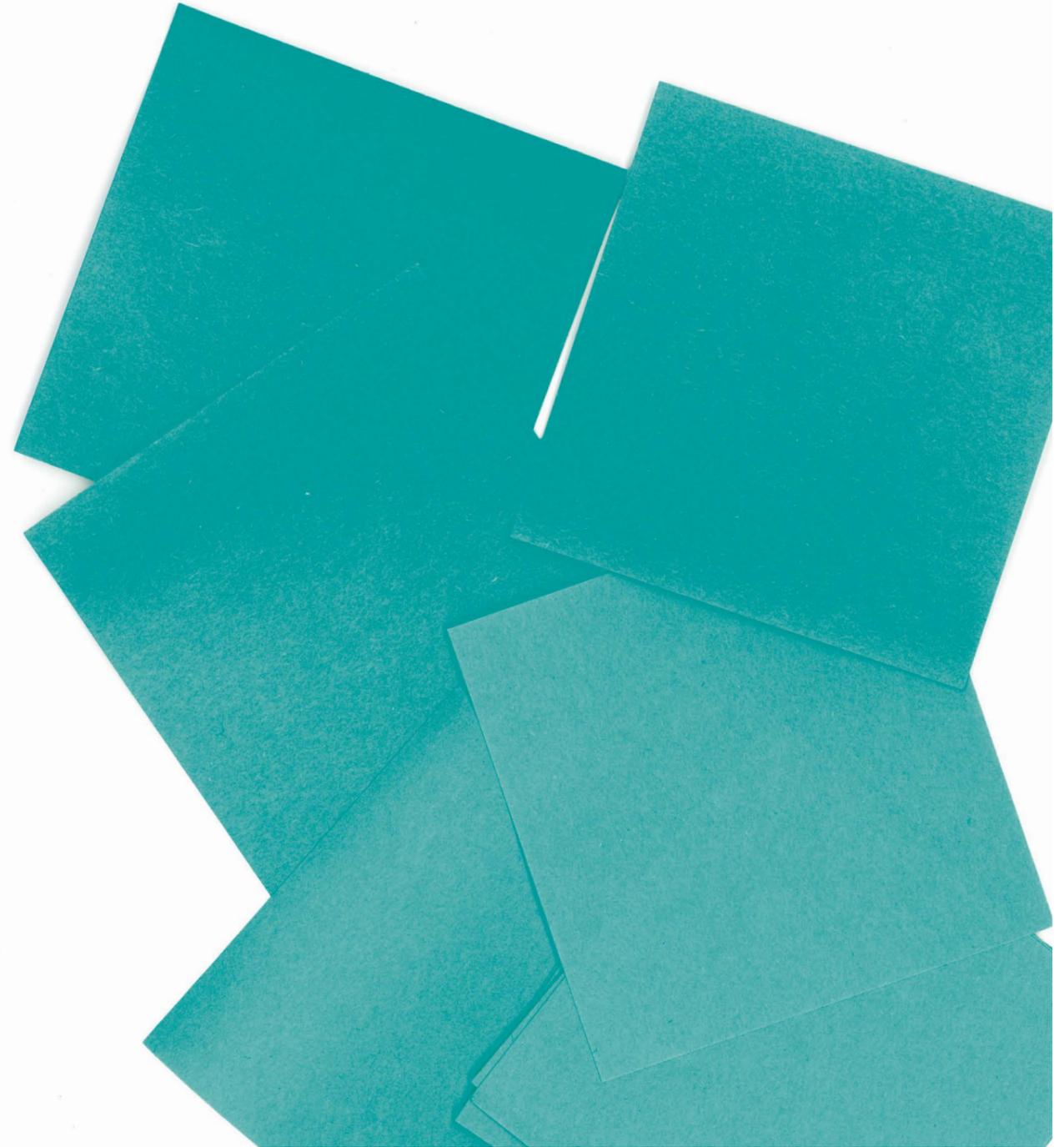
### Example

See Mindmap example on page 176.



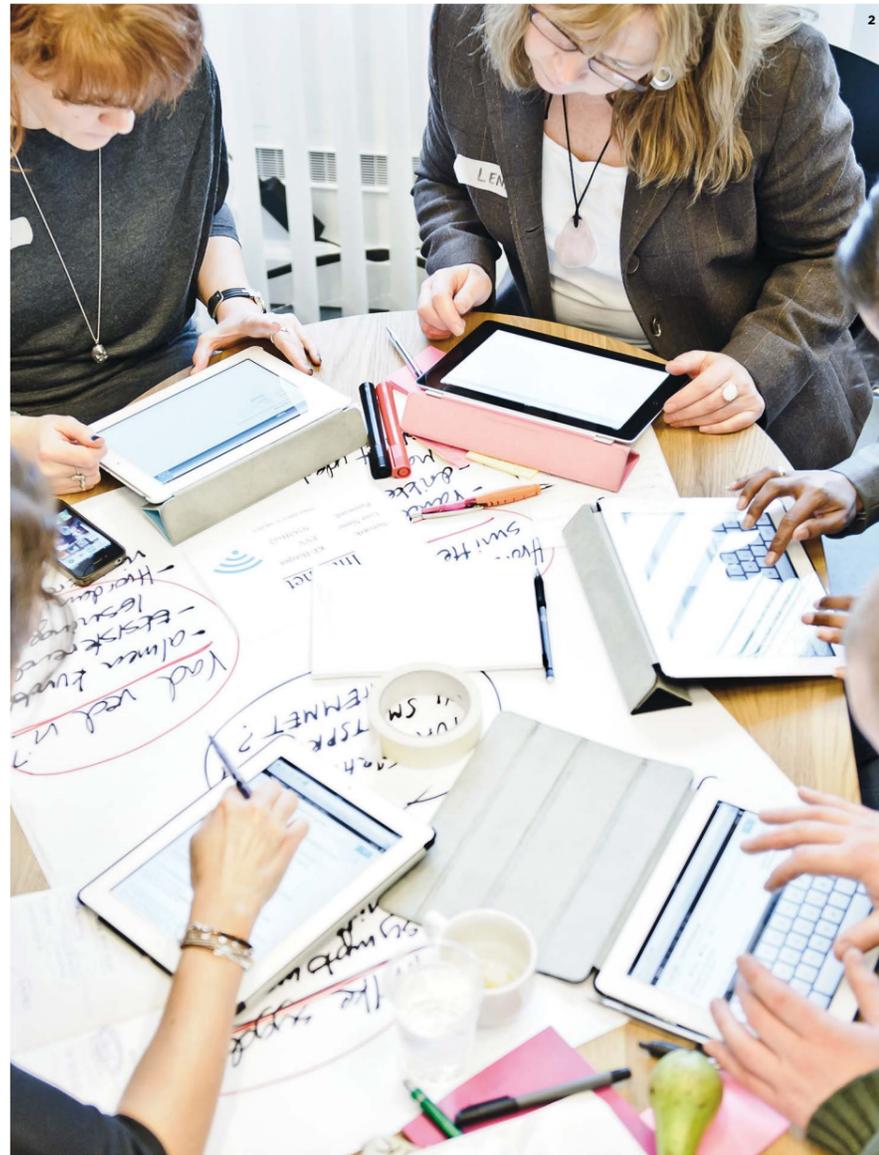
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**THE  
PERCEIVE  
PHASE**



**IMAGES FROM THE PERCEIVE PHASE**

- 1 Knowledge Mapping and Central Themes (technique 7)
- 2 Field Work (technique 9)
- 3-4 Persona and Heart Diagram (technique 10)



## 7. KNOWLEDGE MAPPING AND CENTRAL THEMES

### OBJECTIVE

That the students get an overview of the design team's combined knowledge and knowledge needs in relation to the selected sub-theme and the selected challenge. The gathered knowledge is used by the team to prepare their research.

### APPROACH

Here, the design team has an opportunity to discuss objective knowledge versus subjective knowledge and what this means to their research and the way they ask questions. In their design teams, the students draw the Knowledge Map template on A2 paper (or two sheets of A3 taped together).

The teacher then starts the task by giving examples of answers to the following questions:

1. What do we already know about our sub-theme, challenge, target group, context, etc.?
2. What do we think we know?
3. What do we need to know?
4. Who should we ask, and where can we look?

After drawing the Knowledge Map, the students brainstorm individually on post-its and give a minimum of three answers per question to question 1 and 2. After this, the students present their post-its to their team members and discuss if the answers reflect something they know or something they think they know. Often, a part of the knowledge they think they have turns out to be (only) something they think they know, and therefore needs to be researched further.

Based on this mapping, the team now discusses what they need to know and formulates the questions they need answers to, i.e. what needs to be researched. Here, the students can optionally divide the questions into "Need to Know" and "Nice to Know".

The questions are written in column 3, "What we need to know". After this, the students brainstorm individually again on post-its about how the team will find answers, who to ask and which alternative sources they can use in their research. These post-its are placed in column 4, "Who should we ask, and where can we look?". The filled-out Knowledge Map is then hung on the wall to be used as a basis for the teams' Research Strategy (technique 8).

### Example: Flooding

What do we know about flooding?

- That people get water in their basements.
- That many things are destroyed.
- That rats come out of the sewers.

What do we think we know?

- That many people get sick because of rats.
- That it is raining a lot more now.

What do we need to know?

- How many houses are affected?
- Which areas are affected the most?
- What is the biggest problem for people affected by a flood?

### Execution time

2 lessons.

### Props

A2 paper, post-its and Knowledge Map template.

### Setup

The students work in their design teams at their stations.

### Template

See Knowledge Map template on page 172.

»



Who should we ask, and where can we look?

- We could ask the city/municipality.
- We could contact a medical officer.
- We could ask people who were affected by the flood.
- We could find statistics online.

**Plan**

- Drawing of Knowledge Map and setting up tables for group work.
- Individual brainstorming about the first two questions.
- The students present and discuss suggestions and answers for column 1 and 2.
- The students discuss what they need to know and formulate questions.
- Individual brainstorming about “who can we ask, and where should we look?”
- The students present and discuss their post-its and place them in column 4.
- The Knowledge Map is hung on the wall.

## 8. RESEARCH STRATEGY

### OBJECTIVE

That the students learn to structure, plan and prepare researching their challenge and that they obtain knowledge about different research methods.

### APPROACH

Based on the students' Knowledge Maps (technique 7, Knowledge Mapping and Central Themes), the students prepare their research and create a research strategy. This strategy is shaped as a plan for how the students will collect the desired information.

The plan must contain:

- An overview of which types of research need to be done and which media that needs to be used (Internet, library, photo registrations, interviews, focus groups, etc.).
- Who needs to be interviewed? (don't forget to schedule appointments).
- Who is responsible for what in the team?
- A time schedule of what needs to be achieved.

The design team can now split up into two smaller groups: An interview group and a desk research group who will continue preparations separately.

The interview group creates a questions guide containing both general and specific questions related to the chosen sub-theme. It is important to focus on the fact that the user is central in the challenge, thus keeping in mind that the interview with the user is long and thorough. The teacher guides the students with the questions guide in mind, and the preparation for the interviews is finished. The interview group (or another sub-group) can make relevant observations in the local area, e.g. photo registrations, video clips or plottings on maps.

The desk research group plans how to find inspiration to their challenge and divides tasks among themselves (library, internet, etc.). This group must pay attention to the credibility of their sources, e.g. it is not everything you find on Google that is true/credible even though it seems to be.

### Example of questions guide

General questions

- Demographics: Name, gender, age, marital status, family, income, education, job.
- Geography: Place of birth, places the person has lived, holiday destinations, etc.
- Psycho-/sociographics: The person's values, self image, friends, passion(s), role models, source(s) of inspiration.

Specific questions

- How did you experience the flooding?
- Why do you think that your particular house was affected?
- What could you do yourself (own resources)?
- What need did/do you have for help?
- What are you going to do to avoid a similar situation in the future?

### Plan

- Introduction to the sub-theme based on the design teams' Knowledge Maps.
- Lesson 1 (all together): Shaping a concrete plan.
- Lesson 2: Interview group and a desk research group as well as a possible observation group plan ahead (in individual groups) in detail.

### Execution time

2 lessons.

### Props

Paper, filled-out Knowledge Map from technique 7.

### Setup

Part 1: Takes place in design teams.  
Part 2: The team splits up into 2-3 sub-groups and work on their specific task.

### Template

See Research Strategy template on page 173.

## 9. FIELD WORK

### OBJECTIVE

Based on careful planning and the students' research strategy, the students complete field work and desk research and thereby get experience with various research methods.

### APPROACH

It is now time for the strategy to be implemented. The interview group conducts their planned interviews, the observer group reports from the local area and the desk research group continues searching for material about the challenge. The work will hopefully result in the challenge being reviewed from multiple perspectives, and the challenge should thus become clearer.

#### 7 tips for the interview group (the observation group)

1. Carry visible name tags telling who you are and where you are from. If you meet curious citizens, take your time telling them about what you are doing, why they are interviewing the specific person and what you need their answers for.
2. Keep the situation informal e.g. by serving coffee/tea/water and by sitting next to the person and not in front of him/her – it is an interview, not an interrogation!
3. Keep to the question guide (only add a couple of questions if required).
4. Allow the interviewee to talk and stay in character, i.e. keep your personal opinions to yourselves.
5. Keep to the allocated time schedule!
6. Explain the purpose of the interview.
7. Don't forget to thank the interviewee for his/her time.

While the interview groups conduct the interviews, the observation groups collect information from "the field" and the desk research groups explore their individual challenges using computers, the library and other types of media in the same way the students would normally search for information.

Field Work should preferably include the real target group and knowledge people, because these people are central to Design to Improve Life processes. If this is not possible, you can simulate an investigation at the school where the students pretend to be specific user profiles of the target group. The students can also interview other students, their families, friends or acquaintances who know about the challenge.

It is a good idea for the students to both try to conduct field work and desk research during the design process. Often, some of the design teams will experience that the new knowledge clashes with what they thought they knew about the challenge. This is because their field work and research often reveals that the challenge actually lies somewhere else. This can be a frustrating realization, but compared to the benefit of gaining the correct knowledge, this is a positive realization because it should lead to the students developing a better solution to their challenge.

### Plan

- Preparation and setup of field work and desk research.
- The students structure and divide the tasks between them and complete the tasks.

### Execution time

A full or half day depending on how many and when the interview appointments are scheduled.

### Props

The 7 tips (see approach) + the prepared questions for people from the target group and experts. Cameras or mobile phones for photo registering, map of the area (if the physical context is relevant).

### Setup

Field work.



## 10. PERSONA AND HEART DIAGRAM

### PERSONA\*

#### Objective

That the students process and use the collected knowledge to understand the user(s) by creating and describing a series of fictive persons, who will serve as a basis for the further development of their Design to Improve Life solution.

#### Approach

A Persona is a fictive user profile that represents the primary users and interested parties related to the challenge. The Personas are thus a simplified version of the primary user and interested party, and the students must – using clippings from magazines and newspapers – visualize different types of Personas, who are a part of their challenge.

Each design team draws 2-3 Persona templates as instructed and then split up into 2-3 smaller groups, who will each create a Persona. The Persona is created after the groups have discussed the different sections of the Persona template.

Now, the Persona is visualized. This is done by the group by drawing, by writing and by gluing clippings onto the different sections of the template to characterize it. It is important that the Personas give a nuanced picture of different users based on the conducted field work, and that the design team can agree on which types of people the Personas represent.

Precise and thorough Personas are a great foundation for the continuous work with understanding and identifying the user's needs in relation to the challenge the design team is working with.

*\*The technique is inspired by Arnold Wassermann and Ideafactory.*

### HEART DIAGRAM

#### Objective

Using this technique, the students reflect upon the experiences that they already have in relation to the chosen challenge, and how these experiences can be used forwardly when looking towards an actual solution to the challenge.

#### Approach

The 1st part of the technique is conducted individually and focuses on the left side of the diagram – from the past until now. Each student is given/draws a Heart Diagram on an A4 sheet themselves and write their challenge in the middle of the heart.

The next step is to brainstorm individually about which specific good or bad experiences they have (or solutions they know) about the challenge – and here, they are allowed to use the information they have collected from their field- and research work. These experiences/solution examples should be about what the concrete experiences/solution examples were, and not why they were good or bad.

Three specific good experiences/solution examples are written in the top left quarter of the diagram, and three specific bad experiences/solution examples are written in the bottom left quarter of the diagram.

The 2nd part of the technique is conducted as interviews and focuses on the right side of the template – the future. The students interview each other in pairs about the experiences/

#### Execution time

3 (2+1) lessons.

#### Props

**Persona:** A1 paper, glue, scissors, magazines, big markers.

**Heart Diagram:** One Heart Diagram per student on an A4 sheet, pens and masking tape for hanging diagrams on the wall.

#### Setup

The students work in their design teams at their stations for both techniques.

#### Template

See Persona template page 174 and Heart Diagram template page 175.



solution examples they have noted in the template's left side, and now the focus is on why the solution was good or bad, and how these experiences can be used in relation to the solution that is going to be developed/created. What the students are trying to achieve with the solution is written in the top right quarter of the template, and what they want to avoid is written in the bottom right quarter of the template.

The filled-out templates are now finished Heart Diagrams which are presented to the whole team and hung on the wall.

Persona and Heart Diagram both require a thorough introduction – the teacher should explain to the students why it needs to be done, and how it can be used in the design process.

### **Plan**

#### Part 1 (2 lessons)

- Distribution of magazines and materials and drawing of three Persona templates per design team.
- Each design team creates (together) three Personas using clippings from magazines, cartoons and text (see approach).

#### Part 2 (1 lesson)

- The students brainstorm individually about good and bad experiences/examples of solutions to the challenge (see approach).
- The students interview each other in couples about why their experiences/solutions are good or bad (see approach).
- The teams present their diagrams to each other and hang them up on the wall.



## 11. FORM THE CHALLENGE

### OBJECTIVE

That the students learn to relate to the specific context, thus understanding the users and their needs better. By using specific materials, the students learn to visualize and concretize their challenge and gain experience with working creatively under time pressure.

### APPROACH

The teacher introduces the task and hands out 'design boxes' containing building materials (see props).

The students then choose random materials and build (in pairs) a simple model, which – based on their Personas and Heart Diagrams – explains what the problem in their challenge is. The model does not have to look pretty; the most important thing is to visualize the challenge itself. The students present their models to each other and discuss and talk about the challenge – all together.

Based on this, the design teams choose one or more models to rebuild to get a better, common understanding of what the teams' challenges actually are. The design teams evaluate and analyze the model(s) and write key notes, points and conclusions down – as seen in relation to the question: What have we learned about our challenge in relation to the upcoming work with design solutions?

The models are then placed next to each other, and the appropriate evaluation comments are added to each one.

### Plan

- Introduction to the task and handing out materials to design teams.
- The students form challenges in pairs, with their knowledge from Personas and Heart Diagrams as a starting point.
- Short presentation of models as well as subsequent feedback in design teams.
- Together, the teams build one or more chosen challenges.
- Evaluation and analysis of the models: What have we learned about our challenge in relation to the upcoming work with design solutions?
- Writing down conclusions on post-its, which are attached to the model.

### Execution time

2 lessons.

### Props

A 'design box' containing materials defined by the teacher (cardboard, straws, wire, modeling clay, etc.), Personas and Heart Diagrams (used as a starting point for this technique) and post-its.

### Setup

The students work in their design teams at their stations.

## 12. DESIGN TASK AND PROJECT DESCRIPTION

### OBJECTIVE

That the design teams – based on the work conducted so far – formulate a project description as a foundation for developing ideas and design solutions.

### APPROACH

The design teams must now revisit the products they have created throughout the various techniques: Mindmap and Focus (technique 6), Persona and Heart Diagram (technique 10) etc. – and from these derive the essence of the work they have done so far.

But first, the design teams must do a visualization of the narrowing process that has taken place from the overall theme to the concrete challenge that they wish to address with their solution design. The visualization is made like ‘a funnel’ where the overall theme for the Design to Improve Life process is written on top and the sub-theme which the design team has chosen to work with is written below. Next comes the challenge the design team has chosen to focus on through Mindmap and Focus (technique 6), and after that the final, concrete challenge which ‘came to life’ during Field Work (technique 9) and research is written. Finally, the funnel is concluded with a wording of the design task: “How can we...?”

Next, the teams must write up a project description based on what they have discovered/learned so far. The project description must answer the following questions:

- What is the project’s name?
- What is the challenge and what is the design task?
- Who is affected by the challenge and who are the users/target group(s)?
- What negative effect does the challenge have on the users/target group(s) and on social, economic and environmental sustainability?
- What are the focus areas in relation to the context?
- What are the success criteria; what positive impact does the design team want to achieve with their design solution in relation to the users/target group(s) and to the social, economic and environmental sustainability?
- What “promoters” and “inhibitors” are present in relation to development and implementation of solutions?
- What sources of inspiration does the design team have?
- Who are we and how do we decide who does what?
- Who are our collaborators (internal and external)?
- Time plan: Who does what and when?

The teacher decides the magnitude of the project description and adjusts time frames accordingly. A short project description can be created within 1-2 lessons by the team (together).

### Plan

- The teacher introduces the funnel and the project description.
- The students get an overview of the design teams’ products created in the process so far.
- The design teams read and discuss the questions from the project description (together).
- The design teams answer the questions (together), keeping in mind the work they have done so far.

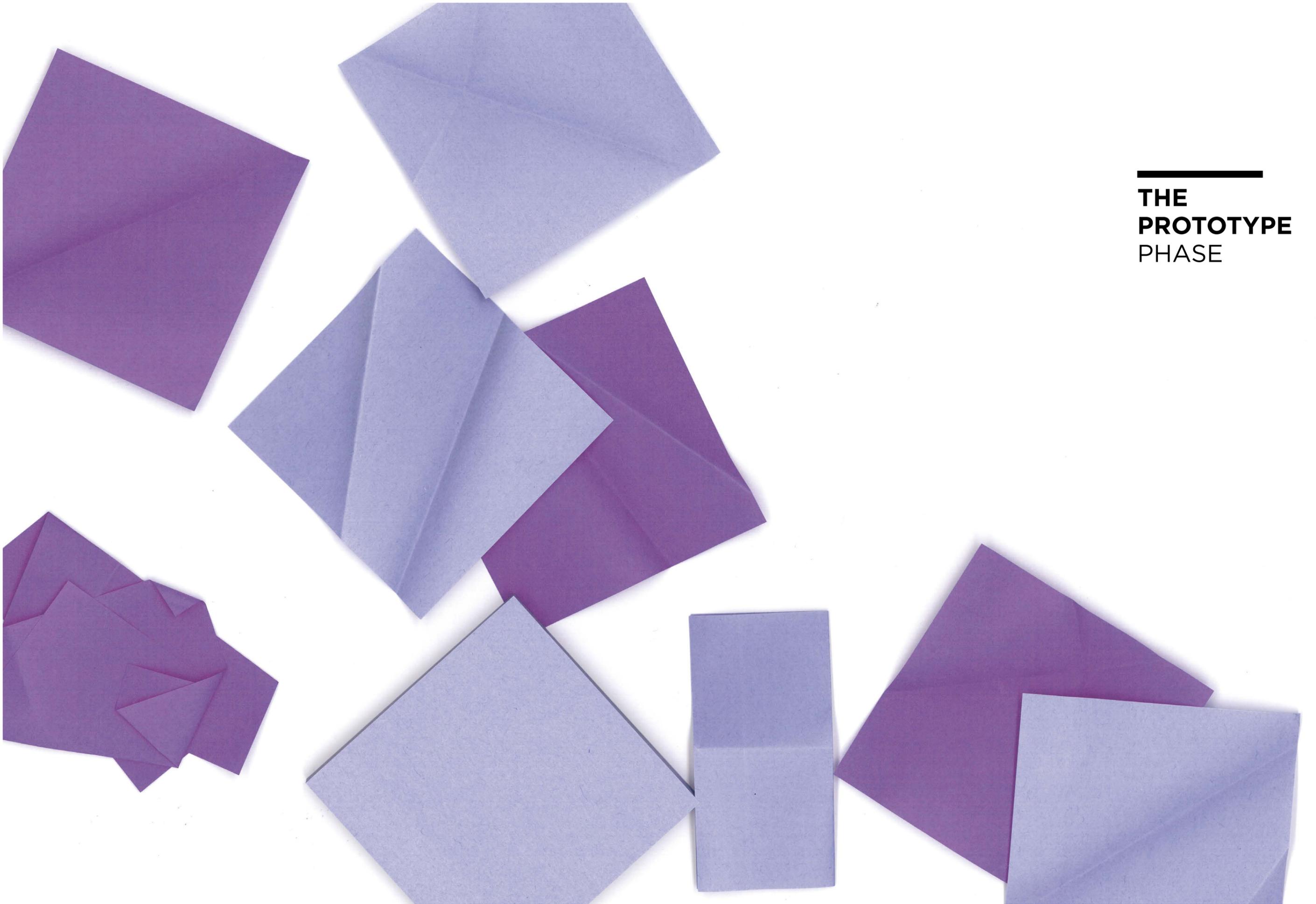
**Execution time**  
2 lessons (or otherwise decided by the teacher).

### Props

Output from earlier actions and techniques, A3 paper for the funnel, questions from the project description (see approach), a computer and a printer.

### Setup

The students work in their design teams at their stations.

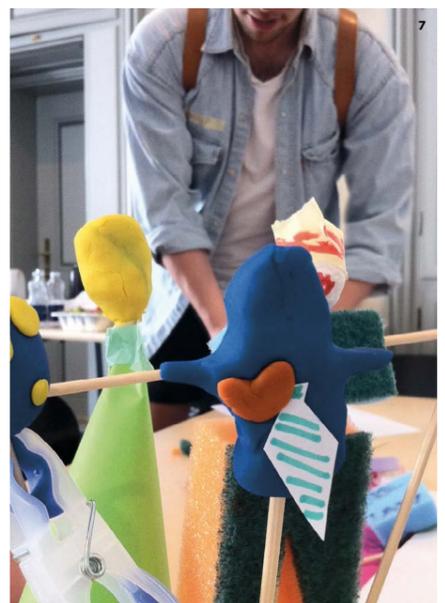
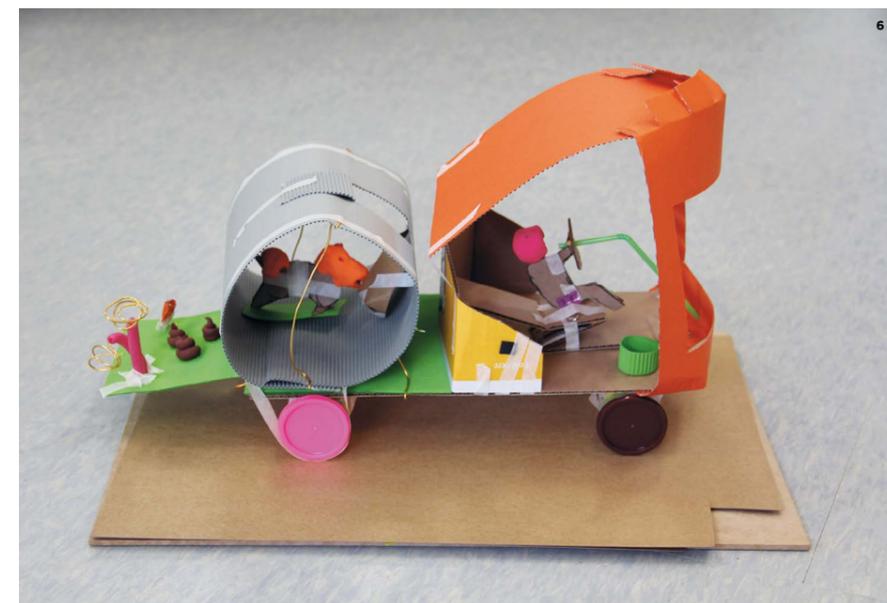
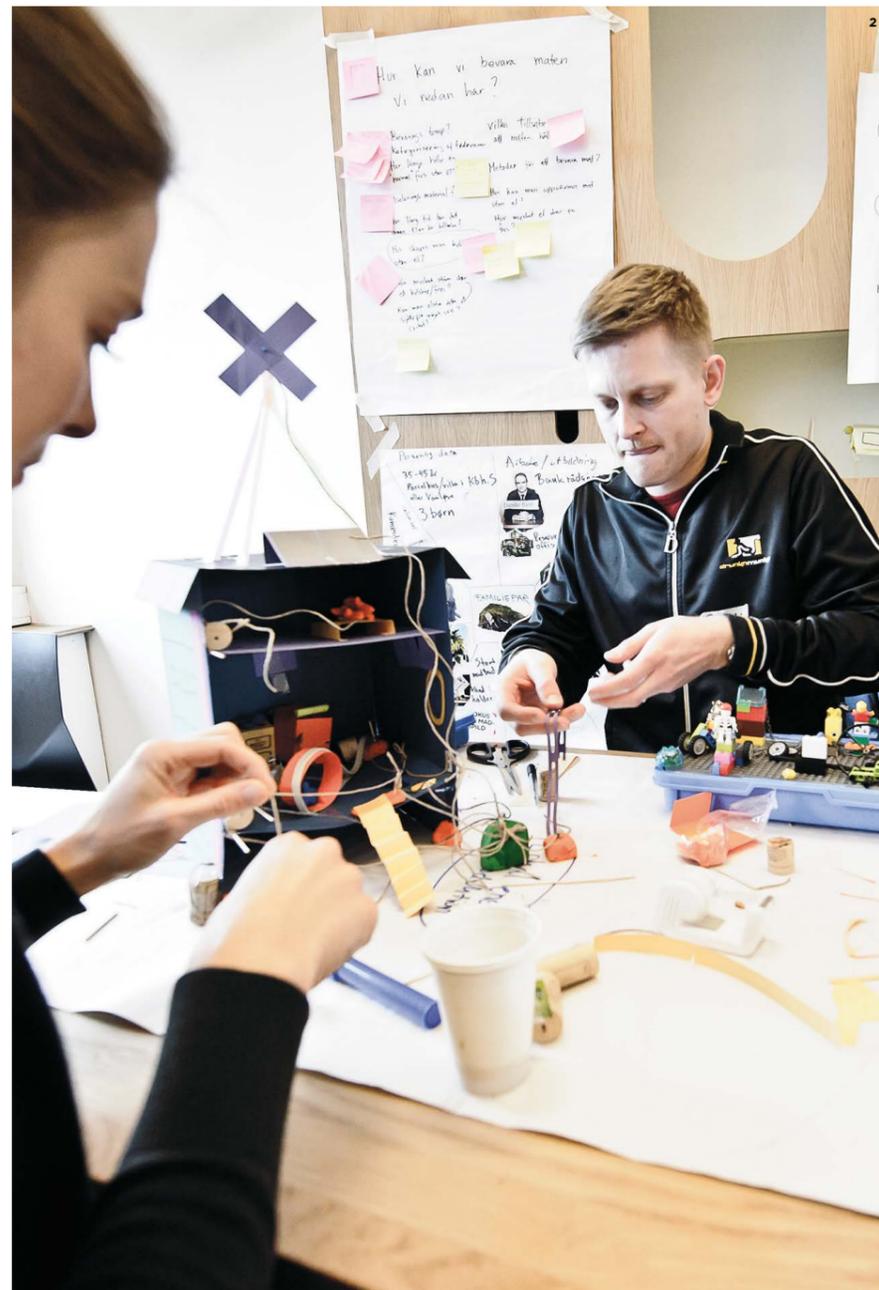


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**THE  
PROTOTYPE  
PHASE**

**IMAGES FROM  
THE PROTOTYPE PHASE**

- 1 Idea Poker (technique 16)
- 2 Rapid Prototyping – 1,000 Ideas (technique 14)
- 3-4 Associate and Build (warm up technique B)
- 5 Persona Models and Role Play (technique 13)
- 6 Walk the Dog (warm up technique C)
- 7 Persona Models and Role Play (technique 13)



## A. BLIND DRAWING

### OBJECTIVE

That the students through a fun experience open their creative mindsets and get comfortable in the creative process.

### APPROACH

Blind Drawing is a warm up technique to the creative process in the *Prototype* phase. It is a fast and simple technique designed to bring out the students' creativity and make the students comfortable with the creative processes. At first, some of the students may try to look at what they are drawing in order to draw a "pretty" drawing, but the more blind drawings they do, the more they will loosen up and follow the technique correctly.

Blind Drawing can be used in the *Prepare* phase instead of Portrait and Interview (technique 3).

First, the students draw themselves by looking in a mirror – they are not allowed to look at what they are drawing. The stop watch is set to 20 seconds. When the time is up, the students stop drawing and take a new piece of A4 paper on which they draw another student from their design team.

Create a system that ensures every student draws and gets drawn – it is easiest if the person you are drawing sits in front of you (see illustration). Again, the stop watch is set to 20 seconds within which the students must draw one of their team members without looking at the paper.

When the time is up, the drawing is given to the person drawn. All the drawings are hung up on the walls in the classroom with the names of the students drawn attached to their drawings.

### Plan

- Preparation and introduction to the technique.
- Draw yourself by looking in a mirror and not looking at what you are drawing.
- Draw a member of your design team without looking at what you are drawing.
- Hang the drawings up on the wall.

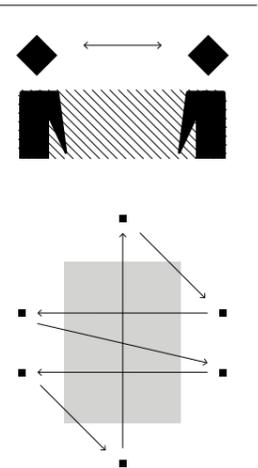
**Execution time**  
15 minutes.

### Props

Mirror, A4 paper, stop watch, pens, mirrors and tape.

### Setup

The students work in their design teams at their stations. Everybody have to be able to see each other. In front of them they have a piece of A4 paper and a bold marker (for best results).



## B. ASSOCIATE AND BUILD

### OBJECTIVE

That the students kick start the creative process and find alternative solutions to the challenge.

### APPROACH

Words are paired up to create new words, which the design team members divide between them and build new interpretations from.

The technique can be used to spark creative thoughts and ideas, thus kick starting the students' creative work process. Associate and Build can either function as an ideas generating technique, as starting point in the *Prototype* phase or it can be used as a distraction from the challenge where non-related words are used to give the students a break.

The design team begins by drawing two columns and writes 10 random words in each. The words that are used to associate do not need to be related to the challenge. The words are paired up across the columns to form new words.

The technique provides an opportunity to both generate alternative interpretations and pragmatic solutions. The students mix and match to generate the best wordings.

### Example

1a Flooding	1b Raincoat
2a Floating	2b Plastic bag
3a Shelter	3b Container
4a...	4b...

Then, the words are paired up. The words can look as the following:

- 1. Flooding-Container.
- 2. Floating-Raincoat.
- 3. Shelter-Plastic bag.

The design team now chooses one of the new words and creates a model-interpretation of the word. They agree on how much time the team can spend building the model and this time period should be relatively intensive. When the time is up, the design teams present their new models to each other and this process may lead to further development of one or some of the model-ideas. All the models are put on display throughout the design process to provide inspiration for further development of the design teams' final design solutions.

### Plan

- Preparation, setup and introduction to the technique.
- 2 x 10 words is written in two columns.
- The words are paired up randomly and divided among the design team.
- The new words are built as models.
- The groups present their models and display them in the classroom.

### Execution time

1 lesson.

### Props

Various materials for building the models: Cardboard, paper, string, elastic bands, straws, plastic, tape, scissors, glue, markers, post-its, etc.

### Setup

The students work in their design teams at their stations.

## C. WALK THE DOG

### OBJECTIVE

Walk the Dog is a warm up technique that does not relate to the design teams' challenges, but focuses on teaching the students to kick start creative processes and idea generation.

### APPROACH

In groups, the students design a solution for the man who is tired of having to walk his dog in the rain. The solution can be everything under the sun – only limit is the students' imaginations. The technique is best applied at the beginning of the *Prototype* phase, and it is often an advantage to mix the students into new groups other than their design teams. The students choose materials to build with after they have discussed possible solutions to the man's problem of walking his dog in the rain without getting wet.

As a help, the teacher can ask questions to help the students think about how to design alternative solutions to the problem. E.g. "Does the man even have to leave his house?"

The students get a limited period of time to design their solutions for the man and his dog (e.g. 30 minutes), whereafter they all meet up and present their solutions to each other.

### Plan

- Preparation and introduction to the technique.
- Group formation.
- Design a solution for the man with the dog.
- Presentation of the different solutions.

**Execution time**  
1 lesson.

### Props

Various materials for building the models: Cardboard, paper, string, elastic bands, straws, plastic, tape, scissors, glue, crayons, pens, post-its, paper clips, etc.

### Setup

The students work in their design teams at their stations.

## 13. PERSONA MODELS AND ROLE PLAY

### OBJECTIVE

That the students – through the development of three-dimensional models of their Personas and role play – get to know their target groups/users better and at the same time get a new perspective on the challenges.

### APPROACH

In this technique, the design teams create three-dimensional models of their Personas from the *Perceive* phase. They start off by re-telling their design teams about their Personas and build models of various materials. The Personas are divided between the design teams' members and built on a stick to make them function as theater puppets. More models can be created of the same Personas to make sure every student gets a Persona model to control.

During the construction, the students have to reflect on how their Personas act and which needs and wants he/she has in relation to the challenge.

When the Personas are done, the models from Form the Challenge (technique 11) are placed at the center of the group tables, and the role play can start. If the role play stalls, the students must start over using another Persona model. They can also choose to use more than one Persona model in the role play. The students can benefit from taking notes of the play or recording it on their mobile phones/a video camera for review later in the process.

The students need to understand why they are doing the role play and what they can get out of it in relation to their design process. They need to be carefully instructed in how they can try to understand another person's perspective, and thus get a more nuanced understanding of how the challenges affect the target groups' lives and which solutions are needed.

### Example

First, the Personas' characteristics are presented using the visualized Personas from technique 10. E.g. "Hi, my name is Jacob, I am married to Lisa. We have three children and our basement has just been flooded..." or "I need..., because..." After this, another student presents his/her Persona and says e.g. "I wish that..." or "I need..., because..."

After this, the remaining Persona models take turn presenting their needs and wants. Dialog between the various Personas is welcomed, and they should ask each other questions and offer their advice to each other.

### Plan

- Preparation and setup.
- Introduction to the process: Objective and approach.
- The students build the Persona models as described in the approach.
- The students present their Personas.
- Role Play as described in the approach.
- Review of recordings or recitation of notes.
- Discussion about relevant needs and solutions, and what they mean to the future work.

### Execution time

1-2 lessons.

### Props

Various materials for building the Persona models (modeling clay, skewers, tape, string, clips and clamps, cotton balls, steel wire, etc.), Personas (technique 10), Form the Challenge model (technique 11), mobile phone or camera.

### Setup

The students work in their design teams at their stations.



## 14. RAPID PROTOTYPING – 1,000 IDEAS

### OBJECTIVE

That the students learn how to generate multiple, fast ideas through time-intensive model building.

### APPROACH

Prepare materials for building models and set an alarm on the clock. First round could e.g. be 10 minutes. Time is reduced as the students warm up and get comfortable with the process.

It is often a good idea to agree on several rounds where the students build a new idea each round. The rounds have to be intensive; the students need to be under pressure and the more rounds they complete, the better. The students should become better at rapidly visualizing their ideas in a simple way. After building the solutions/ideas/concepts, the students present these to their team members. Whether they present their models after each round or at the end of the whole process is optional. This technique is targeted towards ideas development and they should therefore be prioritized and processed.

The students can also choose to further develop or add onto each other's models. Through visualization, the challenge and the possible solutions become clearer than when the students brainstorm on post-its.

Rapid Prototyping – 1,000 Ideas helps the students loosen up and kick-starts their creative mindsets. The technique is good to use after one of the other ideas development techniques, where the design teams have developed many new ideas and have opened up to creative processes.

### Plan

- Preparation, building materials are laid out, the timer is set.
- Rapid Prototyping – 1,000 Ideas could be e.g. four rounds of 10 minutes (e.g. reduce time for each interval).
- The ideas/models are presented in the design teams, discussed/analyzed and the models the students want to continue working on are chosen.

### Execution time

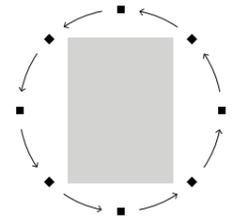
1 lesson.

### Props

Stop watch, building materials: Cardboard, paper, string, rubber bands, straws, plastic, tape, scissors, glue, crayons, pens, post-its, etc. The teacher can also choose to give the students less materials, e.g. LEGO or modeling clay, skewers and string. This helps the students focus on how to visualize their ideas in the fastest and simplest way.

### Setup

The students work at their stations or somewhere else according to their needs and split up into groups of 2-3 people.





## 15. TALKING WATERFALL

### OBJECTIVE

That the students' abilities to create 'association chains' are improved and that the design teams become better at generating new ideas and solutions.

### APPROACH

The design teams each use one of the ideas/solutions from one of the other ideas developing techniques, e.g. Rapid Prototyping – 1,000 Ideas. The idea/solution is written on a piece of paper and placed at the center of the table. A mobile phone is set to record and the team starts to talk about how they can solve the challenge/further develop the idea.

#### The rules of Talking Waterfall

- No pauses in the speech flow.
- The students are encouraged to interrupt each other and build on each other's ideas.
- The students are not allowed to say "no, but..." they can only say "yes, and..."

Talking Waterfall lasts seven minutes and is recorded on a voice recorder (e.g. mobile phone).

When time is up the design teams listen to the recordings. Every time a new idea pops up in a conversation, the recording is stopped and the idea is written down on a piece of A1 paper. This process continues until each team has listened through the entire conversation they have recorded. Hereafter, the design teams reflect on the ideas they have written down and choose the best ones.

Talking Waterfall can be repeated using one of the chosen ideas, which the students wish to dissect further.

#### Example: How do you avoid becoming sick from contact with the water when your basement is flooded and needs to be emptied out?

- "You avoid going down into the basement – perhaps you have some sort of device you can lead down into the basement without having to go down there yourself..."
- "Yes, or you put on some sort of waterproof suit for protection. The suit could be designed specifically for flooded areas..."
- "Yes, and it could be inflatable, so you wouldn't drown if the water rose very quickly..."
- "Yes, and it could have different functions for communication... What if you didn't have to go down into the basement at all, because there was some sort of system that kept the water out of the basement or automatically drained the basement...?"
- "Yes, and all the stuff stored in the basement was waterproofed..."

Talking Waterfall is centered around the students spontaneously inspiring each other, which is favorable when you are developing ideas. The technique supports the students' abilities to think unconventionally and bring spontaneous and unfiltered ideas to the table for the other students to feed off from. Therefore, it is important that the students understand how the technique works, and how they can use it when they need to generate ideas.



### Execution time

1 lesson.

### Props

Voice recorder (e.g. mobile phone),  
A1 paper and pens.

### Setup

Each design team sits around a table.  
The subject or idea they are brainstorming about is written on an A1 paper at the center of the table.

»



**Plan**

- Preparation and setup.
- Write down subject/idea to brainstorm about as a question. Remember that it is easier to get ideas for a solution when you formulate a question such as: “How can we protect the stuff we store in the basement in a flooding situation?”
- Talking Waterfall, talking session.
- Listen to the recording of the Talking Waterfall session and map out the ideas.
- Possible repetition of new subject/idea.



## 16. IDEA POKER

### OBJECTIVE

To support the students in exploring new perspectives and angles of the challenge, and in getting ideas for solutions to the challenge.

### APPROACH

First, the challenge, which the students are brainstorming on, is written on a piece of A1 paper: E.g. “How do we prevent becoming sick from contact with contaminated water when we are draining a flooded basement?”

Then, approximately five image cards are distributed to each student. The game can be played using two principles:

The students can either take turns in presenting a card/idea. Or the students can freely interrupt each other whenever they feel inspired to follow up on or present a new idea. The downside of the last approach is that “quiet” students may not participate as much as the other students and get stuck with their cards when everyone else has finished playing. You can try both methods to see which one works the best.

The students start the game by looking at their image cards, presenting ideas based on the images and placing them on the A2 paper. An example could be a picture of an air valve. The student could then say: “You could install valves in the walls, to easier pump out the water into underground canals...” The next student can either choose to build on that idea using one of his/her own cards or present a new idea. If a card does not inspire the student to say anything about the subject, the student can choose to pass, draw a new card and is then skipped in the next round.

When all five cards have been used, the students create an overview of the ideas. I.e. the ideas that are linked should be grouped together and the ideas should be re-presented. The ideas are fairly easy to remember because of the picture association. Each idea grouping should be given a title, which is written on the A2 paper where the grouping is placed – e.g. “methods for removing water without any human/water contact”. Each design team now chooses 2-3 idea groupings they want to continue working with in the *Prototype* phase. The idea groupings are then written on a piece of A4 paper (one per sheet) and could possibly be used as central theme for another round of Idea Poker to generate more concrete solutions.

When the game is over after 1-3 rounds, the students collect their groupings and hang them up on the wall. The best ideas should now be boiled down and edited further using some of the other techniques.

Idea Poker can be used in connection with Talking Waterfall (Technique 15), as they both help expose the challenge/solutions and open up the process. The students can choose to build models from the new phrases/challenge-questions to transform the words into physical form, e.g. like they do in Rapid Prototyping – 1,000 Ideas (technique 14), Persona Models and Role Play (technique 13) or Mock-up (technique 18).

Using Idea Poker, the design teams can choose to explore the challenge in the *Prepare-* or *Perceive* phase, or they can explore the solution possibilities in the *Prototype-* or *Produce* phase.

### Execution time

1 lesson.

### Props

Image cards or association cards from toy stores, A1 paper, A4 paper, markers and tape.

### Setup

Each design team sits around a table. At the center of the table, they place a piece of A1 paper, on which they write the challenge/problem in the middle. Every student has a marker to write with and can reach the paper from his/her seat.

»



### Example

- Chris is holding an image card of a turtle and thinks of this solution as he puts the card on the A1 paper: “By floating on top of the water, we can avoid the bacteria.”
- When the next player places his/her card, he/she can choose to link the card to the turtle (“float on top of the water-idea”), or the card can be placed somewhere else as a new idea.
- Muhammad has a picture of an umbrella and says: “We can block the water, to prevent it from running down into the basement.” He puts his image card in another spot on the paper.

### Plan

- Preparation, formulation and distribution of image cards.
- One round = approximately five students with five cards each (25 cards).
- Repetition of idea groupings + define titles for groupings.
- Selection of three idea groupings – each written on a piece of A4 paper.
- Optional repetition of Idea Poker.
- Hang the outcome up on the wall.

## 17. MATERIAL TESTING

### OBJECTIVE

To develop the students' abilities to visualize their ideas and become aware of different kinds of dimensions. To help the students attain a comprehension of how various materials can be used to physically shape and form ideas.

### APPROACH

Each design team sits around its team table and now has to visualize some of the ideas they have for solutions in 3D. The students use the technique individually, and each student has to build solutions using only one material e.g. clay.

After the teacher has introduced the technique and provided examples of how solutions in a given material can look, the design teams are provided with the materials the teacher has chosen for the assignment. This could for instance be three types of material such as clay, paper and steel wire.

The students should have the opportunity to get a feel of the material to understand its possibilities before they start visualizing their design ideas. The students should work individually, but are allowed to talk to each other about their suggestions as the final solution is essentially a joint project.

The students have ten minutes to work with each material and have to present at least one solution in each of the three materials. When all materials have been tested, the teams display their models and present their suggestions in turn. It is a good idea to keep the materials separate – i.e. present all of the models in clay, then the ones in paper, etc.

At the end each design team should discuss their solutions and materials: Which material is best suitable for the model(s)? If any of the students get new ideas for the design, the potentials of these are discussed in relation to the challenge. The students choose the solution they want to continue working with in Mock-up (technique 18).

### Plan

- Preparation and introduction to the technique.
- Each design team talks about the materials and tries to understand its strengths and weaknesses.
- Testing the first material: The design is shaped/built using the specific material. This test is done individually among the students but they can talk about their solutions with their design teams.
- Testing the second material: The design solution is built/shaped as well as possible.
- Testing of third material: Same as testing second material.
- The students present their solutions within the design teams.
- The solutions are presented according to material.
- The design teams discuss which material they believe is most suitable for their design solution, and chooses which one to use in Mock-up (technique 18).

### Execution time

2 lessons.

### Props

A4 paper (approx. six pieces per student), clay/modeling dough, steel wire, scissors, glue, tape, tongs, knives.

### Setup

The students work in their design teams at their stations, but work individually – as the design team members focus on the same challenge.



## 18. MOCK-UP

### OBJECTIVE

To help the students turn their ideas for solutions into physical objects or systems (Mock-ups), to make it possible to test these and to enable the design teams to further develop their designs and get a sense of how they will work in the real world.

### APPROACH

In order for the design teams to get a sense of reality in terms of their designs, it is important that the forms, materials and constructions of the designs are as close to the real finished solutions as possible – prototypes of the final designs. This also applies to solutions, which are not physical, e.g. a service. Using the Mock-up technique, the students can visualize and express how a service needs to be organized and function within its context. Simultaneously, the realization of the designs gives the design teams the opportunity to align their expectations of the solutions.

A Mock-up is a prototype where all essential parts are present, to make it possible to test the usability of the solution. For instance, if a design team has designed a solution for how to pump water out of a basement into an underground canal, all of these elements need to be shown in the Mock-up, as the user, who is testing the design, needs to be able to understand how it works. A Mock-up does not have to be a model built using physical materials; e.g. it can also be a film if the solution is about communication or an app for a smart phone. The significant thing is that the Mock-up represents the solution in the right way, so that the users who are testing the design understand the idea and are able to actually test how and if it works.

The design teams agree on which of their idea(s) they want to build a Mock-up of, and which criteria it needs/they need to meet during the testing. Hereafter, the design teams choose which form the Mock-up should be and which materials, equipments and tools they need in the process.

With help from the teacher, the design teams make a plan of action for their Mock-ups and decide how to construct them. It can be necessary to draw sketches or make preliminary models before starting on the real Mock-ups. Remember, that it takes time to collect the proper materials, equipment and tools – agree on who is supposed to get hold of which things. When the materials etc. are collected the design teams head for the workshops or similar and divide the work between their members while keeping in mind their action plan. The work surrounding the Mock-up is documented throughout the process using film or photos.

When the Mock-up is done, it is evaluated by the design teams based on the previously set criteria: Does the Mock-up depict what it is supposed to and will the user be able to understand and test the design? It is a good idea to do a quick test using some of the other design teams to make sure they understand and can use the Mock-up properly. If not, adjustments should be made.

If it is possible, the Mock-up should be tested by the “real” users within the context it is intended for. If that is not possible, it should be tested by the other design teams or other students from the school using User Test (technique 19). When the test is completed, the students should document the results.

Be prepared for possible waiting time. The teacher should carefully read this technique's approach in order to be able to plan how and when during process materials and equipment »

### Execution time

At least one full school day for the practical work and even longer if the development and testing are central to the teaching objectives the teacher has set for the design process.

### Props

With the teacher, the design teams describe, calculate and choose materials, equipment, etc.

### Setup

The design teams find a suitable location for the assignment and may use various appropriate workspaces.



needs to be ordered, picked up or delivered. The Mock-up technique can have a bigger or smaller role in the whole design process. In the above described approach, the Mock-up plays a large role in the design process.

**Plan**

- Preparation and introduction to the technique.
- Criteria for the Mock-up are developed. What is the purpose of the specific Mock-up?
- Sketching and preliminary model.
- List of materials and equipments + action plan for the process.
- Build the Mock-up.
- Study the Mock-up and allow other design teams to test it.
- Test/explore the Mock-up (model) in relation to the *Context* diagram (see page 58).
- Describe/document the test results.

## 19. USER TEST

### OBJECTIVE

To allow the individual design teams to test their physical designs in the relevant surroundings (using the actual users that the designs are intended for) in order to adjust the design solutions accordingly.

### APPROACH

When working with design solutions, it is important to set aside time for both developing and testing along the way. Therefore, it is an advantage that this process interactively takes place while the students both develop their physical designs and gather input from the tests with the users in the context.

The design teams focus on their user groups (Personas) and their design solutions, when they plan their testing. They relate to the challenges they discovered during the *Prepare* phase and use these as a starting point to develop a series of questions, they need to answer during the testing. Best practice should be discussed with the teacher.

During the preparation of User Test the design teams have to keep all of their previous work in mind and use the information they have gathered and analyzed in the previous phases, including Personas and interviews. Remember to focus on *Form, Impact* and *Context* (page 14).

If it is possible, the design teams can choose to display their Mock-ups (e.g. in the local area) and observe how citizens/users interact with the designs. They can then ask questions to people about why they do/do not interact with the designs. The Mock-up can also be tested by instructing the users in how they should use the design. The method of testing depends on how the finished design is intended to work. E.g. if the design includes pictograms, these should not need an explanation as they should be self-explanatory. In contrast, if a design offers a new method or solution to a problem, this may require an instruction.

When a design team has gathered a satisfactory amount of information about its design, the students should bring this back to the classroom and, based on the result, make the necessary adjustments (if needed) to their design. If desired, the test can thereafter be repeated.

It is important that the design teams keep in mind which type of questions they ask during the testing. If the questions are guiding or “closed”, the students might not get the real picture of the usability of the design.

### Example

- Do the users think the design is a good response to the challenge, and could it be improved in any way?
- Does the design work within the intended context?
- Is it accessible (economically, physically and socially) to the target group?
- Do the users like and can they identify with the shape of the design?

### Plan

- Introduction to the process (see objective and approach).
- The students plan a strategy for the User Test.
- The students display the Mock-up and observe the users’ interaction with the design and interview the users if necessary.
- The students collect the information and bring it back to their classroom.

### Execution time

User Test is related to Mock-up (technique 18) and can preferably be implemented during the Mock-up model building and testing. The test itself does not take long but is of course dependent on where the test takes place. If the Mock-up is physically brought to the local context, the test will take longer than if it was done at the school. The test can also take place in a design team member’s home and can run over a longer period of time.

### Props

Mock-up, camera, question sheet, pen and paper.

### Setup

Depends on where and how the Mock-up is going to be tested. The students work in their design teams.



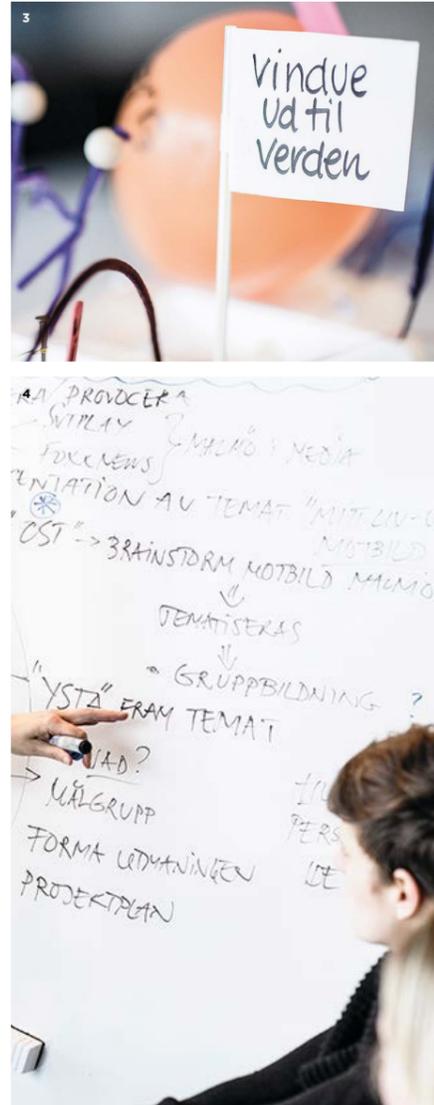
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**THE  
PRODUCE  
PHASE**



**IMAGES FROM  
THE PRODUCE PHASE**

- 1 Design Overview (technique 20)
- 2-3 Production of Material for Final Presentation (technique 22)
- 4 Storytelling (technique 21)
- 5 Design Overview (technique 20)
- 6 Production of Material for Final Presentation (technique 22)



## 20. DESIGN OVERVIEW

### OBJECTIVE

To ensure that the students learn to focus on and choose the relevant results from the entire design process (the four phases), in order for their designs to be meaningful solutions to the challenge and actually improve their users' lives.

### APPROACH

The design teams place all their materials, models, sketches etc. from the entire design process on their work tables and the surrounding walls to create an overview of their design processes. The students then write their individual reflections on which parts of the design process they believe are the most important to include in the presentation of their work process and final solution on post-its. Taking turns, the students present their thoughts and place their post-its on the related material. The design teams then discuss each other's reflections and collectively choose the main points to include in the final presentation. The presentation format can either be pre-selected by the teacher or the individual design team can choose their format, granted that it is approved by the teacher.

An example of a generic presentation format could be five posters:

1. The process – how did they work and what did they learn?
2. The challenge – what is the problem and its context?
3. The target group(s) – who is affected by the challenge?
4. The solution – the final design and its developing stages.
5. Flaws – what would we have worked on further if we had more time?

The design teams should also present physical models of their final designs.

The students use their logbooks (see page 37) as help to find the main points and events of the design process.

### Plan

- Output material from all four phases is displayed on the table.
- Individual reflection on the output of the process. Important elements are written on post-its. Logbooks are used as helping tools.
- Presentation of post-its within the individual design teams.
- Discussion of the main elements/events of the process and collective development of final presentation.
- Script of the presentation.

### Execution time

At least one school day. The execution time depends on how much emphasis the teacher puts on the actual completion of the design process and the students' presentations of their process and final solutions. The described approach is rather time-consuming and requires a minimum of a full school day, but could benefit from the students working on it outside of school too.

### Props

Output from all four phases, logbooks, posters, building materials etc.

### Setup

The students work in their design teams at their stations.

## 21. STORYTELLING

### OBJECTIVE

That the design teams evaluate their final solutions based on their *Form, Impact* and *Context* and whether they truly are Design to Improve Life, i.e. how and to what degree their designs improve their users' lives.

### APPROACH

Based on their design process and final solution, each design team discusses, describes and evaluates how the challenge and their solution are related to INDEX: Design to Improve Live®'s evaluation parameters, *Form, Impact* and *Context*:

**Form:** Description of the solution, based on shape, form, expression, materials and usability of the design. The description should include reasons for concept, shape, choice of materials and why this solution is better than other similar solutions.

**Impact:** Description of why a design team's solution improves people's lives. At this stage, the teams use the results of their *Impact* diagrams from Sum Up, where each team evaluated the challenge's negative implications on people's lives. Here, they also listed goals for how their designs should reduce the negative influence of the challenge and thus create a positive effect on people's lives.

**Context:** Description of the challenge and target group. Why did the team pick this specific challenge and design process? At this point, the students use the results from Sum Up and the *Context* diagrams, where they evaluated which context their design belong in. The results of Persona and Heart Diagram (technique 10) and Form the Challenge (technique 11) should be used to describe significant relationships in regards to the context.

The descriptions should be short and precise, and should be handed in to the teacher as to prepare him/her for what is to come in the presentation.

### Plan

- Each design team uncovers the relevant results from the *Impact* diagram, Personas, etc., and discusses how they can evaluate whether their design lives up to the *Form, Impact* and *Context* parameters and Design to Improve Life. Key words are written down in the process.
- Each team creates a disposition for how they will assemble the description and divides the writing among its members.
- One student from each team collects what has been written, assembles the texts and hands the final presentation in to the teacher.

**Execution time**  
2 lessons.

**Props**  
Outcome from Design Overview (technique 20) and a computer.

**Setup**  
The students work in their design teams at their stations.

## 22. PRODUCTION OF MATERIAL FOR FINAL PRESENTATION

### OBJECTIVE

That the design teams produce the necessary materials for their final presentations, in order for them to effectively communicate their design processes and final solutions.

### APPROACH

At this point, the design teams should produce materials for the presentation, e.g. the five posters, 3D models or other. Using the overall plan in their final presentations (see technique 25, Preparation and Presentation in Final Sum Up), the students need to do a production plan for the production of their posters, models etc, in relation to the chosen format.

#### The production plan should include

- The various elements of the presentation material.
- Deadline(s) in relation to preparation, production, print etc.
- Distribution of tasks and responsibility.
- Potential appointment of a production leader.
- Time and instruction for rehearsal of the presentation.

When all the material has been produced, the presentation should be rehearsed: Does it work, and is the time schedule respected? If not, adjustments should be made to ensure that the entire design team feels safe and comfortable in their individual presentations of their process and solution (see technique 25, Preparation and Presentation in Final Sum Up).

#### Plan

- Development of production plan.
- Development of materials for the final presentation.
- Rehearsal.
- Final adjustments.

### Execution time

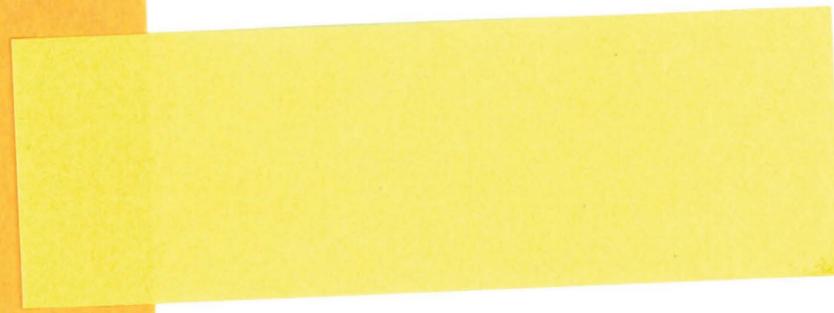
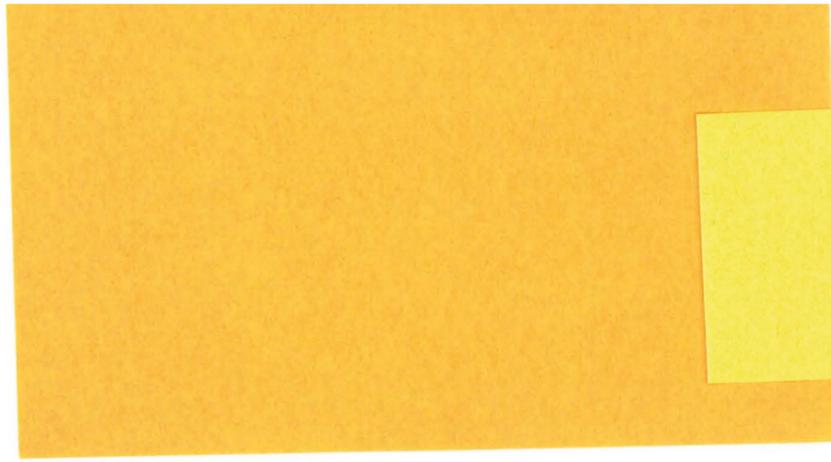
Agreed on by the design teams but decided by the teacher. The process requires a significant amount of time – ideally, several days.

### Props

Large pieces of cardboard to hang the presentations on or likewise, the needed materials for creating models, a computer including PowerPoint or InDesign for digital development of the presentation and digital camera for documentation of the material.

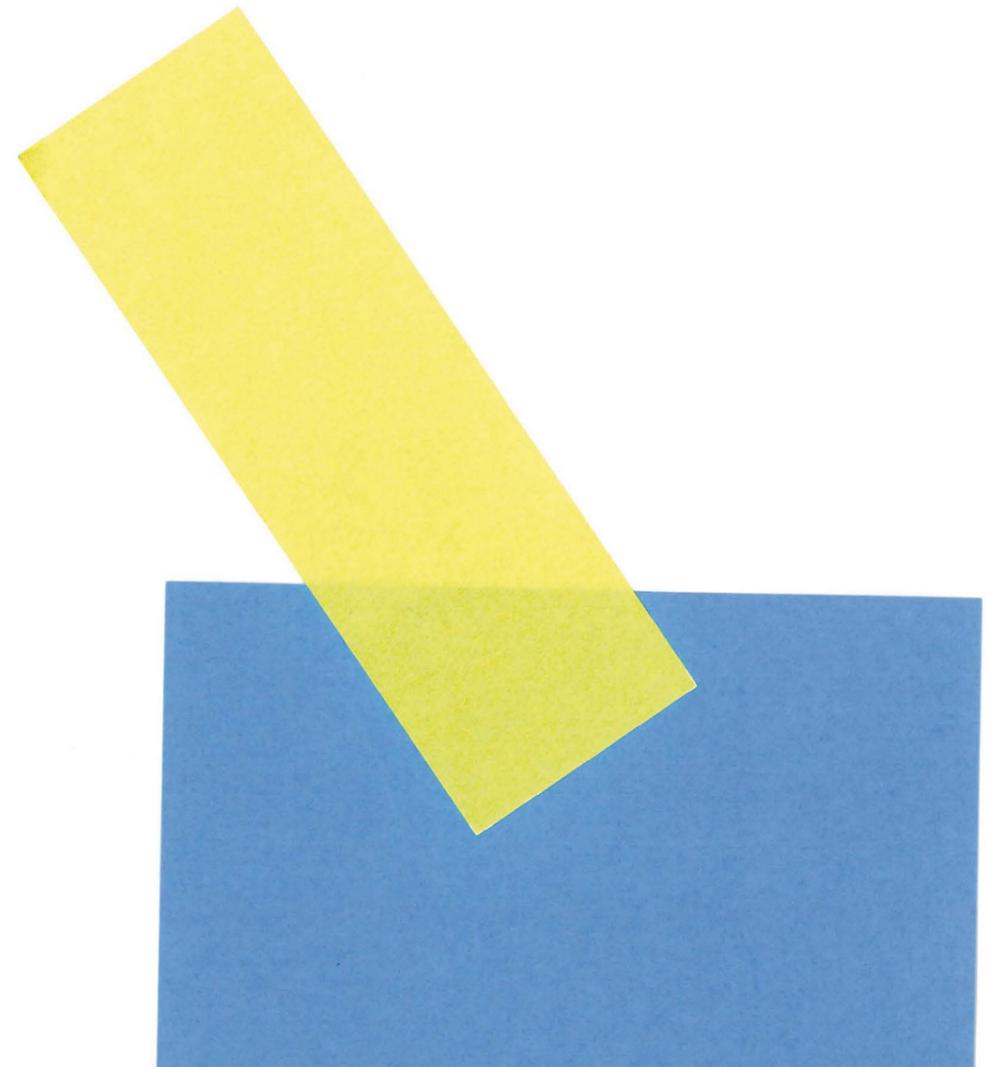
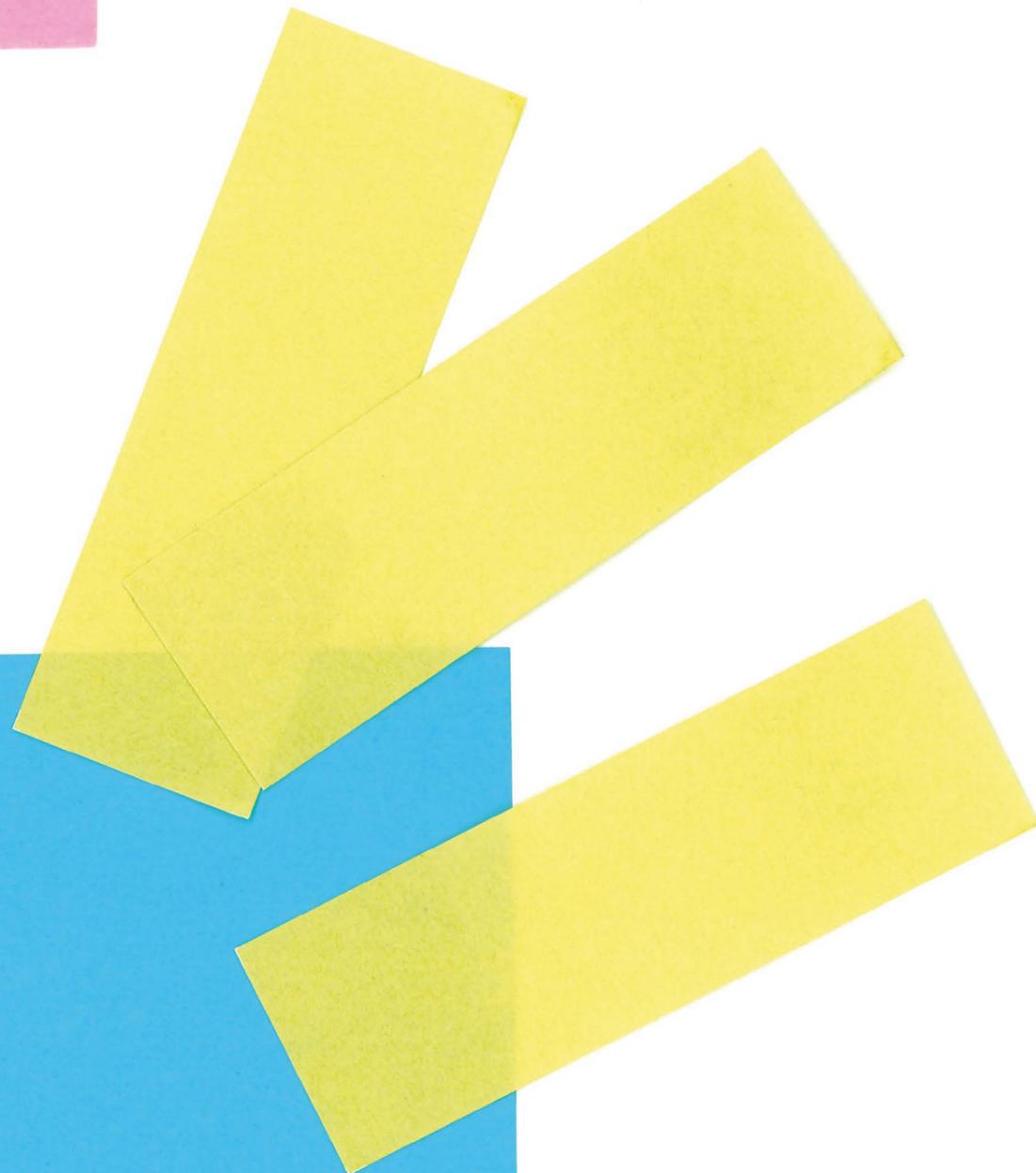
### Setup

The classroom is transformed into a workshop and the students make use of a layout studio or other (if available). The students work in their design teams.



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**SUM UP**



**IMAGES FROM  
THE SUM UP ACTION**

**1-3** Presentation, Feedforward  
and Feedback (technique 23)



## 23. PRESENTATION, FEEDFORWARD AND FEEDBACK

### OBJECTIVE

To help the students continuously reflect and meta-reflect on their work in the design process: Where are we? What have we learned? Where are we going with this? Why are we doing this? The students practice giving and receiving constructive feedback on their work and progress.

### APPROACH

The Sum Up actions are placed at the end of each phase in the Design to Improve Life process, but can be used any time the teacher or the students find a Sum Up useful. They are a crucial part of the design process, as it is at these stages the students share their experiences, learn to give and receive feedback and collectively reflect on what they are learning in the process.

The Sum Ups are carried out in the same way after each phase, except after the *Produce* phase where the Sum Up acts as the final presentation and evaluation of the design teams' work. In the following, the general elements of Sum Up are described, followed by a checklist for the preparation of the final presentation.

#### Sum Up consists of five sub-processes

1. Preparation of presentation.
2. Presentation and feedforward (the individual student's wish for what he/she wants feedback on).
3. Feedback and feedback on feedback.
4. Meta-reflection.
5. Summary in the design teams.

#### 1. Preparation of presentation

The individual design teams collect their output from the specific phase, which is being summed up, and discuss what they have learned and where they are in terms of the purpose of the process: Where are we? Where are we headed now? Hereafter they discuss what they individually need feedback on (this is called feedforward), and prepare their feedforward. They then prepare a short presentation of their work and agree on who says what in the presentation.

#### 2. Presentation and feedforward

The design teams come together and the Sum Up starts. The team presenting displays their output and the remaining teams sit on chairs placed in half-circles – one for each design team. The team sitting closest to the presenting team is now the feedback team. The other design teams' job is now to listen to the session and ensure the following:

- The feedback should be constructive and respectful.
- The design team getting feedback should consider it a help and not become defensive instead of receiving.
- The design team getting feedback has to remember to write down important points from the feedback for use later on in the process.

The design team receiving feedback first, starts by presenting their work and finishes by presenting their feedforward to the feedback team.

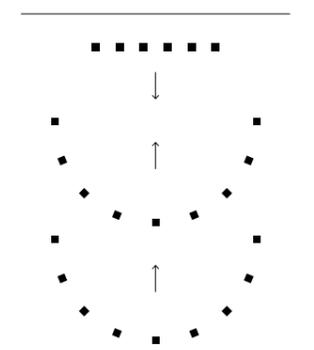
**Execution time**  
Minimum 2 lessons.

#### Props

The design teams' output from the specific phase, tape for hanging material on the walls, logbooks.

#### Setup

The chairs (one per student and one for the teacher) are placed in half circles so that there is one half circle per design team, excluding the presenting team – meaning that if you are three design teams, you need two half circles as shown in the illustration below. Sum Up takes place with all the students involved, but preparation and summary is done in design teams.



»

### 3. Feedback

The feedback team asks questions in regards to the presentation and hereafter gives their feedback. When the feedback is concluded, the remaining design teams should now comment on how the two teams did in the presentation and feedback. When the specific Sum Up is done, all the teams rotate and the process is continued with new teams until all the design teams have presented and given feedback.

### 4. Meta-reflection

After all the teams have given and received feedback, the teacher carries out a meta-reflection together with the students about, why they have completed the specific phase in the design process, which experiences they have gained, and what they have learned from the related techniques, e.g. in relation to reflection, communication, mapping and interview. They also reflect on what the specific actions and techniques were about. Meta-reflection can be followed by individual reflection written in the students' logbooks.

### 5. Summary

After the meta-reflection, each design team gathers individually and talks about the feedback they have received and what it means for their further process. Hereafter, they decide whether they are ready to enter the next phase or if they need to take a step back. The teams discuss this with their teacher.

Sum Up is a central part of the Design to Improve Life process and has great learning potential in regards to interaction and communication within the classroom. A Sum Up with three design teams should last a minimum of two lessons.

### Plan

- Preparation in the design teams.
- Setup and hanging materials on the walls.
- Presentation of work and feedforward (agree on number of minutes per team).
- Feedback (agree on number of minutes per team).
- Feedback on feedback (agree on number of minutes per team).
- Meta-reflection.
- Summary in the design teams.

## 24. ORACLE ROUND

### OBJECTIVE

That the students get some answers regarding their challenge. The goal is for the students to see that there is not just one, but many solutions to a challenge.

### APPROACH

All the students should choose a question that they want to get input on. The students sit in two circles (one inside the other) facing each other. The students sitting in the outer circle “rotate” while the students in the inner circle remain in their seats. The students in the outer circle ask questions to the person they are sitting opposite to and then listen to the answer. And they have to ask the same question all the way around the circle. The people in the inner circle are the oracles – they have the answer to anything, but only have one minute to explain.

The teacher starts off the process and times it. After each minute the students in the outer circle should thank his/her oracle and move to the chair to the left. The oracles now ‘receive’ a new person and a new question which they have to answer. When the circle is completed, the students in the inner and outer circle switch places and the oracles now become the ones asking the questions and vice versa.

Number of participants: At least six students. If there are too many participants, you can choose to do more than one Oracle Round and if you are an unequal amount of students, you should include a ‘pause chair’.

### Example

Question from the Oracle Round could be: “I am in doubt whether my design team’s research question is clear enough. What should I do?”

The oracles could e.g. answer:

- “You could suggest that your design team ask for an ‘obstruction’ (see page 159) by the teacher or another design team.”
- “Try making a new research question and ask yourselves: Is the new question better, or was the old one actually pretty good?”

The benefit of Oracle Round is that the students get as many answers as possible to a specific question. The technique is especially useful when the students need new perspectives or are finding it hard to see new possibilities. It is useful at various stages in the phases – or even as an obstruction if the students need new energy. The technique builds on the students’ existing work and the oracles’ answers/suggestions should be included in the further work.

The Oracle Round can be used in the Sum Up or at other times during the process, where new and more angles and input are needed for a challenge or an idea.

### Plan

- Set up chairs.
- The participants each prepare a concrete question.
- Oracle Round session.
- Time for reflection and notes after the round.

### Execution time

1-2 minutes per participant.  
Don’t forget to calculate time for switching seats and roles.

### Props

Stop watch

### Setup

The participants sit facing each other in two circles (one inside the other). You can also do the Oracle Round standing up or in rows instead of circles.

## 25. PREPARATION AND PRESENTATION IN FINAL SUM UP

### OBJECTIVE

That the students get experience in improving and completing a collective presentation of their design process and final solution to their challenge.

### APPROACH

In addition to the preparation of their final presentation, the students need to consider which settings the presentation should be set in; how the audience should be positioned, which tools they want to use, who presents what, etc.

It is a good idea to make some type of a script. The script should act as a guideline for how to present the project in the best way, and enable the students to practice what to say. Therefore it may be necessary to do a rehearsal in order to adjust the content to fit the format of the real presentation.

### Good advice when presenting

#### Introduction

Begin by telling the audience what you are going to say and then actually say it: E.g. “What I would like you to remember from this presentation (when you have forgotten everything else) is...”. You can also start with a specific case, i.e. a specific and relevant story, which includes the principle elements of your challenge and is related to your final solution.

An example of this could be: “In the newspaper yesterday, there was a story about a Saudi Arabian woman who has been sentenced to stoning because she drove a car. The western world responded by... .. and this has led to negotiations about... ..Our project focuses on another challenge, but the two cases are still connected because...”

Ergo: State what your design is about and the reason why you have developed it. Make it interesting from the beginning and don't forget that people and their fate is always interesting.

#### Substance

Say it: At this point, the students present the actual content, the substance, which in this case is the design process and the final solution. The important elements of this part are:

- What are the premises of the process?
- What are the most important points and the most valuable learnings from the four phases?
- How did you work with the challenge?
- Who are the users and how did you include them in the Design to Improve Life process?

This presentation is interplay between the presentation of the “actual conditions” and a meta-reflection over the process and what you have learned and experienced throughout the process. The sharper the interplay is, the better the presentation becomes.

#### The end

Sum up what you have said: At this point, it can be a good idea to return to what was stated in the beginning of the presentation, and re-tell it in the light of what you have presented: “The story of the woman in Saudi Arabia is thus closely related to... and I therefore hope you can see that...”.

**Execution time**  
Minimum 2 lessons.

#### Props

The design teams' previous presentations, post-its for feedback, materials to hang the presentations on the wall.

#### Setup

The chairs should be placed as in a normal Sum Up, where everyone can see the people presenting.

»

**Plan**

- Preparation in design teams.
- Setup and hanging materials on the walls.
- Presentation of work and feedforward/feedback from teacher + other design teams (agree on how long this may take).
- Collective summary.



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**THE  
JOKERS**



During the Design to Improve Life process, the students (or the teacher) will feel that the process has stalled because the students lose focus, fall in love with a specific idea/challenge or disagree and become frustrated. This is perfectly normal and an inevitable part of the process.

Jokers are a series of techniques and methods that you (the teacher or an experienced student) can use when the process for some reason is stuck. Jokers work as a kind of positive interruption that can change design teams' mindsets, make them change their course of direction and see new possibilities. Jokers can also be used as a helping tool in concretizing and limiting challenges, if the process needs to be helped forward.

Therefore, there is a difference between which kind of Jokers are applicable in exploration processes and which Jokers are best suited for limitation processes. Jokers help make the Compass flexible and dynamic because they make it possible to use specific tools in the Compass when they are needed.

You can freely choose how many Jokers you want to pull out of the hat in the process.



#### IMAGES FROM THE JOKER TECHNIQUES

- 1 Kill your darlings
- 2 Energizer
- 3 Obstruction



## INSPIRATION

A need for inspiration can occur in all four phases at all times in the Design to Improve Life processes. For example, inspiration to see new angles or to discover blind angles can be needed when the students are analyzing their input in the *Perceive* phase, or they can be in need of inspiration to get more ideas in the *Prototype* phase.

### Inspiration can e.g. be:

#### Experiences

The students go on an inspiration trip somewhere relevant. It can be anywhere from a department store to a public pool or a museum, etc.

#### Surprise

The teacher or one of the other design teams prepare a surprise as inspiration for the team that needs it. It can be a YouTube clip, a movie or a specific gift that the team gets. The teacher can also choose to create a surprise process if he/she sees that the need for inspiration is the same among the design teams. In this process, a team can be given the task of preparing a surprise for another team – a surprise that serves as inspiration in their design process. See Oracle Round (technique 24).

## BRAINSTORM

Most times, brainstorming is used in the start-up phase, but actually it can be a good idea to use brainstorm elsewhere in the process, e.g. if the students run out of interview questions when conducting field work in the *Perceive* phase. Brainstorms can be carried out as Open Space (technique 4) or as a quick round with individual ideas on post-its. Persona and Heart Diagram (technique 10) is also applicable if the objective is to get to the students' relevant experiences. Finally, Talking Waterfall (technique 15) and Idea Poker (technique 16) are also good brainstorming techniques and generally very applicable in the different phases of the Design to Improve Life process.

- 4. Open Space (page 73)
- 10. Persona and Heart Diagram (page 91)
- 15. Talking Waterfall (page 113)
- 16. Idea Poker (page 117)

## INTERRUPTION

Jokers generally represent a positive interruption, but there are some interruptions that are especially good at shifting focus. 'Kill your darlings' is the most consistent and tough interruption in this sense, because it kills a specific, beloved idea or at least removes it from the team and prevents the team from building on it. Kill your darlings may also work if the teacher (e.g. in the *Perceive* phase) tells the students that the challenge they cannot stop focusing on suddenly is off the table – enabling them to focus on some of the other challenging aspects of what they are working with.

Another effective interruption is 'obstructions', where shifting focus (e.g. leaving the classroom, switching seats or lying down on the floor) can be enough for the students to see other angles and perspectives. »



### **Kill your darlings**

One of the biggest pitfalls in Design to Improve Life processes is ‘darlings’, i.e. problems, challenges, ideas or solutions that you as a team or an individual fall madly in love with and therefore cannot depart from. Darlings can obstruct work and prevent the students from finding more challenges or coming up with more solutions, even though the “darling” does not represent the actual problem or the best solution. Kill your darlings is about removing the blockage and thus opening up for new possibilities. This can happen by making the students take a critical approach to their idea or by physically removing or destroying the suggestions they like the most. Kill your darlings can also occur when the teacher presents a scenario or introduces rules, e.g. that a specific target group (e.g. homeless people) is no longer relevant to the design team’s work, because the challenge with homeless people already has been solved. This will help the team to focus on some of the less eye-catching target groups within their challenge.

### **Obstructions**

Obstructions represent disruptions, actions or material that in one or more ways challenge the students to see the challenge in a new perspective, as the challenge via the obstruction is illuminated from another angle. An obstruction can e.g. be the teacher asking a critical question related to a design team’s process or simply turning focus elsewhere by removing parts of the design – forcing the design team to rethink.

### **Energizers\***

When the energy in the classroom or in the design team is low, an ‘energizer’ can advantageously be executed with the students. The energizers are intended to bring new energy to the design team(s) – some are for learning, others are just for fun.

**Energizer example:** ‘The evolution’ (a variation of ‘rock, paper, scissors’). The purpose of this technique is to get people moving and laughing. No material is needed for this technique.

Evolution goes from egg to chicken to dinosaur to human and reverses back from human to dinosaur to chicken to egg. All participants start out as eggs and the way to evolve into a chicken is by finding an opponent and beating him/her in rock, paper, scissors – the loser remains an egg. If you lose as a chicken, dinosaur or human you go back an evolution step. So, winners evolve a step forward, while losers “evolve” a step back. You can only challenge an opponent of the same evolution status or one step higher/lower. An egg can therefore not challenge a dinosaur and vice versa.

There are body positions attached to each evolution stage: And egg is on its knees on the floor, the chicken walks around with bent knees flapping its wings, the dinosaur is hunched over and makes big eating movements in front of its face and the human walks around fully erect.

The teacher decides when time is up (e.g. after 10 minutes).

*\*You can find more energizers online or in books. Search for ‘energizers’, ‘ice breakers’, ‘team building exercises’, etc.*



## CONCRETIZATION

In the process, it can often be necessary to have an idea from the team or a team member (or the question or challenge you are analyzing or unfolding) specified or concretized. And there are many ways to concretize: You can visualize the idea or challenge by drawing or building it or you can find examples that concretely highlight what you mean.

**Visualization:** The students individually or together draw the challenge or the idea they are trying to express. It is important that the students understand that it is not about drawing something pretty, but rather about using a communication tool to concretize and create a common understanding in the design team. You can also build the context or the idea; to do this, the students can use Form the Challenge (technique 11), Rapid Prototyping – 1,000 Ideas (technique 14) or Mock-up (technique 18).

- 11. Form the Challenge (page 95)
- 14. Rapid Prototyping – 1,000 Ideas (page 111)
- 18. Mock-up (page 123)

**Exemplification:** Another effective way to concretize is to use examples. Preferably examples that are as simple as possible, as this enhances understanding. If the students need to get more specific regarding their challenge (e.g. “Loneliness among the elderly in Denmark”), the example could be: “My great-grandmother lived in a nursing home in the countryside and her family lived 100 miles away in Copenhagen. Therefore she rarely had visitors and that made her lonely”. By using this example, the challenge is now concrete and the team can think of other examples of loneliness among the elderly which can help them to understand and limit their challenge.

## REFLECTION

In Design to Improve Life processes, the participants alternate between individual reflection, knowledge sharing (among all) and idea generation. The individual reflection is important for several reasons: First of all, it ensures that all students can participate and the project benefits from the team’s collected resources. And second of all, the students learn to listen to each other and acknowledge and take advantage of different angles and perspectives on the world.

The reflection can be carried out as an individual reflection written down on post-its or paper, or it can be carried out in pairs as a reflective conversation where the students afterwards tell the other design team members about their reflections.

## PRIORITIZING AND CHOOSING

Some phases in the Design to Improve Life process are concluded with prioritizing and choosing. In the *Prepare* phase, it is choosing a challenge, and in the *Prototype* phase it is choosing a solution. However, it can be necessary to prioritize and choose other places in the process, e.g. when Personas need to be made. »



Prioritizing and choosing in Design to Improve Life processes is built on democratic principles, and through different evaluation tools the students learn to make educated choices based on common criteria and evaluations. A basic evaluation tool is INDEX: Design to Improve Life®'s three evaluation criteria: *Form*, *Impact* and *Context*.

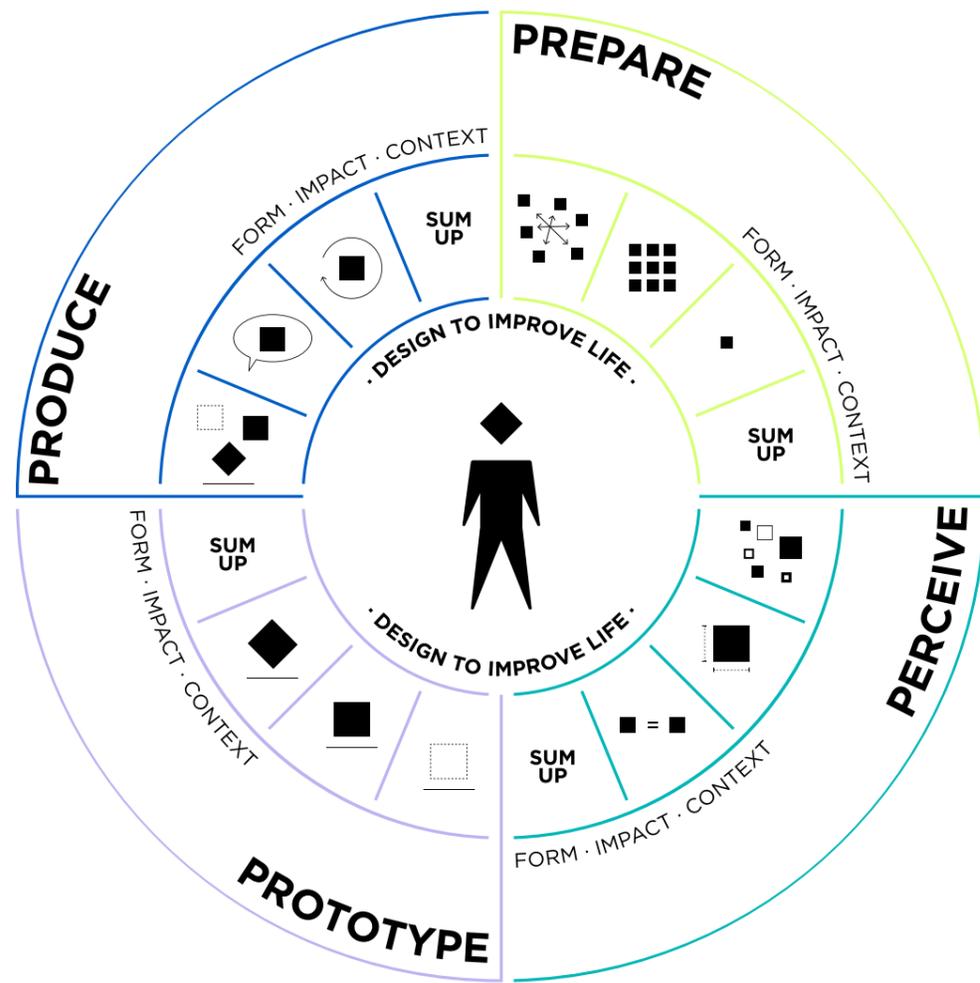
Furthermore, Design to Improve Life processes produce output all the time, e.g. Mindmap which can be used as an evaluation basis when making necessary choices in the processes.

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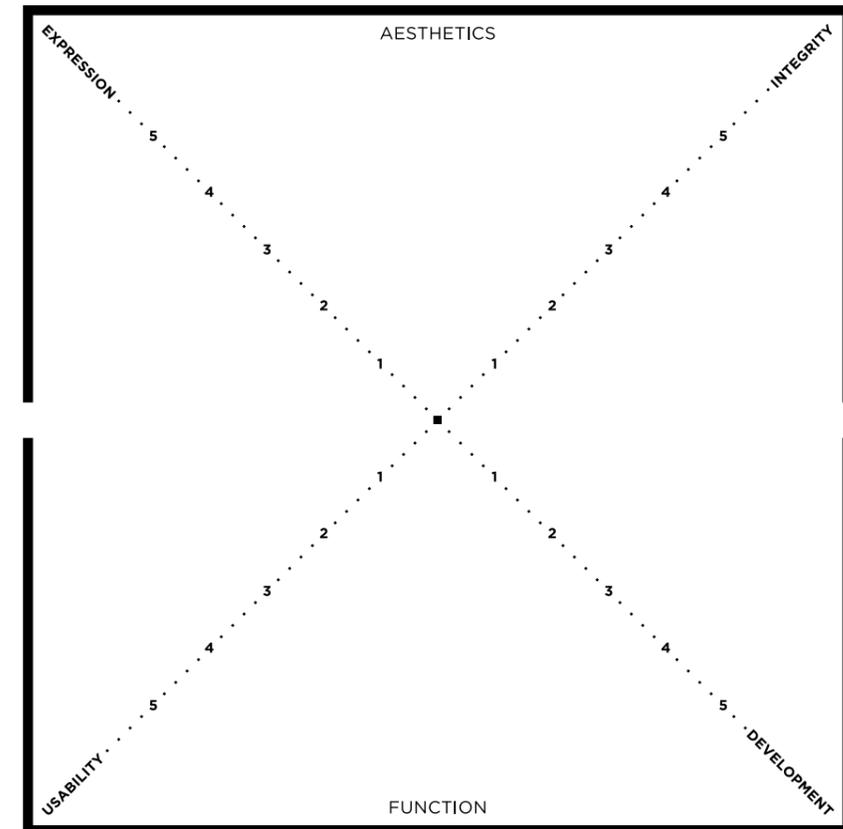
**TEMPLATES**  
(GUIDING)



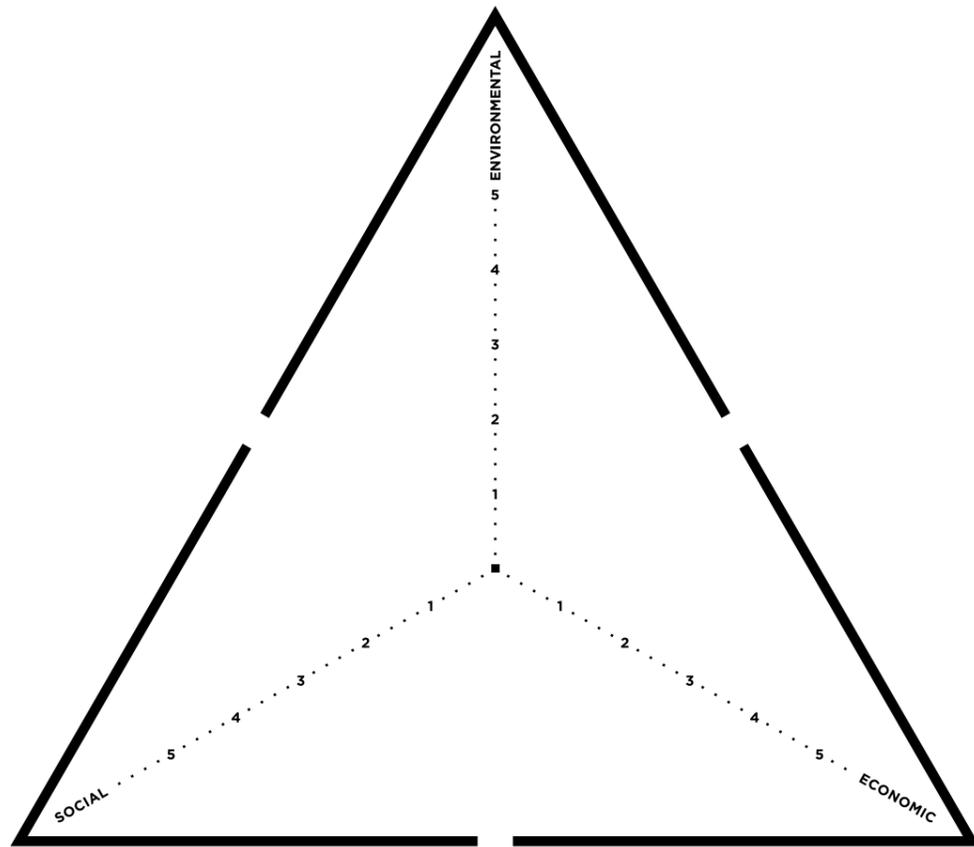
THE DESIGN TO IMPROVE LIFE COMPASS



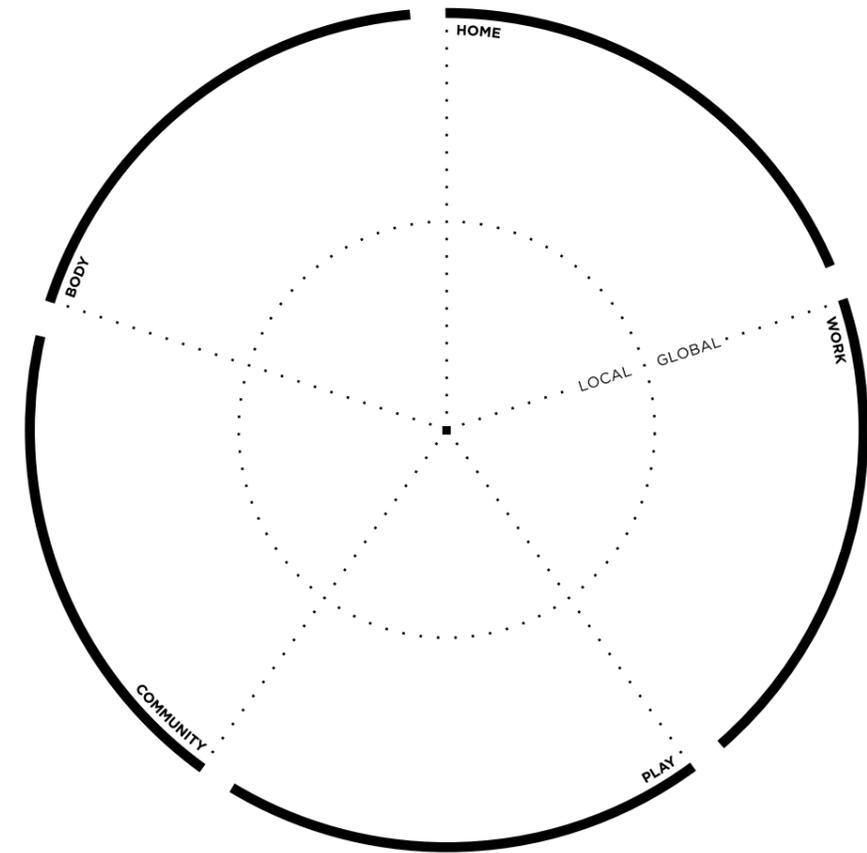
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DESIGN TO IMPROVE LIFE EXAMPLE:

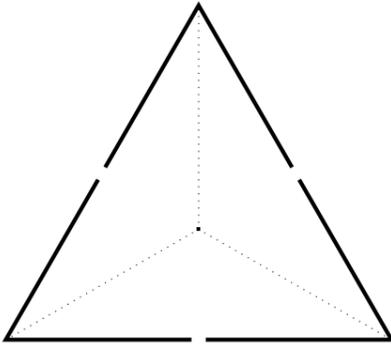
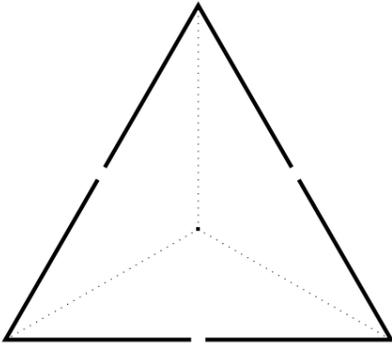
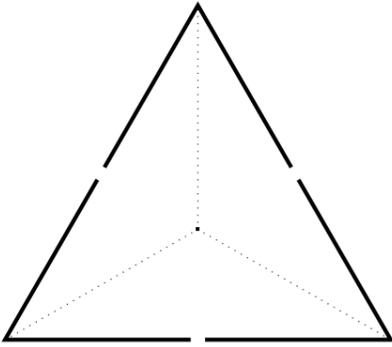


DESIGN TO IMPROVE LIFE EXAMPLE:



**OVERALL THEME:**

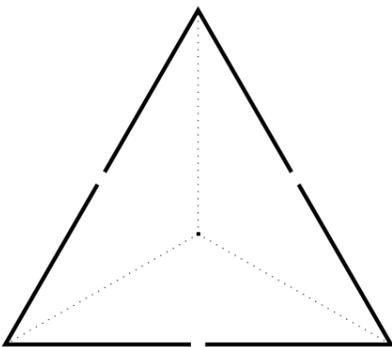
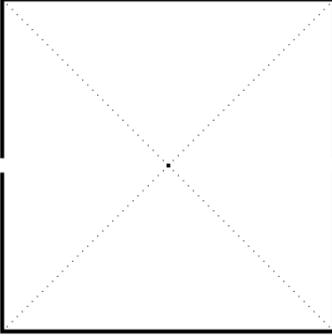
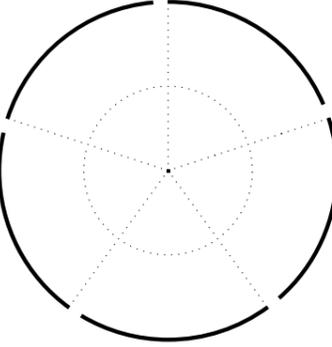
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<b>PAST</b>	<b>PRESENT</b>	<b>FUTURE</b> →
YEAR/TIME PERIOD:	YEAR/TIME PERIOD:	YEAR/TIME PERIOD:
		

**DESIGN TO IMPROVE LIFE EXAMPLE:**

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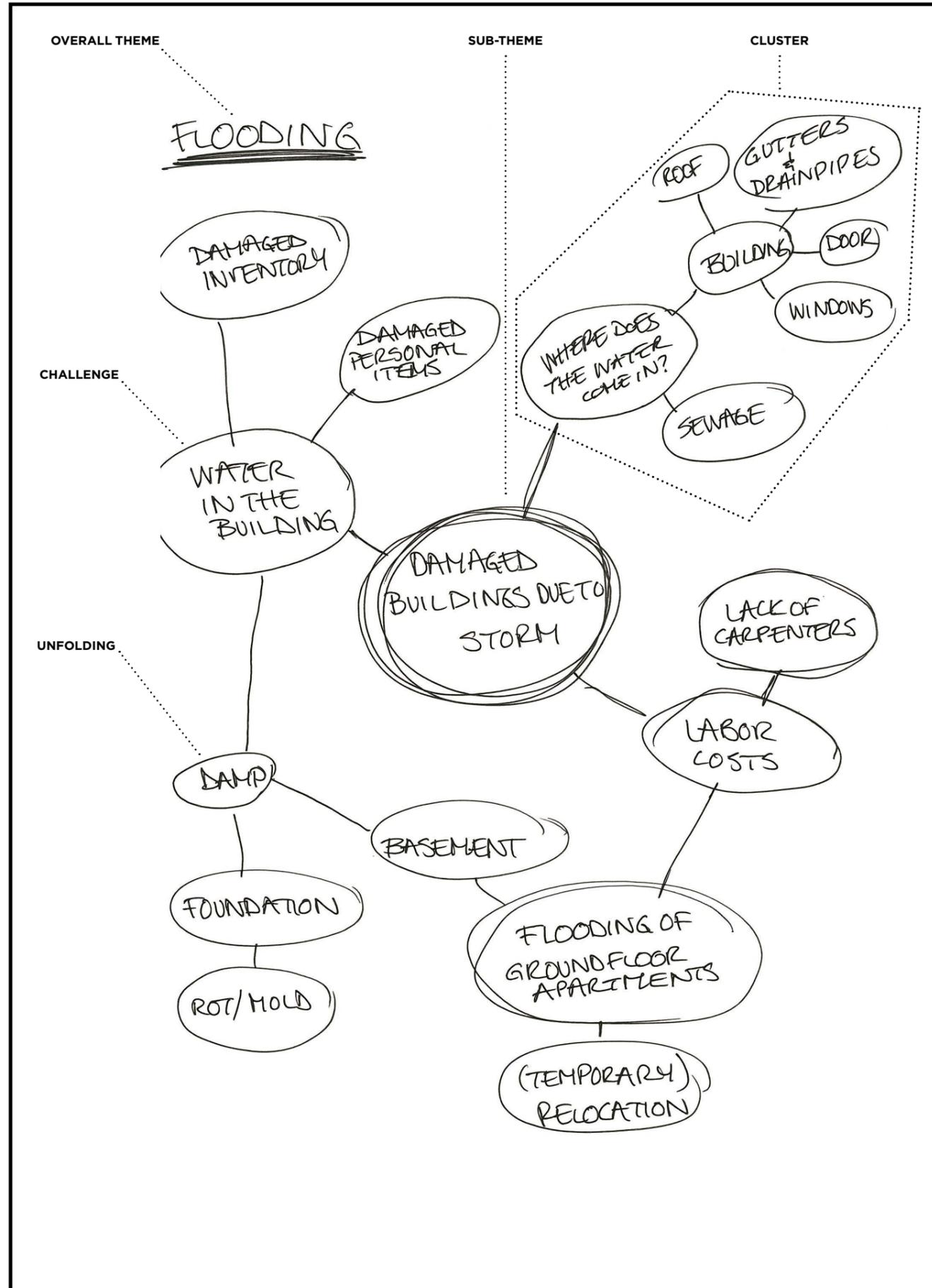
IMAGES & TEXT:

CHALLENGE:			
WHAT DO WE KNOW?	WHAT DO WE THINK WE KNOW?	WHAT DO WE NEED TO KNOW?	WHO SHOULD WE ASK? WHERE SHOULD WE LOOK?
<p>TARGET GROUP</p> <hr/> <p>THE CHALLENGE</p>			

CHALLENGE:					
WHAT DO WE NEED TO KNOW?	HOW WILL WE FIND OUT?	WHO ARE WE GOING TO ASK?	RESPONSIBLE TEAM MEMBER	TIME FRAME	NOTES/ CHECKLIST







■ **INDEX**  
■ DESIGN  
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