

CREATIVITY

Creativity techniques



SlnnDesign
Sustainable Innovation through Design

BACKGROUND MATERIAL

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I. Objectives of the module

- To explain the process of finding ideas to address a specific problem;
- To present specific methods to generate, refine and select ideas to reach a specific objective;
- To give practitioners and teachers useful tools to facilitate the creative process.

Keywords: Problem solving, Creative process, Idea generation, Creative thinking, Idea selection



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2. Introduction

This module will present a set of techniques to stimulate creative thinking along the entire pathway to a solution.

Whether you have been tasked with the development of a new product or have encountered a problem with an existing design, the creative process follows four general steps as shown in Figure 1 below.

A whole range of creativity techniques exists to help with each step from the problem definition, the idea generation, the refinement of ideas to the selection of suitable ideas to be implemented in a new concept or new product.

It is extremely important to first define the specific problem or question to ensure that the actual underlying issue is solved. Often a clear and concise definition of the problem can lead you half way to a solution.

Once the problem has been clearly defined, the ideas can be generated. There are numerous creativity techniques designed to help you in this step of the creative process. Some of the most common and useful techniques (and some variations) are described in this module. It is important to generate as many ideas as possible in this stage of the creative process. This will generate a range of plausible and implausible ideas, some of which may be related and feasible while others can be used for other projects and others may be completely unfeasible.

These ideas then need to be refined, combined and thought out in a little more detail before they can be pursued further or discarded. While some creativity techniques in the 'idea generation' step incorporate this, there are specific creativity techniques to support this refinement, which have been set out in the 'refine ideas' step.

There are supporting tools available that can facilitate these creativity techniques and should give moderators something to turn to if the group in a creativity technique becomes stuck

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or sidetracked. These supporting tools are shown in Figure 1 and described in the box on page 21.

Once the ideas have been refined, similarities identified and combinations have been explored, it is necessary to select the most promising ideas for further development or implementation. In some cases, this may be obvious, while in others, it may require an extra step: 'select ideas'. Again there are specific creativity techniques and tools available to facilitate this step and especially allow for a cooperative decision to be made in the group.

The selection of an appropriate technique should be made based on what seems most feasible to use and on what seems to be most appropriate to the problem under investigation. [Rocha, 2011] Some of the techniques are designed for group sessions while others can be applied by individuals.

Figure 1 below shows a summary of the four step approach to problem solving and the creativity techniques, along with the supporting tools described in this module.

Role of the moderator: The moderator has their focus on the methodology and is not directly involved in solving the problem. They are responsible for ensuring that the group is goal-oriented and are working efficiently. The procedure should be transparent to all concerned to ensure that everyone can participate in the problem solving. Here the role of moderator differs significantly from that of a manager of a company, who is usually strongly involved in developing the solution and plays a key role in the selection of a solution. The role of moderator is often carried out by external persons or neutral experts [Herb et al, 2000].

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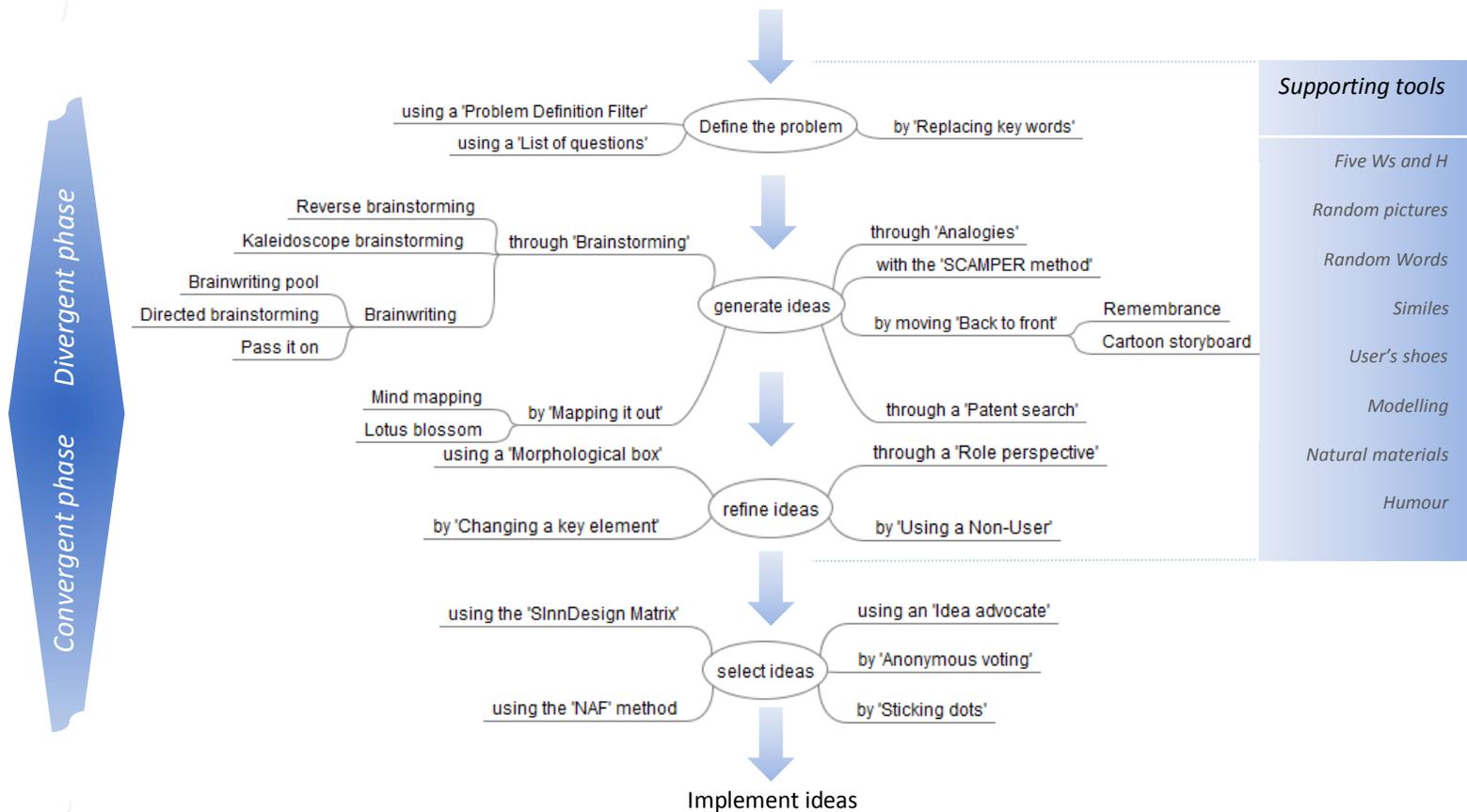


FIGURE 1 Creativity techniques along the entire problem solving pathway

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3. STEP 01 - Define the problem

To ensure a successful creativity session, the problem or question has to be clearly defined. Clearly identifying the problem is a huge step towards finding a solution.

To prepare the creativity session and depending on the participants, a clear, succinct statement that explains the problem and purpose of the session can be sent to participants beforehand. This can be accompanied by background materials that will help participants understand the context of the problem. [Cornett, 2013] However, too much prep can limit – or even destroy – the freewheeling nature of a creativity session. Whether it is sent before or it is only presented at the session itself, it is important to clearly define the problem and lay out any criteria that it must meet. [MindTools (2015)]

This can be done through a concise sentence on the problem, the question to be addressed in the creativity session and the boundaries that apply.

In case a problem consists of several sub-problems, it is recommended to tackle the sub-problems first, and then to bring the sub-solutions together. [Crul et al, 2014, p.113ff] The problem can also be abstracted or reversed as suggested in several of the creativity methods. [Wimmer et al, 2004 p.112f] There is quite a large difference between asking ‘How can we prevent an accident?’ rather than asking ‘How can we make this safer?’

When formulating the question and to stimulate the creative process it is better to start the question with ‘how’ or ‘invent’. The ‘how’ question focuses on the way or principle while the ‘invent’ focuses more on the end result. [Crul et al, 2014, p.113ff] The boundaries need to be clear to ensure that the ideas address the problem at hand and contribute to a solution.

Two specific methods can be used to identify the underlying problem and formulate a specific problem statement: a ‘Problem Definition Filter’ and a ‘List of questions’. Once a first problem statement has been defined, a third technique

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can be used to further refine the statement or spark the creative process: 'Replacing key words'.

To get to the root of complex problems a filter process may be used. [Cooper, 2014]

3.1. The Problem Definition Filter

In this method, underlying problems are defined in three steps:

1. Describe the current situation. Paint a picture in words by including the apparent problem, the impact it is having, the consequences of not solving the problem, and the emotions the problem is creating for those involved.

2. Draft and distill. Once you have examined and clearly explained the situation, draft a simple problem statement by filling in the blank: The problem that we are trying to solve is...

Distill the problem to its simplest form possible.

3. Dig deep. "Why is that a problem?" If the answer is another problem, then you are moving from the apparent problem to a deeper problem. Then ask yourself again, "Why is that a problem?" Do that repeatedly until you either land on what is obviously the source of all of the problems you have identified, or you identify unexpected consequences of not solving the problem. If you land on unexpected consequences, the problem you identified right before that is likely to be your "underlying problem."

Once a problem is very well defined, it may have a straightforward solution but it should also be considered if it is worth to solve a problem, often they are not. [Cooper, 2014]

3.2. List of questions

Another way to define a problem (statement) clearly is by using the following list of questions [acc to Herb et al, 2000]:

1. What is the problem (about)?
2. Are there similar problems in other areas?
3. What has been tried (and why)?

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4. Where has this problem been solved before?
5. Where is the problem coming from? (What causes the problem – fishbone diagram)
6. Where is the problem surfacing?
7. When did the problem surface?
8. What led to the problem surfacing at this specific time?
9. Is the problem the result of a previous solution?
10. What happens if the problem is not solved?

This final question may also be described and would equate to doing nothing. We often make the assumption that something must be done about a particular issue / problem, but what happens if we "do nothing"? Usually this leads to one of three possible outcomes; [Mycoted (2015), Do nothing]

1. The problem doesn't need to be solved
2. You will have a better idea of the benefits of solving the problem
3. You will have generated some alternative problems to solve.

A Moderator will guide a team (5-7 members) through the questions. It is not necessary that every person is an expert,

often people from different fields bring different views which could benefit the process. First, each person should find an answer to every question and then a consensus in the team should be defined. Working through the questions will take about an hour.

To further refine a first rough problem statement or spark the creative process, 'Replacing key words' can be a very useful technique.

3.3. Replacing key words

This method requires the identification of key words in the sentence, their substitution with other words that have the equivalent general meaning to create different emphases and a different rhetoric.

In the example below (Table 1), the word-processor thesaurus gave the direct and indirect synonyms for the 3 key words in the problem statement:

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Table 1 example of replacing key words in a problem statement with synonyms to better define the problem and identify possible solution pathways.

The product	consumes	too much	resources, while	in use
outcome	uses	excessive	reserves	occupied
result	wastes	profligate	material	engaged
effect	depletes	extravagant	supplies	taken
item	exhausts	lavish	incomes	unavailable
	expends	wasteful	assets	operational
	exploits	large amounts		working

Obviously the amount of potential paraphrasing is very large and a simple problem statement can be reworded in many ways, which correspond to very different meanings. Paraphrasing as such can be used either to alter the problem statement itself, or to trigger different streams of ideas about possible solutions. [Mycoted (2015)]

4. STEP 2 - Generate ideas

Using the clear and concise definition of the problem, the idea generation can start. There are a huge number of different methods available, many of which are simply variations of a central technique. Some of the most common and useful techniques and variations thereof are summarized below.

4.1. Brainstorming

A group of participants with different backgrounds come together to generate ideas addressing a specified problem. The ideas, generated in the span of approximately half an hour, are written down by a moderator visible to all participants. The ideas should not be criticized or commented on by the participants during the idea generating phase, as criticism may freeze the idea generation process. First, it is important to generate many ideas without restrictions and follow this up with a second phase where the participants expand, combine, evaluate and filter the proposed ideas.

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Figure 2 Brainstorming: evaluate and filter ideas



The group moderator can contribute ideas, but should spend most of their time and energy on supporting the team and facilitating the debate. It may also be necessary to refocus the

group if people become side-tracked. [MindTools (2015)] The brainstorming will take about 20-40 min and results are not final solutions but ideas and approaches on how to solve a problem.

Five variations of this process are presented below.

A detailed explanation of brainstorming and other related methodologies is also given the InEdic Manual [Rocha, 2011] and other sources.

4.2. Reverse brainstorming

This process is similar to brainstorming. However, instead of asking "How do I solve or prevent this problem?" the participants are asked, "How could I possibly cause the problem?" Similarly, instead of asking "How do I achieve these results?" the group are asked, "How could I possibly achieve the opposite effect?"

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The solutions to the reverse problem can then in turn be reversed and applied to the original problem. The responses may offer attributes of a potential solution. [Wimmer, 2004] This method may be useful to spark the process or offer a new perspective when basic brainstorming fails to produce results.

4.3. Kaleidoscope brainstorming

This is an expansion to the basic brainstorming process. Before starting, the facilitator explains the process to the participants.

The participants start with a short brainstorming session where they can voice their first ideas. This is followed by a silent session where the participants note down a small number of their own ideas and guess ideas that others in the group may be thinking and writing down.

Following this first silent session, all participants are asked to briefly present in turn not only their own ideas, but also their best guesses of the ideas for others. Ideally, one participant

will present several of their own ideas as well as guesses for ideas by all other individual participants. In turn, each participant gives a similar presentation without comment or discussion from the other participants.

Following the presentations, the floor is opened to discussion. In this discussion round, participants may discuss why and how they guessed the other's ideas. Each participant can also comment on the guesses of the other participants, and expand upon, validate or clarify them. The facilitator should note the highlights and conclusions resulting from this discussion.

This first round is followed by further silent and speaking sessions, creating the kaleidoscope effect. In the further sessions, participants should be asked to increase the depth and complexity of their thinking. Specifically participants should now also think about and guess how other participants are thinking about or expanding the ideas of others. [Made by Makers, Ideas for Ideas]

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TIP: To make this process practical and feasible, the facilitator may allow participants to, leave blanks against certain participant's names, limit the number of ideas required to be guessed for each participant, allocate responsibility to each participant to think about certain named participants and; in any event; give a time limit for each stage of the activity.

4.3.1. Brainwriting

This is a variation of brainstorming where participants are asked to write down ideas on a form within a fixed time period. The ideas are then passed on to other participants, who can either write down new ideas or further develop the previous ideas. For example, 6 participants write down 3 ideas each within 5 minutes and then pass them around and then write down then next 3 ideas, inspired by the ideas of the ideas already on the paper, and the pass it on again till the round is completed. Once the documents have completed a full circle around the room, the final expanded ideas are

discussed and evaluated in the group. There are several variations of this technique, such as the use of a “Brainwriting pool” where small cards are placed in the middle of the table, which each participant can take out, combine and expand on, or use as inspiration for new ideas before putting them back in the middle of the table. Another variation is “Directed brainstorming”, where participants are asked to write down one idea, swap it randomly and add to the idea they have received.

These techniques can also be implemented electronically and participants can be asked to draw ideas, letting others interpret the drawings without any explanation from the “artists” (“Pass it on”). The participants should not communicate while they are writing or drawing. [Made by Makers, Ideas for Ideas]

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Figure 3 Example: Brainwriting



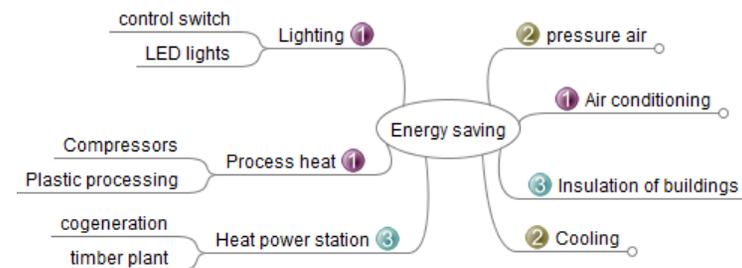
4.4. Mapping it out

This approach is a little more hands on and is especially useful when creating links or resolving complex issues. Two mapping techniques are presented in a little more detail.

4.4.1. Mind Mapping

Mind mapping can be used by groups or individuals, to generate ideas around a central topic or to develop further potential solutions.

Figure 4 Example: Mind mapping



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Mind maps “branch” out from a central topic, using connections, colours and fonts to highlight ideas, create links or relationships. Participants are encouraged to use free association to start the ideas flowing and “branch out” from the central topic, using single words or simple phrases to extend thoughts from one idea to the next. Once the initial mind map is complete, the participants can try to refine the relationships and expand upon ideas. [WikiHow (2015), How to Make a Mind Map] Generally this method is very easy to apply and can also be applied from a single person. To facilitate the exercise, a possible starting point around the central topic can be the “Five W’s and H”: Who? Why? What? Where? When? and How? [Crul et al, 2014, p.117] A variation of this process is known as “Lotus Blossom”.

4.4.2. Lotus Blossom

Instead of using a single piece of paper to create a mind map, the central topic can be described on a sheet or post-it and placed on the floor or on a wall. The participants then generate ideas on separate sheets and place them around the

central topic. Each individual idea is in turn surrounded by ideas/questions/problem areas for that specific idea, which are also surrounded by ideas/answers/solutions. To give you enough space to work, it may be necessary to copy the original ideas and place them at a distance to the central topic. At the end, move from the outside inwards to identify feasible ideas/solutions. [Made by Makers, Ideas for Ideas]

4.5. Analogies

It can be useful to alienate the problem using analogies, before these analogies are related back to the problem and the applicability and feasibility of the identified solutions is evaluated. This method needs trained participants and a skilled moderator. The problem needs to be analysed and clearly defined before it can be alienated by searching for analogies such as:

- Direct analogies (starting from some aspect of the problem i.e. waterproofing, folding, etc. one looks for comparable or analogous situations)

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- Analogies from nature (bionics, how would nature solve this problem?)
- Personal analogies (what if you were an element in the problem looking out or how would you feel if you were part of the problem?)
- Symbolic analogies (what metaphorical expressions can you find?)
- Fantasy analogies (what would happen in a fairy tale or what would a superhero do?)

[Crul et al, 2014, p.118] & [Wimmer, 2007 p.154f]

Often an analogy will include the words "... **is like** ..." [Infinite Innovations Ltd (2015)]

Example 1: Running a business is like managing a theatre production.

Solution: A theatre production is split into two halves. Do we need to split our sales team into two sections: pre-sales and after-sales?

Example 2: Changing a tyre on a car is like putting your shoes on.

Solution: You re-tie your shoelaces when you feel they are loose. Can we incorporate a sensor in the car wheel that will alert the driver if a wheel is loose?

4.6. The SCAMPER method

Checklists can be used to systematically walk through all possible changes that can be made to a product to either discover directly applicable changes or new starting points for further developments. [Crul et al, 2014, p.117] Based on the SCAMPER method, a list of triggers is proposed here:

- **S**ubstitute / replace - components, materials, processes, ...
- **C**ombine / integrate – components, assemblies, units
- **A**dapt / alter / adjust - the function, elements, processes
- **M**odify - the size, scale, shape, attributes
- **P**ut to another use - the product, function
- **E**liminate or **A**dd – components, attributes, functions

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- **Rearrange / invert-** the ordering, layout, turn it inside out, upside down, left to right

[Infinite Innovations Ltd (2015)] & [Wimmer, 2007 p.155]

TIP: The participants can continuously be asked “How can...?”, “What else ...?”, “How else ...?” until the ideas are exhausted and before moving on to the next point on the list. [Crul et al, 2014, p.117]

4.7. Back to front

Looking at a problem from back to front means, moving from the future to the present to find a possible pathway to a solution. Two specific techniques using this principle are proposed.

4.7.1. Remembrance

In this method, participants are asked to bring the problem into the past and remember it as something that has been solved. Participants should focus on how they feel now that the problem has been solved. How others now view the problem, how they are viewed by others, etc.

The participants are then asked to move their mind to the gap between when the problem used to occur and now that it has been solved. Encouraging participants to play out alternative scenarios and timelines will allow them to fill in the gap, thus “remembering” what may have happened. To define the ideas, the participants can act as trial witnesses, accounting the details of the solution as they “remember” it.

Example: A problem about reducing office smells (from trainers, cooking, etc.) exists. You think about the nice clean smell and remember how it started with a good clean-out and then continued with regular intense scrubs. You develop the idea into a high intensity office cleaning business, complete

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with steaming and dry cleaning [Made by Makers, Ideas for Ideas].

4.7.2. Cartoon storyboard

In this technique, the participants use a blank cartoon storyboard to find a pathway to achieving a goal or solving a problem. The storyboard consist of six numbered boxes on a sheet of paper. In box number 6 participants are asked to draw the goal. They should relax, and imagine themselves at the goal, think about the surroundings, the implications at that point and the implications to others. In box number 1, participants then draw the current situation or problem. Again, thinking of feelings and the most dominant features of the current situation. Once the end and start points have been defined, participants are asked to fill the remaining four boxes, generating a sequence from the present to the future.

Figure 5 Example: Cartoon storyboard using pictures



Once they have finished the storyboard, the participants are asked to identify the potential obstacles when moving from one box to the next. [Mycoted (2015), Cartoon Story Board] Participants can then evaluate, discuss and find solutions to these obstacles and even combine different storyboards.

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4.8. Patent search

A patent database can be a valuable source of new ideas. Patents are by their nature documented new ideas and can easily be viewed online through the European Patent Office (www.epo.co.at). Expired patents can, for example, serve as a useful basis for generating new ideas, while valid patents can provide useful information on the activities of competitors or offer a new approach to an existing problem. Analogies can be used to find solutions in other areas where similar problems are faced and may already have been solved. [Wimmer et al, 2004 p. 113f]

5. Refine ideas

5.1. Morphological box

Morphological analysis builds upon attribute analysis by generating alternatives for each attribute, thereby producing new possibilities or improving the ideas that have emerged during an idea generation session. These attributes are specific features, and might be components, assemblies, properties, qualities, dimensions, colour, weight, style, service efficiency or design elements of a product.

The product being considered for improvement is first analysed. A full product description is made using a list of attributes. The question then asked is: can (or have) alternatives be(en) found for the various attributes? If, for example, a certain part is made from aluminium, could it also be manufactured from a different material?

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Next, a table is drawn using these attributes as row headings. The identified variations of the attributes are written down within these rows. An entry from each row is then selected and linked which leads to different options.

Sample problem: The design of a packaging solution for ceramic products is required. Ideas have been generated and can be used to carry out a morphological analysis. The attributes of a packaging solution are packaging material, shape, colour and means of protection. In the table below the attributes are listed in the first column; in the following columns the alternative solutions of each attribute are listed. Then two possible ways of packaging are highlighted. [Rocha, 2011]

Table 6 example of a morphological box

Attribute	Alternatives			
packaging material	cardboard	bio-plastic	plastic	Paper
means of protection	compartments	pre-shaped foam	paper shred	airbag
packaging shape	square with cuts	cylindrical	square without cuts	triangular
packaging colour	various colours	natural	same as company	local colouring

Solution1 **Solution2**

5.2. Changing a key element

Using this method, existing ideas can be radically distorted or expanded to solve the problem.

Working in groups of two, participants identify five key elements in the case or in their favourite solution and eliminate, distort or enlarge one random element.

Participants should make up new ideas that benefit from the fact, that the chosen element has been eliminated (the

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element does not exist), distorted (the element is changed radically) or enlarged (the element is much bigger and its influence increases radically). Participants should not generate new ideas that just work without the missing element, or compensate for the missing, distorted element, or accommodate the enlarged element, but should try to invent a solution that really benefits from the fact, that the key element has been eliminated, distorted or enlarged.

Example: An often told example of distorting a key element, comes from when Edward De Bono was working with Citroen. It is told, that he gave them the distortion: the wheels of the car are now square. And it is also told that this was how Citroen invented their shock-absorbing hydraulic systems. [Made by Makers, Ideas for Ideas (2015)]

TIP: It may be useful to start the group off with an exercise such as improving a restaurant. The 5 key elements might be: food, atmosphere, service, hygiene, location. Groups of two can practice the technique on this exercise before addressing the solution you want to refine.

5.3. Role perspective

Participants are asked to take on different roles to get a different perspective on the ideas and spot possible pitfalls in their solutions. These roles can be fictitious, such as cartoon characters or real people (picking celebrities can help). The participants evaluate the proposed idea by continuously being asked: What this role would do, prefer, like, dislike, notice or complain about as a customer/user? What is the key element/feature of the product for this role, what makes or would make them love this solution?

Exercise: Allow small groups to pick one role each. Give them some time to find their roles by making them introduce themselves. Give them the idea and continue asking the above questions, noting the most important points before moving on to the next participant. Let them move around freely and use accessories; the more they identify with the role the better the results are going to be.

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The role could also be of the manufacturer of the product instead of the customer and the questions would change appropriately.

5.4. Using a non-user

Interviewing a non-user with no relations to the issues and products in their everyday life, can give a new perspective to the problem or proposed solution and lead it in an interesting direction. Asking people who are unaware of boundaries and challenges can sometimes help find new ways of refining the solution.

TIP: Some useful questions to non-users may be - What could be done to improve the product? Which part works particularly well, which does not? What is this product used for? How is it different to other products? Could you describe your experience in using this prototype? [Made by Makers, Ideas for Ideas (2015)]

Supporting tools can be used across all the different techniques, from the problem definition to refining ideas to facilitate the process and ultimately ensure its success [Made by Makers, Ideas for Ideas (2015)].

Five Ws and H – This technique uses basic questions: Who? Why? What? Where? When? and How? to generate prompts and act as an access point to the problem. This can be used in early problem solving to define more details to the main problem or define (sub) problems to be solved. This tool can be used in brainstorming or as a basis for mind mapping.

Humour – Keeping creativity sessions light and humorous is essential. Laughter can induce great creativity.

Modelling – Using simple modelling or building material can be inspiring. (Modelling wax, Cardboard, String, etc.)

Random pictures and materials – Printing out a lot of random pictures and allowing participants to use the pictures in the creativity session may help the process. Giving participants approximately 30 seconds per picture, they should try to see anything that reminds them of the posed problem and how it might be solved. Helpful questions may be: What activities are going on or what situations are being faced and why? This can also be done using materials from nature such as leaves, nuts, soil, rocks, etc. Laying it all out and encouraging the participants to touch it and combine it may spark creativity.

Put yourself in the user's shoes – This can be effective when designing a product for a specific customer base with specific needs: asking participants to try living the User's life for a short period of time to identify what needs arise. This can be complemented or done by researching the customers' Facebook profiles, twitter, Instagram or flickr pages.

Random word – By using a random word as a prompt and forcing the group to use it to solve the problem, the group is forced to approach it from a different angle.

Similes – Participants are asked to complete the sentence:

< *term associated with the problem* > is/was/are/were like _____.

This method can provide a large number of similes associated with the problem. This may especially be useful to identify patterns and recurring ideas.

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6. Select ideas

6.1. SlnnDesign Matrix for the evaluation of DfS ideas

The purpose of this tool is to evaluate the product improvement from individual ideas or groups of ideas that were generated during the brainstorming session(s) regarding its technical, economic, environmental, social and market feasibility.

The application of this tool allows the design team and top management of the company to decide whether a given improvement option or a group of options is to be implemented in the short, medium or long term, or if it should be discarded. In some cases, additional research may be necessary to implement an idea.

Table 7 SlnnDesign Matrix for evaluation (excerpt)

Feasibility		Impact			Robustness of the analysis
Technical	Market	Environmental	Social	Economic	

6.2. NAF - New, Appeal, Feasibility

The NAF method is a simple way of scoring / assessing ideas and potential solutions. Subjective scores out of 10 are given in the three categories: New, Appeal, and Feasibility for each idea. The scores are not tallied, but rather kept separate for each category. Assigning a score to these three categories should help overcome the “either / or” thinking pattern, helping to identify promising ideas, even if they still need further development.

New: (to the problem holder) How new is the idea to you? It may not be new to the world, you may just not have thought of it.

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Appeal: How much do you like it at a gut level? This has to be high.

Feasibility: How feasible is it to put this into practice?

[Mycoted (2015), Idea Selection (2015)]

In general, if an idea scores well in the categories “New” and/or “Appeal” but has low “Feasibility” it may be a good idea that needs more thought to overcome pitfalls (Table 3). Similarly, if the categories “New” and “Appeal” are scored low but the “Feasibility” is high, the underlying idea may not be very desirable. A rough guide on the possible different outcomes is given in the matrix below.

Table 8 summary of the possible NAF outcomes and their interpretation

The NAF matrix			
New	Appeal	Feasibility	The idea / solution ...
↓	↓	↓	<i>should not be pursued.</i>
↓	↓	↑	<i>will likely not be implemented.</i>
↓	↑	↓	<i>might be good but needs work.</i>

↓	↑	↑	<i>might already exist? if not, why?</i>
↑	↑	↑	<i>should be pursued!</i>
↑	↑	↓	<i>is good, but needs work or further ideas.</i>
↑	↓	↑	<i>might be a good part-solution or starting point.</i>
↑	↓	↓	<i>is not worth pursuing.</i>

6.3. Idea Advocate

An idea advocate is assigned to each idea. The idea advocates need to be of equal power and status. This idea advocate should have a relation to the idea. The initiator or person charged with the implementation would be ideal. The idea advocates, researches and prepares a case to present to the relevant decision makers and other idea advocates. A case is then selected or eliminated based on a discussion among the decision makers. Several rounds of presentations may be

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required if several cases are equally valued. [Mycoted (2015), Idea Selection (2015)]

6.4. Anonymous voting

After a first pre-selection of ideas (~ 5 - 9 ideas) by the moderator and the group, the ideas are ranked by the participants, in order of preference, on individual cards in silence. The cards are handed to the moderator and the votes tallied up. I.e. 5 points for first place, 4 for second etc.

The moderator can also limit the number of ideas that the participants can vote for. [Mycoted (2015), Idea Selection (2015)]

6.5. Sticking dots

A variation of the anonymous voting is a popular and quick method for determining priorities by open voting.

After ideas are placed in order and briefly outlined on a flip chart, the individuals or groups are given a set number of dots (say 5 each). The dots can be of different colours. The participants stick their dots to one or several of their preferred ideas. The maximum number of dots given to one single idea can be limited. The method can be used to select one single idea, create a ranking or identify a shortlist. [Mycoted (2015), Idea Selection (2015)]

6.1. Summary

To conclude, this module introduces different creativity techniques and methodologies to support the product development.

These methods are to be used in the step 4 New product concept of the SlnnDesign product development process. After finalizing the DfS strategy (step 03) the mentioned methods and tools can be used to define a problem, to generate ideas, to refine them and finally to select the relevant ones for defining the new product concept. Once problems are solved and ideas generated, the product

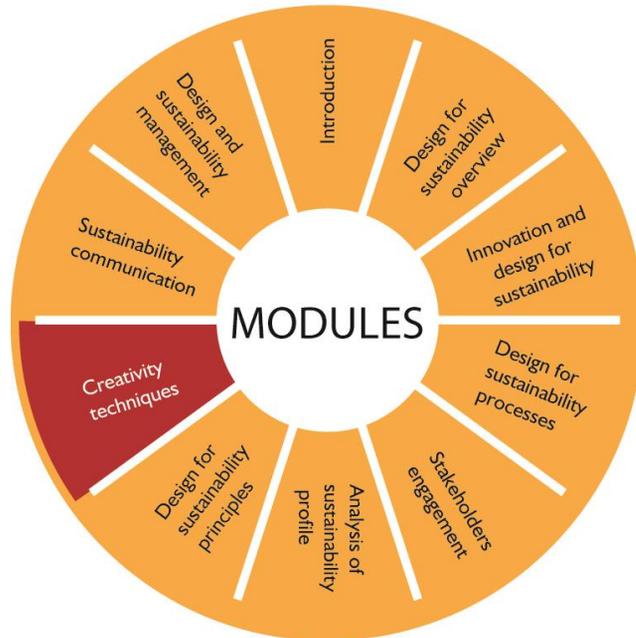
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concept can be defined and the embodiment design can start. Often this also needs further research to come up with a first design.

In this module a lot of information is given about some methodologies and their results, however for the application within a specific application, more information could be required. In the literature as well as online under: www.mycoted.com, www.mindtools.com, ideasforideas.com a lot more details are given.

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