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TOWARDS ACTIVE AND WORKING LIFE ORIENTATED LEARNING

**Teaching methods for teachers
and training providers**

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Contents

1 Introduction

This guide has been compiled as part of the EU-funded *WastED – The Export of Education of Waste Management* project. WastED is a project carried out by Turku University of Applied Sciences, SYKLI Environmental School of Finland and Haaga-Helia University of Applied Sciences. Project partners also include organisations based in Estonia and Latvia. The main goal of the project has been to develop a waste management training package based on innovation pedagogy. For further information about the project, please visit www.wasted.fi. More on innovation pedagogy can be found in publications by Turku University of Applied Sciences at loki.turkuamk.fi.

This publication is a practical guide to student centred teaching methods based on innovation pedagogy. The guide offers methods for diversifying and invigorating different teaching, training and learning situations. The authors have sought to create a resource that is both clear and accessible, and no previous knowledge of training or teaching methodologies is required. The aim of the guide is to promote the use of a wide variety of approaches in various learning and training settings.

The teaching methods found here follow the principles of innovation pedagogy relating to learning processes. The approach emphasises active experience-based learning combined with interaction and applying theoretical knowledge. Communal learning, problem-solving and processing information play a central role. All teaching and learning aims at comprehensive progress where all competences needed in working life are enhanced. (See e.g. Lehto & Penttilä 2013.)

The majority of the teaching methods discussed in this guide have been tested as part of the *WastED – The Export of Education of Waste Management* project by students at Turku University of Applied Sciences as well as other WastED partners. The testing process generated useful practical information on the different methodologies, including positive aspects and challenges. The test results have been collated under the Experiences sub-headings immediately following the guidance sections. They also include a table on the positive aspects and challenges involved with each method. The methods have primarily been gathered from online sources, a few have been developed further based on additional sources and some have been developed by TUAS students.

1.1 Six groups of teaching methods

In the guide, the methods have been categorised under six headings.

The chapter covering **discussion as a learning tool** explores the opportunities presented by discussion in the learning context. The section also sets out a series of methods that can be employed to facilitate and direct the discussion.

The section on **brainstorming methods** discusses methods that are primarily suitable for problem-solving purposes and for generating new ideas.

The argumentation-based methods chapter sets out methods designed for sharing and processing facts and expert information.

The section on **workshop-based methods** includes brainstorming, problem-solving and development approaches that aim to generate fully processed information and readily implementable solutions.

The chapter on **knowledge and process acquisition** focuses on the process of acquiring in-depth knowledge on a topic and developing genuine expertise within in.

The section on **other methods** contains a range of miscellaneous methodologies that cannot be categorised under any of the other headings.

1.2 Tips on using methods

Listed below are points that are recommended to bear in mind when putting these methods into practice. These top tips have been put together on the basis of the series of practical tests carried out as part of our project.

- Familiarise yourself fully with the chosen method and give careful consideration to implementation. Remember to set objectives and assessment of the method.
- Give the group clear and precise information on the method and make sure that everyone has understood it.
- Share the aims of your method with the group.
- Monitor the work your group is doing during the exercise and offer support wherever it may be needed.
- Set aside some time to go through the results and analyse them.
- Don't be afraid to try out various methods and, above all, don't be afraid to innovate!

1.3 Assessing assignments

Feedback and constructive criticism are essential for development. The following approaches can be used to assess work produced by students and the methods used:

- The instructor assesses work generated by the students and provides feedback.
- The students assess each other's work as part of a peer-review exercise. The instructor provides verbal or written feedback.

- The instructor or other students provide preliminary feedback, which the student can use to improve their work. The instructor assesses the completed piece of work.
- Self-assessment coupled with feedback from the instructor/other students.
- External assessment provided by an industry representative. External assessments are particularly useful if a project commissioned by a third party, such as a local company, is included as part of the training.

1.4 Teaching method summary

Method	Description	Time and approach	Group size	Level of difficulty	Level of expertise required	Page
Discussion as a learning tool • Points of view and ideas shared through discussion • Supports learning in a variety of contexts • Can be paired with other methods during task analysis						
Snapshots	Images and videos to facilitate discussion	Quick During contact hours or online	Whole or small group	Easy	Intermediate	12
Statement and question cards	Discussion is encouraged through a series of statements and questions.	Quick During contact hours or online	Whole or small group	Easy	Intermediate	13
Circle	Instructor-led discussion on a pre-determined topic	Quick During contact hours or online	Whole or small group	Easy	Intermediate	16
Idea-based methods • Methods for generating new ideas and solutions • Communication differing points of view and problem solving						
Brain-storming	Method for generating innovation and new ideas	Time-consuming During contact hours or online	Whole group or smaller groups of 1–5 persons	Intermediate	Intermediate	18
Reverse brain-storming	Generating new ideas through negative thinking	Time-consuming During contact hours or online	Whole group or smaller groups of 1–5 persons	Challenging	Intermediate	20
Idea tree	Method for generating casual ideas and perspectives	Fairly quick During contact hours or online	Whole group or smaller groups of 1–5 persons	Intermediate	Intermediate	21
8X8 method	Developing and identifying new perspectives and ideas	Time-consuming During contact hours or online	Whole group or smaller groups of 1–5 persons	Intermediate	Intermediate	23
Argumentation-based methods • Sharing in-depth information and perspectives • Presenting a series of perspectives and arguments • Collating and disseminating expert information						
Debate	Broad look at issues through juxtapositioning	Time-consuming During contact hours, advance assignments	Suitable for all group sizes	Intermediate	In-depth	26

Method	Description	Time and approach	Group size	Level of difficulty	Level of expertise required	Page
Panel discussion	Information and ideas sharing	Time-consuming During contact hours, advance assignments	Suitable for all group sizes	Intermediate	In-depth	30
Either – Or	Information sharing through argued choices and opinions	Quick During contact hours or online	Whole or small group	Easy	Intermediate	32
Workshop-styled advanced methods • Sharing, acquiring and deepening knowledge base • Information processing						
Workshop	Method for sharing expertise and information	Time-consuming Distance learning assignments and contact hours	Groups of 2–5 persons	Intermediate	In-depth	35
Learning Cafe	Developing ideas and presenting new information	Fairly quick Distance learning assignments and contact hours	Groups of 2–5 persons	Intermediate	In-depth	37
Six Thinking Hats	Method for problem solving, brainstorming and development	Time-consuming Distance learning assignments and contact hours	Small groups of 5–15 persons	Challenging	Intermediate	41
Think-Pair-Share	Knowledge acquisition method, progressing from individual tasks to group working	Time-consuming Distance learning assignments and contact hours	Groups of 2–5 persons	Intermediate	In-depth	45
Jigsaw	Sharing expertise with a group	Time-consuming Distance learning assignments and contact hours	Groups of 2–5 persons	Intermediate	In-depth	46
Evolving presentation	Amassing information on a topic by passing it from group to group	Time-consuming Distance learning assignments and contact hours	Groups of 2–5 persons	Intermediate	In-depth	49
Storyboard	Visual exploration of a topic or process	Time-consuming Distance learning assignments and contact hours	Small groups of 1–6 persons	Intermediate	Intermediate/ In-depth	51

Method	Description	Time and approach	Group size	Level of difficulty	Level of expertise required	Page
Extended workshop methods	Combining work and study	Time-consuming Distance learning assignments and contact hours	Suitable for all group sizes	Intermediate/ Demanding	Intermediate/ In-depth	53
Knowledge and process acquisition methods Acquiring in-depth knowledge and developing expertise						
Mentoring	Expertise in an industry or role	Time-consuming Distance working exercises	Small groups of 1–5 persons	Challenging	In-depth	54
Student mentoring	Role-specific expertise	Time-consuming Distance working exercises	Small groups of 1–5 persons	Challenging	In-depth	55
Bench-marking	Collating examples of best practice and case studies	Time-consuming Distance working exercises	Small groups of 1–5 persons	Intermediate	Intermediate	56
Expert review	Information and perspectives on issues requiring expertise	Time-consuming Distance working exercises	Small groups of 1–5 persons	Challenging	In-depth	57
Peer interview	Amassing knowledge and information through discussion	Time-consuming Contact session or distance working exercise	Groups of 2–5 persons	Intermediate	Intermediate/ In-depth	59
Question & Answer	Knowledge acquisition through set questions	Fairly quick Distance working exercises	Small groups of 1–5 persons	Easy	Intermediate/ In-depth	60
Excursion and Virtual excursion	Fact finding on chosen site/operations	Time-consuming	Suitable for all group sizes	Intermediate	Intermediate	61
Other methods						
Case study X	A narrative method covering a range of fictive and real case studies	Quick A contact session	Groups of 2–5 persons	Easy	Intermediate	64
SWOT analysis	Four elements model for evaluation and development	Quick During contact hours or as distance working exercise	As a personal assignment or small groups of 2–5 persons	Easy	Intermediate	66
Dog Eat Dog	Understanding operational chains and life cycles	Time-consuming During contact hours or online	Groups of 5–10 persons	Intermediate	Intermediate	68

* Distance working tasks can be discussed during contact hours or online.

2 Discussion as a learning tool

Discussion is an excellent way to share information and to identify new perspectives on a wide variety of issues. Participants in a balanced and productive discussion will learn from one another and share their personal expertise with others. In some circumstances, it may be a good idea for the discussion to be preceded by an introduction to give all participants a deeper understanding of the topic.

THE INTRODUCTION CAN BE KEPT VERY SIMPLE AND TAKE THE FORM OF:

Introduction by instructor:
• The instructor introduces the background to the topic, followed by the discussion.

Introduction by student:
• One student or a small group comprising several students familiarise themselves with the topic in advance and present a summary to the rest of the group.

Using material such as a newspaper article or video clip to promote discussion:
• All students are invited to read the article or watch a video clip, which serves as an introduction.
• The students can be provided with questions to support their own thinking process.
• The materials and questions can also be provided as a preparatory exercise.

In addition to these traditional introductions, there are a number of other excellent approaches to promoting and maintaining discussion. A selection of methods is set out in sections 2.1–2.3.

2.1 Snapshots

The snapshots method is based on problem solving. The instructor will identify or draw up a series of scenarios. In some of the scenarios, all details are correct while in others there are errors and mistakes. The students are split into small groups and asked to evaluate the scenarios, identify any errors and put forward suggestions for improvement. The responses are then discussed with the whole group. The instructor encourages the discussion through questions and provides the group with the correct answers. (Paavola 2013.)

EXAMPLE SCENARIO

Images relating to occupational health and safety: The aim is to evaluate the occupational health and safety scenario and identify suggestions for improvement.

1. The instructor will provide images relevant to occupational health and safety.

2. During contact hours, the image will be shown to the class and the health and safety implications and suggested improvements will be discussed. The discussion can also take place online. An online discussion platform can be used to share the images and submit comments.

2.2 Statement and question cards

2.2.1 Flashcards with statements

The flashcards are designed to facilitate discussion and to steer it in the required direction. It is the instructor's responsibility to select the topic for discussion and prepare a number of statements on cards. Alternatively, the instructor can ask the participants to draw up a selection of statements on a given topic. The statement flashcards can also be used to assess the participants' knowledge of a new topic.

THE FLASHCARD METHOD WORKS AS FOLLOWS:

1. Instructor identifies statements relevant to the topic.

2. To start the discussion, one of the flashcards is chosen and read out loud.
   (The participants then respond by raising a card with "Agree" or "Disagree.")

   - All or some of the participants are asked to give reasons for their opinion.

   - This will then be followed by a general discussion on the topic.

3. As the discussion naturally winds down, the next statement is introduced.
   (Lavonen, Meisalo et al.)

EXAMPLE STATEMENTS

| Producer responsibility plays an important role in waste management. | Incineration is a solution for all waste management issues. | Composting is the best way to process biowaste. |

2.2.2 Quiz /"Trivial Pursuit"

The method allows participants to address their chosen topic through a light-hearted quiz. This is a fun and easy method. The questions and answers will also generate lots of discussion.

THE QUIZ METHOD

1. The instructor selects a topic relevant to the course, such as EU waste legislation, recycling or in-house waste management plan.

2. The instructor and/ or participants put together questions on the chosen topic or the background materials provided in the spirit of Trivial Pursuit. It is important to provide the participants with enough time to draw up the questions. This can also be done as a distance exercise. The questions are written on small pieces of paper.

3. The quiz begins. All participants take turns to pick out a question and read it out loud. Others then attempt to provide the correct answer.

The quiz can be played in smaller groups or with all participants together. If you are using the quiz method, it is a good idea to decide in advance whether points will be awarded.

Experiences:
- This is a fun and straightforward teaching method.
- It offers an interesting way to learn and is ideally suited as a discussion starter and ice breaker.
- If the participants are tasked with creating their own questions, they must be provided with enough time to do so.

Benefits	Challenges
Time management (creating questions is time-consuming)	Time management (creating questions is time-consuming)
Less outspoken participants may be sidelined	Less outspoken participants may be sidelined
Participants may not find the topic interesting	Participants may not find the topic interesting

EXAMPLE SCENARIO

Topic: EU and domestic waste management legislation

The quiz is organised as an introduction to the course and allows all participants to get to grips with the topic.

1. The participants are asked to familiarise themselves with the principles of EU and domestic waste management legislation. All participants are asked to put together five questions on the topic and to submit them to the instructor by e-mail by a deadline.

2. Before the contact session, the instructor will go through the questions submitted by the participants and create the flashcards. (This can be done by printing them out as questions on sheets of A4 and cutting them into strips.)

3. Run the quiz as part of a contact session. Participants should take turns to pick questions from the pile. Remember that the emphasis here is on lightheartedness and fun. You can also have more detailed discussions during the quiz.

2.3 Circle

The circle is a discussion-based exercise combining interpersonal interaction, listening, dialogue and consensus seeking. The idea is to give all participants a chance to respond to a question or to put forward their point of view without interruption. As you are not allowed to interrupt another speaker, you will need to reserve any comments you may have on other people's points of view until your own turn. To make sure that everyone can remember the points they wish to make, participants should bring or be provided with pen and paper. (Language Centre; Verso.)

The role of the instructor is to choose a topic, prepare some introductory remarks and compile questions that will be addressed during the Circle. One of the participants can also be asked to provide an introduction or all participants can be asked to prepare the topic themselves in advance.

HOW TO CONDUCT A CIRCLE

1. To begin, participants are invited to sit closely together in a circle.
2. The instructor explains the aim of the exercise and provides an introduction speech.
3. The instructor invites the person on his/her left to speak. Participants can pass round an object, such as a pebble or a stuffed toy, to indicate whose turn it is to speak.
4. All participants are entitled to speak for as long as they are holding the object. When they have finished, participants should be asked to pass the object on to the next person. Language Centre; Verso.)

When you have completed the full circle, the instructor can provide another introduction to a new topic and pass the object on again. (Language Centre; Verso.) For the subsequent rounds, you can change the direction of the turn taking or ask another participant to begin.

The most important thing to bear in mind is that when one member of the circle is speaking, others must listen – the instructor has a particularly important role to play here. If anyone speaks out of turn or people begin whispering to one another, the instructor should address this immediately. You can choose to open the floor to comments at the end but during the exercise, the rules must be adhered to. (Language Centre.)

Experiences:

- If you are intending to tackle a more challenging topic, it is a good idea to ask the participants to gather information on it in advance or familiarise themselves with materials provided by the instructor.
- Ideally suited to people with expertise in the area.

Benefits	Challenges
Solutions are identified during discussion	Lack of prior knowledge → advance preparation required
Flexible approach	
No limitations – can turn into a very complex and advanced exercise	Loud versus quiet → the instructor is required to encourage the quieter members of the group to take part.
Everyone can learn	
Also suited for online distance learning uses	

EXAMPLE SCENARIO

The students are asked to familiarise themselves with the waste management policy of a company of their choice, either individually or in small groups.

- The instructor will provide an introduction to the policy and its implications.
  - The students will give a brief presentation on the company they have chosen.
  - This is followed by a brief introduction to the company's local waste management system, including basic organisation and any special features.

- During the following rounds, the waste management policy will be analysed section by section. Each student will be invited to discuss their own policy.
  - Waste types
  - Waste volumes
  - Waste collection points
  - Any negative remarks and areas requiring further development
  - Positive remarks

- Finally, the students will be asked to put forward suggestions for how their chosen waste management plan could be improved as a written exercise. The students can make use of observations and working practices discussed in the Circle.

3 Idea-based methods

All brainstorming methods have a common objective: to identify new ideas and perspectives on the topic under discussion. The aim is to find a solution to a problem or to develop new methods and actions.

3.1 Brainstorming

The purpose of brainstorming is to produce a large number of innovative ideas and select the best ones for implementation. Brainstorming is particularly useful for problem solving purposes. (Innovillage 2013.) During a brainstorming ex-

ercise, participants are not permitted to engage in negative feedback or dismiss any ideas put forward outright. Dismissive comments such as "that has already been done", "that will never work" or "not for me" severely hinder the process. All ideas should be recorded and can be finessed later to ensure that they are feasible. (Innovillage 2013a; Lavonen, Meisalo et al.; MindTools.com 2013a.) Brainstorming can be used to tackle all types of scenarios from a single clearly-defined issue to a larger and more complex subject.

HOW TO BRAINSTORM – THE STEPS

1. Introducing the concept
   - The instructor first introduces the participants to the basic principle and rules of brainstorming. Group can begin with a brief trial round if the participants are not already familiar with the concept of brainstorming.

2. The problem – definition and scope:
   - In keeping with the chosen topic, instructor should now set and define a problem (with participants). The objective of the session is to identify solutions to this problem. It is important at this stage to ensure that all participants have clearly understood the purpose of the brainstorming session.

3. Brainstorming:
   - During the brainstorming phase, all participants are invited to freely contribute their ideas. Participants are not required to argue the case for their ideas and should not be critiqued or evaluated in any way during this phase. However, positive comments can be made at any time.
   - The brainstorming phase can be carried out in a number of ways:
     – As a single group or series of smaller groups, with one person recording the ideas.
     – As an individual exercise followed by a group session, during which the ideas are discussed jointly.
     – Participants can write their ideas down on Post-It notes and display them on the wall.
     – By making use of distance working resources such as a discussion forum available on your institution's own learning platform or online generally.

4. Evaluation and selection:
   - In this phase, the participants will be invited to critically appraise the ideas generated.
   - The best ideas can be selected for immediate implementation or further development. (Innovillage 2013a; MindTools.com 2013a.)

SAMPLE TOPICS FOR BRAINSTORMING

How to increase recycling rates among householders.

Optimising waste collections in urban/rural areas.

3.2 Reverse brainstorming

Negative brainstorming is similar to regular brainstorming but reverses the concept. For example, "How do I solve this problem?" becomes "How can I create this problem?" or "How do I make this problem worse?" "How can I achieve this outcome?" becomes "How can I achieve the opposite outcome?"

HOW TO REVERSE BRAINSTORM

1. The problem is clearly formulated as a question and reversed.

2. Brainstorming: As with regular brainstorming, during the reverse brainstorming phase, participants are asked to generate ideas to solve the reverse problem.

3. The ideas are developed, with the best ones chosen for further consideration.

4. Finally, the ideas are reversed to present solutions to the original problems. (Karreinen 2012; MindTools.com 2013b.)

SAMPLE TOPICS FOR BRAINSTORMING

How can we deliver a high-quality recycling service in X? →
How can we make sure that the recycling service at X definitely will not work?

How can we increase customer satisfaction levels? →
How can we reduce customer satisfaction?

3.3 Idea tree

The purpose of the idea tree is to allow the participants to visualise and order their ideas during the brainstorming session. Sorting and organising the ideas at the brainstorming phase helps participants to develop a clearer understanding of the different concepts and perspectives involved. (CDE.)

The idea tree works best when the ideas are displayed in the shape of a tree. The tree has several branches that allow the participants to cover a number of topics simultaneously or address a single topic from several perspectives simultaneously. All participants will be asked to write down their ideas on a piece of paper, such as a Post-It note, and place it on the branch where they think it belongs. Once all the ideas are written down, the group can go through them together. (CDE.) The participants can also be split into a number of smaller groups for this purpose of this exercise, with each group building their own tree. Images 1 & 2 show brainstorming trees created during a WastED student project and a stakeholder pilot project.
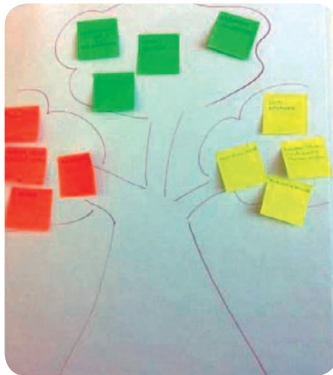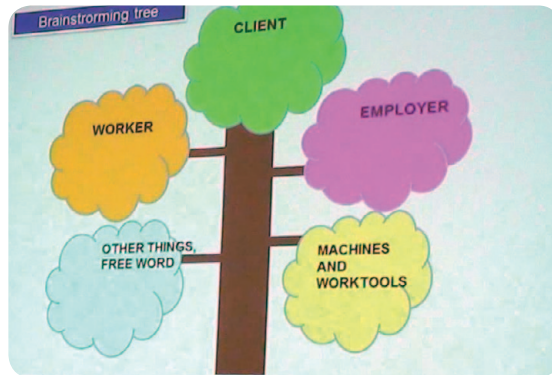

IMAGE 1. Idea tree.

IMAGE 2. Online idea tree.

Experiences:
- The topic and sub-topics should be chosen with reference to the group's level of relevant knowledge.
  - If you are using this method as an introduction, it is advisable to choose an easy and accessible topic.
- It is a good idea to provide the participants with some questions and possible angles (i.e. the "branches" in advance as this will help them to develop a broader understanding of the topic and allows them to focus on the actual problems.
- You should also point out that some ideas may be relevant for a number of different "branches".
- Always include a separate branch for "miscellaneous" entries to avoid restricting the scope of the topic unnecessarily.
- Use a different colour for each branch, including matching Post-It's and pens, to keep it visually clear.
- If the participants are struggling to engage with the exercise, the supervisor should encourage discussion with additional questions.
- Ensure you set aside enough time for both the brainstorming and evaluation. We suggest 20 minutes each.

Benefits	Challenges
A quick, easy and straightforward way to generate ideas	Passive participants
Playful and highly visual	Superficial approach
Excellent demonstration of participants' level of know-how	Chosen perspectives and questions may restrict the scope of the exercise
Generates clearer understanding of the big picture	Ensuring that more reserved participants are included
Promotes discussion	Lack of theoretical information
Individual freedom of expression/ideas generated by group	
Suitable for nearly all topics	

EXAMPLE SCENARIO

Main topic:
Promoting recycling – how can the stakeholders promote higher recycling rates?

Branches:
Consumers, businesses, waste management companies, education, advice, etc.

3.4 8x8 method

IMAGE 3. Results of an 8X8 session.

The 8x8 is an idea generation technique that resembles mindmapping but is more disciplined. In contrast with mindmapping that involves unlimited topics and perspectives, in the 8x8 method these are limited to eight. The 8x8 is designed to identify all relevant issues, possibilities and challenges relating to the main topic, whether this involves developing new ideas or problem solving. Figure 1 provides a model for the method.

HOW 8X8 WORKS

1. Firstly, instructor or/and the participants define the main topic.

2. Then instructor or/and the participants identify eight closely linked perspectives or problems.

3. Under each of these sub-topics, the participants add eight further ideas that are relevant to the topic, contribute to the topic or offer a solution to the problem. (Lavonen, Meisalo & al. B; Tervakari & Silius 2005, 5–6.)
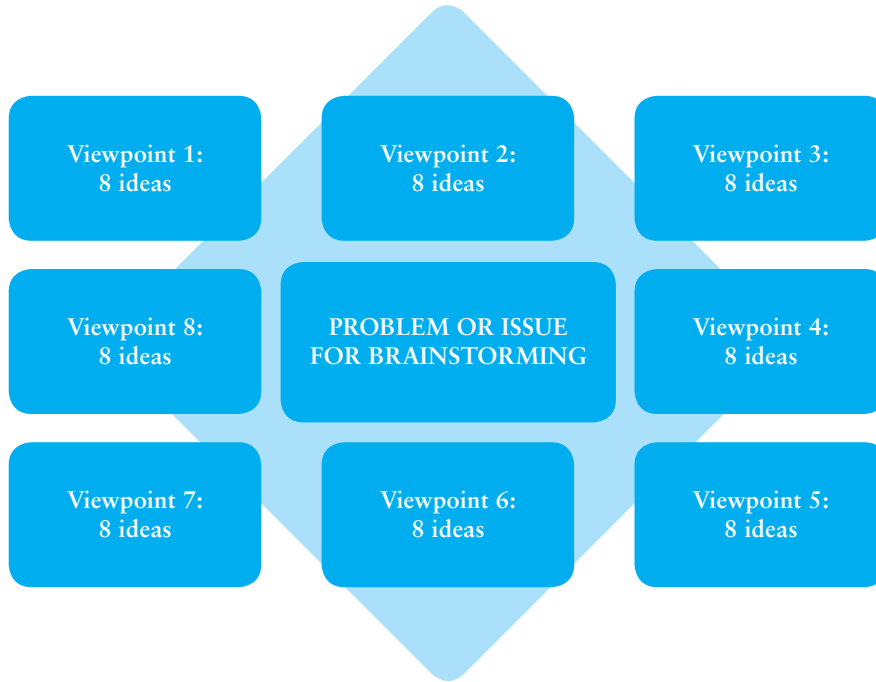
FIGURE 1. An 8X8 grid.

Experiences:
- Make sure that you manage your time carefully. Sample timeline:
  – Completing grid and small group discussions, 30–40 mins.
  – Discussion with all participants and evaluating grid, 20–30 mins.

- If the supervisor has chosen not to prepare the sub-topics in advance, it is important to allow enough time for participants to generate them.
  – Alternatively, the supervisor can prepare some of the sub-topics in advance and ask the participants to complete the rest.
- The smaller groups should ideally have between three and four members.

Benefits	Challenges
A straightforward method	Differing opinions
Easy to tailor the exercise to your needs, very accessible	Challenging terminology
	Not enough comments to cover all topics
Offers plenty of food for thought	Post-discussion evaluation needed
More opinions generated as a group	Time intensive
Diverse	Confusing, can be chaotic due to lack of structure
Opportunity to consider wide variety of perspectives	
Splitting a larger concept into smaller constituent parts	Recycling easy and existing solutions, instead of generating something new
Suitable for a wide variety of groups	Limited time
Will generate new development ideas	Participants not sufficiently familiar with topic.
Sufficient sub-sections to maintain broad scope	

EXAMPLE SCENARIO 1

Topic:
How to make your life more environmentally sustainable.

Areas for consideration:
Hobbies, property, work/study, shopping, transport, travel, food, etc.

EXAMPLE SCENARIO 2

Topic:
Waste management in X (country) now and in the future: How to establish optimal waste management service in X (country)?

Areas for consideration:
What changes or actions are required from the following: national bodies, private stakeholders, local authorities, regional bodies, third sector, consumers, education, and legislature?

4 Argumentation-based methods

The purpose of argumentation is to influence listeners and their opinions and beliefs. Argumentation skills are needed in a variety of settings including presentations and other forms of verbal address that aim to influence the audience as well as debates and discussions relating in a decision-making context. In addition to information sharing, argumentation can also be used to find solutions to problems. (Language Centre.)

IMAGE 4. Students are testing debating method.

4.1 Debate

A debate comprises the following elements:

- At least two opposing viewpoints.
- Both parties use facts to argue their case.
- Both parties put forward arguments and counterarguments.
- The objective is to achieve consensus. (Heikkilä & Rönkkö 2006.)
- It is important to bear in mind that debating is not arguing. The participants must be able to provide evidence to support the arguments they put forward and all arguments must be based on fact. (Heikkilä & Rönkkö 2006.)

THE FOLLOWING PROVIDES AN OUTLINE OF HOW A DEBATE PROCEED:

1. First step is to choose a topic, also known as a motion, the debaters for each side and a Chair.

    The number of debaters on each side can vary from just one to several. It is essential to ensure that the opposing sides are evenly balanced, i.e. if the opposition consists of an expert in the relevant field, the proposition may need more members.

2. Collating arguments

    In small groups participants discuss their points of view and then collate and develop a series of arguments. This phase can also be done as a distance learning assignment to avoid wasting time on fact finding and drawing up arguments during contact hours.

3. Speeches

    When both groups are ready or you have run out of time (you could set a time limit for preparation), the participants will be asked to outline their position on the motion. It is important to remind all participants that they must not interrupt the speeches. There will be time for contributions from the floor later on. You can also set a time limit, of perhaps one minute, on the speeches.

4. Debate

    After both sides have outlined their points of view, the objective is to reach consensus through discussion and argumentation. The role of the Chair is to promote debate, draw attention to any inappropriate comments or excessively long speeches. Finally, the group is invited to discuss the outcome, share their experiences of the debate and go through the key learning outcomes. Typically, each debate should last 10–20 minutes. (Heikkilä & Rönkkö 2006.)

Experiences:

- According to the participants, debating is an interesting teaching method that allows you to learn new things and update your knowledge and opinions.
- When you are planning the debate, it is a good idea to give some thought to how you can involve quieter participants.
- Participant-led fact-finding is a key to the method's success.
- The debate allows the audience to gain a broad understanding of the chosen topic.
- You may wish to consider filming the debate and viewing it afterwards. The video recording would give the debaters the opportunity to gain a broader understanding of the topic and to learn from their own performance.
- The Chair plays a key role and is required to drive the debate and even out the debate.
- It was felt that between two and three participants per topic was adequate.
- Two debates took approximately 90 minutes, including a final discussion.
- It is essential that all participants familiarise themselves with the topic and formulate their own opinions before the debate.

Benefits	Challenges
New points of view → learning	Overly passive or active participants
Sharing factual information	Scope not sufficiently defined → superficial debate
Listeners are also learning	Unsuitable for large groups
Verbal and interpersonal skills	Potential for conflict (supervisor or Chair has key role to play)
Improved argumentation skills	
Opportunity to present new and different perspectives	
Can be run as a distance learning assignment using video conferencing.	

4.2 Panel discussion

Panel discussions differ from debates in that the objective is not to achieve consensus but to share information, express a range of viewpoints and opinions and identify areas for development. (University of Jyväskylä.)

The discussion will be livelier and the exercise more successful if the participants represent different viewpoints. If the teams or participants do not naturally hold a range of differing viewpoints, instructor could opt for a role play exercise by assigning a choice of opinions or roles to the participants. Possible roles include a civil servant in an environmental authority or a politician.

In addition to the panellists or teams, you also need a Chair. The role of the Chair is to:

• Draw up questions on a choice of topics, which can be put to the panellists or the audience.
• Provide an introduction to the chosen topic, including the reasons for choosing it.
• Introduce the panellists and their backgrounds.
• Monitor the progress and encourage the debate wherever needed.
• Draw up a summary of the discussion. (University of Jyväskylä; Kepa ry.)

The discussion can be conducted informally, meaning that the Chair is not required to invite individual panel members to speak; their role is limited to ensuring that all participants have the opportunity to express themselves. However, if the discussion is not balanced, the Chair can step in and invite panel members to speak in turn. (University of Jyväskylä.)

Following the Chair's introductory remarks, the panellists can give their own brief opening statements; however, this is not compulsory. The opening statement should not be a lengthy monologue; the idea is to make it short and to the point. You can set a time limit for how long one person can speak at a time. It is the task of the Chair to ensure that it is observed, using an hourglass or a timer. What matters is that all panel members express their ideas clearly and persuasively and carefully listen to and value the opinions of others. (University of Jyväskylä; Kepa ry.)

If you would like to liven up the discussion, you can ask the panellists to express their opinions by voting, standing up, drawing or by finding their place on an imaginary continuum that represents the range of opinions. Members of the audience can submit questions verbally or in writing to the Chair who then selects the questions that will be asked. (Kepa ry.) If you choose not to take questions from the audience during the discussion, you can have a Question & Answer session after panel discussion has concluded, which is an opportunity for audience members to comment on what has been discussed and ask any questions they may have. (University of Jyväskylä.)

Finally, the Chair will summarise the discussion and present the outcomes. (Kepa ry; University of Jyväskylä.) At a subsequent training session, the group can be encouraged to reflect on the panel discussion and the outcomes.

It is a good idea to have the participants sit in a semicircle in front of the audience, so that the participants can make eye contact with one another (Image 7). Eye contact facilitates discussion. (Kepa ry.) The panel should ideally comprise between two and six members in addition to the Chair, to allow for balanced discussion over a relatively short period of time. (University of Jyväskylä.)
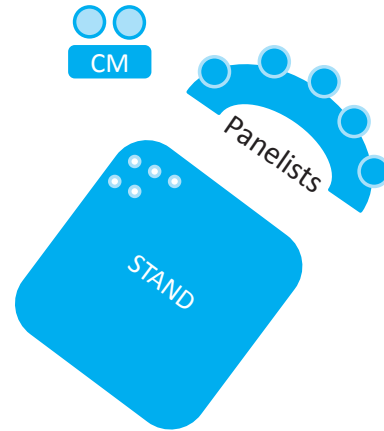

FIGURE 2. Examples of panel discussion.

EXAMPLE SCENARIO 1
Topic: How can we achieve EU waste management objectives?

Assign roles to the panel members that they can identify with. Possible roles include a civil servant at an environmental agency, consumer, waste management business, company responsible for waste generation, etc.

EXAMPLE SCENARIO 2
Topic: Waste management system in own local authority/country.

Invite waste management sector stakeholders, environmental activists specialising in waste and politicians to join the panel.

Consider making the discussion a public event and promoting it through local media outlets. This allows local residents and other interested parties to hear more about the topic from the experts and political decision makers.

The participants can be given the task of formulating the themes for the discussion, drawing up questions, choosing a Chair from among the group and delegating other tasks relating to the running of the event.

4.3 Either – Or

The Either – Or is a straightforward method and lends itself to a wide variety of settings and can be used by larger groups. It involves comparisons between two completely opposite or parallel concepts. The participants must choose their opinions and be able to give their reasons for them. (Kauppinen 2013.)

To begin, you first choose your topic pairs. The pairs must be clearly different, such as hydro-power/nuclear power, composting/incineration, cloth bags/baskets, etc. However, it is not necessary to create extreme opposites such as good/bad, the pairs can also be parallel concepts such as upcycling/re-using. (Kauppinen 2013.)

It is important that there is enough space for the participants to move around freely. You need to create two "goals" at opposite ends of the space, each representing one of the options (Figure 3). The supervisor will read out the pairs one by one and the participants then choose which side to take. After they have made their choices, the instructor asks a random selection of the participants to give the reasons for their choice. The aim is not to identify right and wrong answers but to tease out the thought processes behind the choices. The number of pairs you will need depends on your context. If you are using the exercise as an introduction to a new topic, between 5 and 10 pairs could be sufficient, while 10 to 15 pairs may be needed to fully discuss a topic using this method. (Kauppinen 2013.)

There is a variation to this method that is suitable for use in smaller groups as it is more complicated than the original Either – Or concept. Instead of two opposites, the idea is to form a continuum, the ends of which designate the most extreme ends of the spectrum. A neutral zone should be established in the middle of the continuum. For this variant of the exercise, it is recommended that you choose opposing concepts that are markedly different. After the options have been announced, participants should take their places along the continuum according to their views. When everyone has chosen their spot, the supervisor should ask a random selection of participants to explain their choices (Kauppinen 2013.).
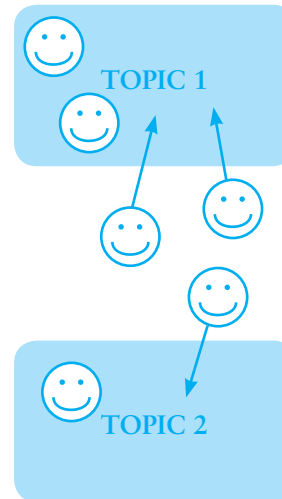

FIGURE 3. *Select opposing pairs pairs – participants choose their sides – discussion (Kauppinen 2013).*

THE WASTE MANAGEMENT SECTOR NEEDS TO BE MORE EFFICIENT AND MORE TIGHTLY REGULATED.

THE WASTE MANAGEMENT SECTOR IS IN GOOD SHAPE.

5 Workshop-styled advanced methods

Workshop methods place an emphasis on information sharing and collection. The methods allow you to explore a large topic, including a variety of perspectives and different sub-topics.

IMAGE 5. Time for team work!

5.1 Workshop

Workshops are a communal teaching method that invites students to work together in small groups (University of Exeter). Workshops can be run in a number of different ways. Below, we discuss one possible approach.

THE METHOD IS AS FOLLOWS:

1. The topic is split into themes, perspectives and sub-topics.

2. The group is split into smaller groups and assign each group with a perspective or topic that is related to the broader topic of the workshop.

3. Instructor provides clear goals to each of the small groups and allows them sufficient time to reflect on their perspective or topic. Instructor can also invite the groups to make use of written or online resources.

4. Each group will put together a presentation that allows the other participants to gain a broad understanding of their perspective or topic. The length of the presentation should be set in advance.

5. When the groups have finished or the time limit has been reached, the entire group comes together to discuss the outcomes. Each small group is invited to give the presentation they have prepared; the topics are collated and then discussed by the group as a whole.
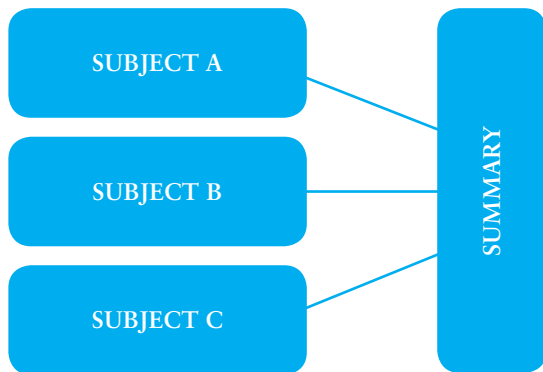
FIGURE 4. Workshop.

The workshop group exercises can also be prepared in advance as a distance working exercise based on the supervisor's instructions. This will leave more time during the contact session for the presentations and discussion. The additional benefit of conducting the workshop partly as a distance working exercise is that it allows the groups more time for research and preparing the presentations.

EXAMPLE SCENARIO

Topic: Waste management → Themes: Legislation, technologies and roles and responsibilities.

1. The participants form three groups. One of the above themes are allocated to each group.

2. Give the groups time to research their theme. Participants can make use of online resources.

3. The small groups present their work to each other. After the presentations, the themes are collated to comprise waste management as a whole.

5.2 Learning café

The Learning café is a simple workshop method designed to identify solutions to problems and issues. The supervisor is required to set the objectives and put together questions, themes and perspectives for the participants in advance. (Innovillage 2013b.)
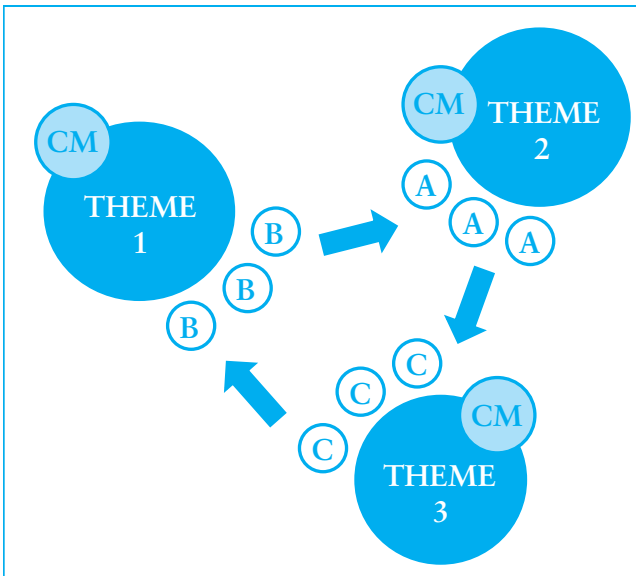

FIGURE 5. *An illustration of the Learning café method.*

Themes 1, 2 and 3 denote tables that have been assigned their own topics.

Each table is allocated with a Chair (C) who remains at the same table throughout the rounds.

The role of the Chair is to present the topic to the smaller groups, take part in brainstorming and collate the ideas.

Three small groups A, B and C, rotate around the table and reflect on the themes with the Chair for a pre-determined period of time.

THE METHOD WORKS AS FOLLOWS (FIGURE 5):

1. Tables are set up to match the number of perspectives/themes used. All tables are provided with large sheets of paper, felt tips and Post-It notes. Tables are also included with a sheet of paper displaying the theme.

2. The instructor starts by explaining the purpose of the Learning café exercise, the main topic and the aims, and provide any instructions that may be needed.
   - The aim of the Learning café method is to generate new ideas, thoughts, perspectives and proposals and to generate fresh factual information.

3. A Chair should be appointed for each table and the remaining participants divided into enough groups to match the number of themes and perspectives.
   - The Chairs and groups should now take their places at the tables. The Chairs present the dedicated theme at their tables and the groups reflect on them and attempt to generate new ideas. The supervisor circulates in the room and, if necessary, can step in to help get the discussion started.

4. When the agreed time has elapsed, all groups change tables. The Chairs remain seated and present their table's theme and the previous group's ideas to the new group.

5. Finally, the new ideas are evaluated in joint discussion while the Chairs provide a brief overview of the ideas put forward at their tables. (Innovillage 2013b.)

Experiences:

- A moderator and one Chair per table are required for this exercise.
  - The Chairs have an important role in collating the information in a logical format and passing on the ideas generated by the previous group to allow the new group to avoid overlapping.
  - The supervisor can take the role of the moderator. The moderator introduces the task and notifies participants when it is time to swap tables.
- When making notes, it is a good idea to make sure that they are as visual as possible with plenty of colour. This will make the end result much clearer.
- The small groups should each have three to four members.
- In the test exercise there were four tables, with 20 minutes spent at each table. The exercise concluded with a join debriefing session.

Benefits	Challenges
Includes both theory and practice	Too much information
A broad and in-depth approach	Competitive spirit
Highly effective team working	Groups may lose interest or become tired if there are too many tables
Learner-led learning	
Suitable for all target audiences	Collating the thoughts and ideas is difficult without a Chair
Highly visual	Digression (the Chair is responsible for ensuring that all groups stay focused on the topic!)

EXAMPLE SCENARIO

The Learning café method is used at an event with 16 members of staff from organisation X, comprising both employees and members of senior management team. A period of 80 minutes has been set aside for the exercise.

Improving waste management at X, sub-topics:
– Waste prevention
– Improving recycling arrangements
– Raising awareness and commitment among staff and senior management.

HOW IT HAPPENS

1. A total of three tables are set up, each equipped with large sheets of paper, felt tip pens and Post It notes. The tables are included with a sheet of paper displaying the theme.

2. The instructor explains the learning café concept and objectives and provides instructions to the participants.
   – The purpose of the exercise is to improve waste management arrangements within the organisation and to engage with both the staff and senior management.
   – The aim is to generate new ideas and suggestions for improving the waste management arrangements. A further aim is to motivate both staff and senior management to take part.

3. A Chair is appointed for each table, with the remaining 13 participants divided into three smaller groups.
   – The Chairs and groups should now take their places at the tables. The Chairs present the dedicated theme at their tables and the groups reflect on them and attempt to generate new ideas. The supervisor circulates in the room and, if necessary, can step in to help get the discussion started.

4. One full round, including time for the transitions, takes about 50 minutes.
   – A period of 15 minutes is dedicated to the first table, after which all groups move.
   – At the second and third tables, five minutes have been set aside for an introduction by the Chair and 15 minutes for the exploration of the topic.

5. Finally, there is a de-briefing session during which the Chairs present the ideas put forward at their tables. This session is conducted by the instructor and will take some 30 minutes.

5.3 Six Thinking Hats

The Six Thinking Hats method was developed by Edward de Bono. The aim is to improve the effectiveness of joint working, but individuals can also use it as a decision-making support tool. The aim is to identify a variety of different perspectives on a single topic and to explore them fully. The hat method is designed to help you broaden your thinking and expand your views. (Innovillage 2013d.)

In the Six Thinking Hats method, colourful hats are used to denote different ways of thinking. The participants try to adopt the role and thinking process relating to the hat they have been assigned. Expressing a variety of opinions and ideas is usually easier through a character. The ways of thinking are set out in Table 1. (Hämäläinen 1, 3.)

TABLE 1. The Six Thinking Hats methods – the perspectives (Hämäläinen 1–2, Innovillage 2013d).

Colour		Way of thinking	Useful questions
White		Neutral Objective fact	What information is available? What information is needed?
Red		Emotion, intuition, hunches Can express opinions without factual basis	How do I feel about this?
Black		Critically-minded and cautious Attempts to identify risks and problems No emotional arguments	What are benefits and drawbacks of this proposal? What do I need to take into consideration?
Yellow		Positive and constructive attitude Considers the benefits to each solution No emotional arguments	What are the benefits? How can we achieve our goals?
Green		Brainstorming hat Creative and innovative Puts forward new ideas and possibilities	What other options and ideas are there? Could we do this differently?
Blue		Usually a leader Observes and forward plans the group's activities Provides summaries and conclusions	How do we approach this?

The hats can be real or imaginary. You can use sheets of coloured paper, scarves or felt tip pens to represent the different ways of thinking. This allows you to see which ways of thinking are being used at the moment and to spot someone becoming stuck in a specific role. (Hämäläinen, 3; Innovillage 2013d.)

There is no set order for wearing the hats but if you are doing a problem solving exercise, you may want to wear the hats in the following order:
1. White: Find out information about topic or problem.
2. Green: Brainstorming – generate new ideas
3. Yellow and black: Evaluate the different alternatives
4. Red: How do these alternatives feel?
5. Blue: How should we proceed? (Hämäläinen, 3.)

There are a number of ways to carry out the Six Thinking Hats exercise:
• The hats are passed from one member of the group to another and the participants take turns to put forward their ideas. One of the participants records all ideas and comments.
• The participants get to choose one of the hats placed in the middle of the circle depending on which thinking style they would like to try out.

The exercise takes place online and the hat colours change weekly. The participants are required to contribute to the online discussion that is steered by the relevant hat colour.

The hats can be allocated in a number of ways:
1. Everyone in the group wears the same colour hat at the same time (parallel thinking).
2. Everyone in the group wears a different colour hat.
3. Mixed colours (some participants wear the same colour hat while others wear different colour hats). (Innovillage 2013d.)

Experiences:
• It is a good idea for the hats to be actual physical objects, i.e. a sheet of paper, a hat, a soft toy or a ball.
• You should set aside plenty of time for this exercise, approximately two hours were set aside for the trial run. Alternatively, set a maximum time period the hats can be worn for.
• It is advisable to go through the order of the hats in advance to make the most of the exercise.
• You do not need to use all the hats.
• The instructor needs to make a clear distinction between informal discussion and opportunities for participants to speak without interruption. It may take some time to get participants to express their views without interruption but they do allow for clear and logical progression.

Benefits	Challenges
Everyone has a chance to have their opinion heard	The topic is too broad or unfamiliar and the task is not clear
The hats bring a bit of extra colour	The hats get mixed up (no longer provide the points of view)
Logical progression	

EXAMPLE SCENARIO 1

Brainstorming ideas for an event, possibly with a recycling theme: The aim is to generate ideas for campaigns, performances and other activities. Even the most off-the-wall ideas are welcome.

1. The instructor introduces the topic and the objectives. The instructor then provides the instructions and introduces the hats.

2. The group choose a secretary who will make a note of all ideas and comments.

3. The participants form a circle to ensure that everyone can see and hear each other.

4. The hats are passed around the group one colour at a time to ensure that everyone has time to contribute.

   – The white hat begins: What are the practicalities? *When, where, etc?*

   – The red hat: What kinds of responses or expectations does this event evoke? *Beardy weirdies, chilled out day...*

   – The green hat: brainstorming – the wilder the better. What could the event look like? *Concerts, arts workshops...* It is a good idea to dedicate more time to the green hat round than the others.

   – The black hat: critical evaluation of the ideas put forward and the event as a whole. *Not everyone enjoys loud background music, what if it rains...*

   – The yellow hat: a positive approach to all the ideas put forward and the event as a whole. What are the benefits of this? *You inspire people, the arts workshops are a great way to...*

5. Now, all the ideas are done trough and observations written down by the secretary. People responsible for organising the event analyse the results and use them to guide the event planning process.

EXAMPLE SCENARIO 2

Occupational health and safety. The participants familiarise themselves with their organisation's occupational health and safety arrangements in advance. During a contact session their observations are analysed using the Six Thinking Hats method:

All participants form a circle to ensure that everyone can see and hear each other. The hats are passed around as follows:

1. White: The participants share their positive and negative observations regarding occupational health and safety at their organisation

2. Green: Brainstorming: How can we address any shortcomings?

3. Yellow and black: Evaluate the feasibility of the ideas put forward during the brainstorming session.

4. Red: How do you feel about these options?

5. Blue: Draw up a summary on the topic and put forward proposals on how to improve occupational health and safety within the organisation.

4.4 Think-Pair-Share

Think-Pair-Share is a three-step method that encourages cooperation between participants. The method is designed to generate discussion on a selected topic. As the method is made up of three steps, all participants must make a contribution. (Serc at Carleton College.)

1. THINK. The instructor puts forward a question that is relevant to a topic that has recently been covered at a lecture, introduces a completely new topic or presents an introduction that contains an exercise. Each participant takes a moment to think about the answer.

FIGURE 6. Think – working independently.

2. PAIR. The participants are split into small groups of two or three. They now share their ideas with the smaller group and continue to discuss the topic and answer further.

FIGURE 7. Pair – working in groups.

3. SHARE. Some or all of the groups present their answers. The whole group discuss the topic. (Serc at Carleton College.)
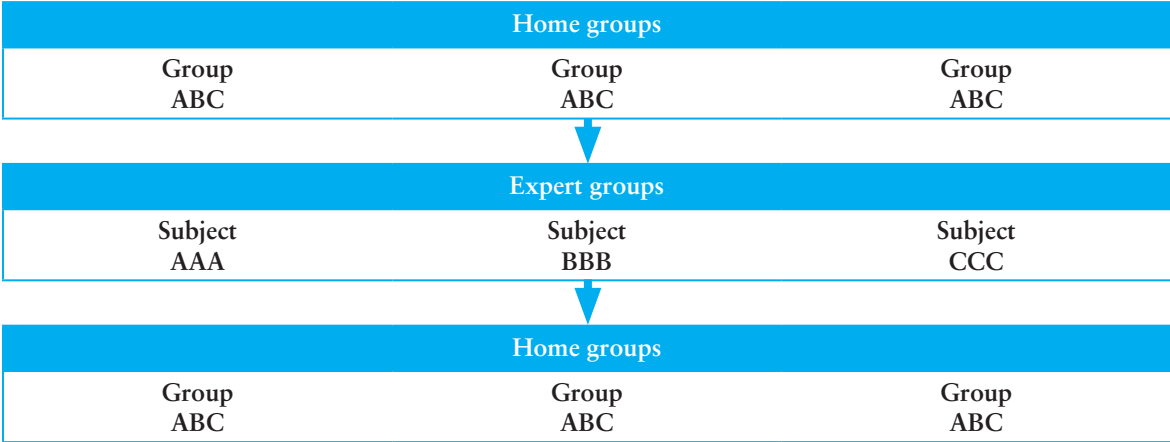
FIGURE 8. Share – cooperation.

5.5 Jigsaw

The Jigsaw method is a joint working method that promotes a deeper understanding of the topics discussed through discussion and information gathering. The benefit of the Jigsaw method is that it requires active participation from all those involved. (Innovillage 2013e.)

The Jigsaw method is set out in Table 2. Firstly, the topic and the different perspectives or sub-topics are introduced. After the introduction, the group is split into smaller groups that serve as a "home" group. The participants share the perspectives and sub-topics allocated to them with the members of their "home" group. As everyone has chosen their own sub-group, all those with the same sub-group form an "expert group". The idea behind the expert groups is to turn every "home" group member into an expert in their own sub-topic. (Innovillage 2013e; Aronson 2013.)

Once the expert groups have familiarised themselves with their topics, using the materials provided to them or by searching for information independently, they put together an information pack. The experts then return to their home groups to cover their topic with the other members. The experts introduce their specialist topic and the other members can ask any questions they may have. The home group then discusses the original task set for them and collates the information contributed by the experts into a single package. (Innovillage 2013e; Aronson 2013.)

TABLE 2. Home groups – expert groups – home groups.

Home groups		
Group ABC	Group ABC	Group ABC

Expert groups		
Subject AAA	Subject BBB	Subject CCC

Home groups		
Group ABC	Group ABC	Group ABC

EXAMPLE SCENARIO 1

Main topic: Utilising domestic waste

Expert group topics:
– Group A: Energy
– Group B: Recycling
– Group C: Composting and digestion

When the expert groups have familiarised themselves with their specialist topic and decided which fractions would be most suitable for their technique, they return to their home groups and draw up summaries of all the techniques.

The summaries might include a comparison of the utilisation techniques or an analysis of whether certain fractions lend themselves to utilisation with more than one technique.

EXAMPLE SCENARIO 2

Main topic: Waste technologies

Expert group topics: One waste type per group

The participants convene as expert groups to gather information on the technologies suitable for their waste type. Finally, the experts return to their home groups and draw up a summary.

5.6 Evolving presentation

The Evolving presentation method is similar to the Jigsaw method. The difference is that in the Evolving presentation, the small groups remain the same, while the topics are circulated.

In normal group work, each small group would only familiarise themselves closely with their own topic, which they will then present to the other small groups or return to the instructor for evaluation. In the Evolving presentation, each group has the opportunity to develop a deeper understanding of all the topics. (Rajala 2013.)

THE EVOLVING PRESENTATION WORKS AS FOLLOWS (TABLE 3):

1. The instructor chooses three topics to be explored in small groups.

2. The participants are divided into three small groups and each group is presented with one topic.

3. The groups gather background information and source material on the topic. At this stage, they are not preparing a visual presentation.

4. At the next stage, the topics are circulated and each group is presented with a new topic. The small groups now prepare a visual presentation based on the information put together by the previous group.

5. The topics are then circulated for a final time. Each small group familiarises themselves with the materials and presentation put together by the previous group. The groups then present the topic to the others based on the materials and presentation given to them.

6. During a contact session, each small group introduces the last topic given to them and all participants discuss the topics as a single group. (Rajala 2013.)

Stages 2–5 can be undertaken as a distance learning assignment.

TABLE 3. A breakdown of the Evolving presentation method (after Rajala 2013).

Task	Group 1	Group 2	Group 3
Gather background information and source material	**Topic A**	**Topic B**	**Topic C**
Prepare materials for visual presentation	**Topic C**	**Topic A**	**Topic B**
Give presentation	**Topic B**	**Topic C**	**Topic A**

EXAMPLE SCENARIO

Main topic: Waste management industry actors – roles and responsibilities

Topic A: EU level
Topic B: National level
Topic C: Local level

The participants are split into small groups and they get to work on their own topic. When the deadline is up, they swap topics as set out in Table 3. After the presentations, the participants can be asked to collate information on how the industry actors on all the different levels interlink to allow them to develop a more holistic understanding of the topic.

5.7 The Storyboard

The Storyboard allows you to visualise a process or event. It will also help you to develop a clearer understanding of the big picture and the different phases involved. The aim is to describe a process or event and identify any areas requiring further development. An added benefit of the Storyboard is that it allows you to compare different alternative scenarios. (Innovillage 2013f.)

The Storyboard helps you to draw up a comic-style visual representation of the process or event. You can also include a choice of alternative events and include comments on the different phases and events under the images. The Story Board can be prepared by hand on paper or on a computer using images sourced online for example. (Innovillage 2013f.)

IMAGE 6. Storyboard – putting it all together.

Experiences:

- Ideal group size is 3–4 persons.
- Ensure that you reserve enough time to execute and go through the storyboard. The storyboard can be created as a small group distance learning assignment. The evaluation and presentations can be done during a contact session.
- The storyboard can be rendered by hand, on a computer, using newspapers, magazines, and online image archives, etc. Participants do not need to have excellent drawing skills.

Benefits	Challenges
Works well in international contexts	The challenge of simplification (in order to render something visually, you must simplify, but how much can you simplify it without making it incomprehensible.)
Highly visual	
Creative	
Easy to authenticate	
Can be developed further	Will others understand the storyboard? → Evaluation and presentation essential

SAMPLE TOPICS FOR STORY BOARD

1. Topic 1: Describe the handling of one waste fraction and identify potential improvements to the process.

2. Topic 2: Occupational health and safety: describe the process and aim to identify risks.

3. Topic 3: Product life cycle modelling.
   - A simplified model in small groups.
   - The aim is to gain an understanding of the full life cycle of the product and to identify any unsustainable points along the cycle.
   - Allows for comparisons of different products assigned to groups.

5.8 Extended hatchery methods

Turku University of Applied Sciences (TUAS) has integrated a number of workshop-based teaching methods that aim to bring together learning, research and knowledge transfer. The workshop method has been developed to support Turku University of Applied Sciences' objectives with regard to innovation pedagogy. The methods include project hatcheries, research hatcheries, expert hatcheries and international research hatcheries.

The different hatchery types are briefly introduced below. Further information on the workshop method is available in Pedagogical Views on Innovation Competences and Entrepreneurship – Innovation pedagogy and other approaches (Lehto & Penttilä eds.) found at http://julkaisut.turkuamk.fi/isbn9789522164407.pdf.

5.8.1 Project hatchery

Turku University of Applied Sciences project hatchery is offered to all first-year students at the institution. The students are invited to join a multi-disciplinary project group that is entrusted with its own dedicated project. At the project hatchery, the students learn project planning and management skills and put together a project plan and report.

The aim of the project hatchery is to give the students an introduction to a scientific approach to working and to give them experience of working in a multi-disciplinary group. It is also hoped that the experience will encourage students to network.

5.8.2 Research hatchery and international research hatchery

During their time at the research hatchery, students continue to pursue their studies, while gathering data for research and development purposes. The students work in small groups on sub-projects. The students are regularly invited to take part in meetings that involve the member of teaching staff overseeing the workshop as well as client representatives. The research hatcheries allow students to develop transferable and team working skills.

5.8.3 Expert hatchery

At the expert hatchery, knowledge is acquired through interviews with experts. The expert workshop requires few if any contact sessions with the project supervisor. The hatchery allows the students to develop better interpersonal skills and to give them access to all the latest information in their field. The expert hatchery resembles the expert review method that is also discussed in this guide.

6 Knowledge and process acquisition methods

6.1 Mentoring

Mentoring is a traditional development method where an expert shares his or her knowledge, skills and attitudes with a beginner, also known as a mentee. Mentoring is an opportunity to develop your professional and personal skills and helps you to adapt to different environments and ways of working. Mentoring promotes a proactive, inclusive and practical approach to work and study. (Salminen & Suhonen 2008; National Board of Education 2012.)

6.1.1 Student Shadowing

The purpose of the Student Shadowing method is to familiarise the student with the work of someone already established in a career, such as a researcher or manager. The mentor's role is to provide guidance and support to the mentee and to make time for one-on-one discussions. Student shadowing is particularly suited to situations where a student would like to gain an insight into the work of an established profes-

sional or expert. The mentee benefits from links to an expert in their field, gains further insights into their industry and a contact in the field. (University of Eastern Finland.)

Students taking part in a shadowing exercise can prepare a written report that sets out their experiences and learning outcomes. They may also opt to share this information with a peer group.

6.2 Benchmarking

Benchmarking is an organisational development tool that allows you to compare your practices with industry best practice. Benchmarking allows you to identify answers to the following questions:

• What is it that we do?
• How do we do it?
• How do others do it?
• How well do we do what we do in comparison with other organisations?
• What can we do to improve? (Management Analysis & Development 2013.)

Benchmarking is not just useful for analysing company performance; it can also be used as a teaching method where students are encouraged to compare a range of different methods and approaches.

At the start of the benchmarking analysis, the first and most important task is to set out the aim of the process. A possible aim could be to improve a given process. Once the aim has been identified, you can select the objects of comparison. These might be companies within the same industry or any industry, depending on what the exact benchmarking entails. In industry-independent benchmarking, the objective is not to perform a comprehensive comparison. Instead, the purpose is to identify best practices within operational elements that lend themselves to useful comparison. (Lahti University of Applied Sciences 2013.)

The benchmarking exercise can be carried out as a workshop, by visiting the chosen organisation or by gathering practical information from a variety of sources, including the internet, journal articles and textbooks. If the analysis takes the form of a visit, it is essential that questions are prepared in advance.

EXAMPLE SCENARIO 1
Divide the group into smaller groups and allocate a country to each group. The groups are then tasked with familiarising themselves with their country's waste management system. Once the groups have gathered information on the waste management systems, they can draw comparisons and identify differences.

EXAMPLE SCENARIO 2
The students are asked to compare the waste management plans in place at a certain type of organisation, such as schools, and to identify examples of best practice. Finally, they will draw up a waste management plan for a real or fictitious organisation in the same industry.

6.3 Expert review

The purpose of an expert review is to source information from experts through surveys or interviews. This method is particularly suited for acquiring in-depth information and can be used for organisational development and troubleshooting purposes. The scope of the review can be determined according to the resources available.

The method can be combined with a normal group exercise where students seek out and collate general information online and in the relevant literature and more detail and in-depth information in added using the expert review method.

The expert review is a lighter-touch version of the Delfoi method. The Delfoi method is based on a questionnaire or an interview aimed at experts. Typically, information is collected through a series of two or three surveys or interviews, with a summary prepared using the results. The experts participating in the survey remain anonymous throughout. The purpose of the exercise is to collect hypotheses, statements and forecasts related to the future to support organisational planning activities. (Innovillage 2013g; University of Jyväskylä.)

THE EXPERT REVIEW METHOD WORKS AS FOLLOWS:

1. You determine the scope of the topic, such as a problem. You decide what type of information you would like to request from the experts and what questions you would like answered.

2. An interview or survey is prepared based on these specifications.

3. You select the experts you would like to approach. It is advisable to select a large number of experts, as not all of them will necessarily respond.

4. Contact the experts and explain the topic and the purpose of the review to them. Include the survey or interview request with this information.

5. Review and analyse the responses.

6. Draw up a report on the basis of the results and use it to identify a solution to the problem under scrutiny.

Experiences:
- The expert review promotes proactive and independent learning and is an opportunity to improve your communication skills.
- You must set aside sufficient time to allow the experts you have contacted enough time to respond, to arrange interviews and to carry them out.
- The results are dependent on how enthusiastic and proactive the participants are, which can be considered a benefit of this technique.

Benefits	Challenges
Gaining in-depth knowledge not available in the public domain	Poor-quality questions and unclear answers
Making links with industry experts	Unable to contact experts or secure answers
The opportunity for additional questions	

6.4 Peer interview

The peer interview method was created for organisational development purposes and is ideally suited for data gathering. In a peer interview, the participants discuss a range of topics. The discussion is based on a pre-prepared interview outline. The purpose is to identify different perspectives and development ideas. (SOSTE.)

Ideally, between two and four participants are required for a peer interview. No one else should be present during the exercise. The conversation can be documented by the participants in writing, through video or voice recording. The method of documentation should be agreed in advance. The process does not involve an interviewer or any other third parties. (SOSTE.)

THE PEER INTERVIEW METHOD WORKS AS FOLLOWS:

1. Firstly, a theme for the interview is chosen and the interview outline is prepared. Also a documentation method that is most suited for one's purposes is chosen.

2. The participants are required to familiarise themselves with the peer interview method as well as the interview outline and documentation method.

3. The interview is organised. It is a good idea for the instructor to be available during the interview.

4. Review and analyse the results. (SOSTE.)

This method can also be used as part of the jigsaw method, which allows the instructor to act as a supervisor while the expert groups review the information they have gathered using the peer interview process.

6.5 Question & Answer

The Question & Answer method is ideally suited as a preliminary exercise as it allows all participants to develop a basic working knowledge of the relevant topic in time for the contact session. This means that, during contact hours, you are not required to cover basic information in a lecture-like format but can move on to a discussion and analyse some of the responses to the Q&A exercise. (Rajala 2013.)

6.6 Excursions and virtual excursions

The purpose of the excursion is to give the students the opportunity to find out more about a site and their operations (University of Helsinki). There are a number of ways of organising an excursion, including a corporate visit (Image 7) or by conducting a virtual visit to an industrial or energy production plant.

IMAGE 7. *Excursion to the Ekokaarina recycling centre, summer 2013.*

HOW TO ORGANISE AN EXCURSION (an example)

1. The instructor sets out the aims of the excursion and makes contact with the site of their choice. The instructor sets a date for the excursion and draws up a programme. It is important to ensure that staff at the site is aware of the aims of the excursion as well as the level of knowledge within the group. For example, a group comprising industry experts will require more in-depth information instead of a general overview.

2. The instructor can set a series of exercises relating to the excursion, including:
   – A preliminary exercise covering theoretical information relevant to the site.
   – A questionnaire the students can complete during the visit.
   – A report, article or analysis about the excursion.
   – A discussion covering the excursion during the next contact or online session.

3. The instructor provides the students with information about the excursion, the purpose and objectives and hand out any related course work or exercises.

4. The excursion and any related exercises.

Excursions can also be organised by the students themselves. The students can contribute to or take full responsibility for planning and organising the excursion.

Experiences:
- A well-organised excursion is an excellent teaching method.
- It is worth putting effort into the excursion and any related exercises.

Benefits	Challenges
Access to new information and witnessing day-to-day operations on site	Ensuring all visitors can hear/understand presentations
Relating theoretical information to a practical setting	You may not get access to "the whole truth"
The excursion can be used to benefit a range of learning occasions	

SUGGESTED VISITS

A landfill site, waste incineration plant, residential area with automated vacuum collection, waste management company and virtual excursions to state-of-the-art waste sorting plants.

7 Other methods

7.1 SWOT analysis

A SWOT analysis (Image 8) can be used for evaluation and benchmarking, brainstorming and development, troubleshooting and project management. It can be used to analyse entire plans and strategies as well as individual methods and materials.

In a SWOT analysis, the internal strengths and weaknesses and external opportunities and threat of the object are presented as a four-field matrix. The object can be analysed and conclusions drawn based on the qualities compiled in the four-field matrix (Table 4). A SWOT analysis benefits from being straightforward and easy to undertake. (OK Study Centre; Innovillage 2013c.) Table 5 displays a SWOT analysis carried out as part of a waste management sector development project.
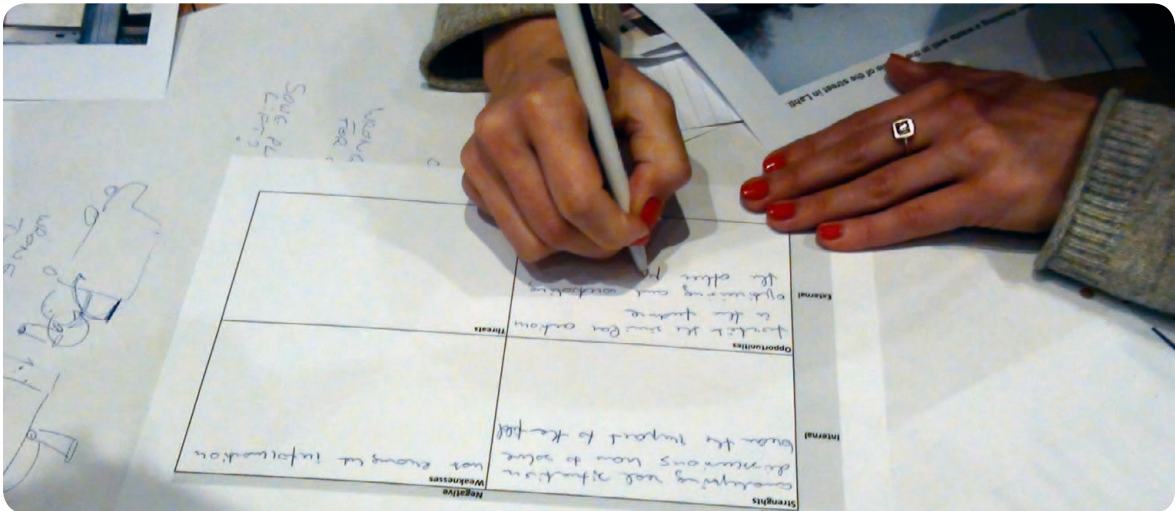
IMAGE 8. Completing a SWOT form.

TABLE 4. SWOT analysis (OK Study Centre).

	Strengths:	Weaknesses:
Internal	• Attributes of the organisation or idea under analysis • What is good? • What works? • Where have we succeeded?	• Internal problems • What prevents plans from being implemented? • What is not working?
External	Opportunities: • External • Influences on the organisation or idea	Threat: • External • Problems or issues in near future to be avoided

TABLE 5. SWOT analysis: A SWOT case study: Waste management development project – public-sector views on the future (Hietaranta, Hillgren, Kangas & Sundqvist 2011, 19).

	Strengths:	Weaknesses:
Internal	• Statutory regulations • Monopoly • Waste management supervisor	• Mature market • Growing operational environment • Waste that is difficult to reuse • Settling for available technology
External	Opportunities: • Enhancing operational intensity • Developing waste handling and utilisation • More precise fraction sorting • Automation	Threat: • Achieving set goals • Technological advances and automation • Globalisation, fewer local operators • De-regulation, free market

7.2 Case study X

Case study X is based on a narrative approach. This method focuses on case studies that can be either real or fictitious. The method is suitable for use in a number of situations and with different types of groups. However, you should ensure that the groups are not too large to ensure the intensity of experience for all participants. The method is ideally suited for groups of 2–5. Case study X is a particularly useful exercise in a seminar setting or similar, as attendees are already interested in and have their own unique viewpoints on the topic. (Kauppinen 2013.)

CASE STUDY X WORKS AS FOLLOWS:

The participants are given a brief introduction to the case study. The facts of the case are covered as neutrally as possible. The audience will also be provided with a "publication" on the topic, comprising material, such as images, press clippings, video clips, that provides more information on the event. Alternatively, the participants can be asked to find out information about the case themselves.

It is important to provide members of the group with time to discuss the events. The purpose of this is to compile a summary covering a series of pre-agreed points. Possible points to cover include:
• What happened?
• Why/how did this happen?
• How could this have been prevented?
• Could the event have had wider consequences?
• Can we learn something from this event?
• Can we prevent something similar from occurring in the future?
• Can more incidents of this kind take place?

The event can be positive or negative but it is important that the group is able to consider both the positive and negative sides to what has occurred. The summary can also be drawn up as a distance working assignment.

Finally, the groups are invited to present their summaries and are expected to provide more in-depth information and respond to any questions the other participants may have. (Kauppinen 2013.)

Case study X can also be carried out as a distance learning assignment. The students prepare the summary online and only the presentations are given during the contact hours.

Experiences:
- Opportunity to learn from real cases
- Combining a real incident with theoretical information

Benefits	Challenges
Discussion-based	Poorly chosen case studies
Analysis of real situations	Access to enough information
Complements theoretical knowledge	

EXAMPLE SCENARIO

Topic: Occupational health and safety

1. The instructor selects an occupational health and safety incident relating to the waste management sector. A large group should be split into several smaller groups and each assigned their own case study.

2. The students are asked to familiarise themselves with the case and seek out news items and articles on the topic. The instructor can also collate material, including images and reports, which the students can make use of in the course of their work.

3. Working in small groups, the participants draw up a summary of the event based on the above instructions.

4. The summaries are presented to the other groups. The participants should be invited to discuss how the accident could have been prevented.

7.3 Dog Eat Dog

Dog Eat Dog is an interesting method that offers an entertaining approach for discovering product life cycles and examining solutions made along the way as well as their wider impact. As part of this method, role play is used to tease out how manufacturers, waste disposal companies and Mother Nature rate the product's characteristics and materials.

More detailed instructions are available in Appendix 1.

Experiences:
- Dog Eat Dog was considered a fun and interesting teaching method.
- It is important to ensure that the assignment is clearly communicated and full instructions provided.

Benefits	Challenges
Reflects everyday reality	Instructions are a challenge
Interesting and unusual method	Based on stereotypes
Introduces new perspectives and even surprises at times	Requires participants to "throw themselves in"
Can be undertaken as a virtual assignment	
Can be adapted to suit a wide variety of circumstances	Group sizes

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Appendices

Dog Eat Dog method

This appendix contains more detailed instructions for the Dog eat dog method and printable forms A–G. The method was devised by Joona Pelttari.

The purpose of the Dog Eat Dog method is to demonstrate that the human tendency towards self-interest is harmful to the wider community and the environment and that the most sustainable outcomes can be achieved when everyone's views are taken into consideration. The method requires you to be able to throw yourself into the scenario.

As part of the method, all participants are assigned a different role. Participants gather in small groups to consider product production processes and life cycles in character. The idea is to try and identify the most advantageous outcome for you personally, employing the most unscrupulous means possible, always looking out for "number one". The ideas can be quirky and different but for the purposes of this exercise it would be useful to have them very clearly defined in order to elicit reactions from other people. The ideas put forward by the characters are given points and compared.

The Dog Eat Dog method works as follows:
- Choose a product or service such as fresh meat, a wooden table, a toy car, a car or a library service. *For the purposes of this exercise: a sausage.*

- You can now choose the roles you will play during the exercise. *You can choose from manufacturer, producer, consumer, waste disposal service (national or local services), environment and ethics.*
- Split the group into small groups of one to four participants with one role assigned to each member of the group. *Six small groups, assigned the aforementioned roles.*
- Each small group is then asked to generate one or two ideas on how they would ideally like to produce the goods/service and what this goods/service should look like. The ideas can be as far-fetched as you like. *For example, the manufacturer might say: "I want to produce sausages as cheaply as possible: I want cheap meat from abroad and meat-like ingredients, and plenty of "fillers" and "preservatives".*
- The ideas generated by the groups are discussed in detail, with the other groups rating them in character. See Forms A–G *Sample rating The consumer rates the manufacturer's comment as -3 because consumers would like to see 100% Finnish meat.*
- The points are then added up and the statements are placed in ranking order. The ideas can be developed further with compromises struck so that they meet the needs and wishes of as many characters as possible.

Scoring:
3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

EXAMPLE 1

Product: Wooden table

Consumer idea: I would like the table to be long-lasting so it should be carefully varnished.

Factory owner = 1 *(Increased costs, which will be reflected in the price)*
Producer = -3 *(Has to handle hazardous substances)*
Disposer = 1 *(Varnished wood is difficult to dispose of)*
Mother nature = -2 *(Chemicals harmful to nature, but will last longer)*
Ethics = 1 *(The product has been varnished so may not be the best possible quality)*
Total -2 points

Next, it would be the factory owner's turn to express their opinion on the wooden table, etc.
Finally, you compare all the ideas and develop them further.

EXAMPLE 2

Product: A toy car

Mother nature: I would like the car to be made of wood instead of plastic as wood is a renewable resource and plastic made from petrochemicals is a burden on the environment.

Factory owner = -3 *(Wooden cars are so last millennium, no one's going to buy them)*
The toy maker, Handyman = 3 *(Wood is definitely less hazardous to work with than plastic)*
Consumer = -3 *(I don't want to buy a wooden car)*
Waste disposal service = 3 *(Wood is easier to dispose of)*
Ethics = 3 *(Wood is a safer material and a renewable resource)*
Total: 3 points *(How can we get consumers excited about wooden toy cars?)*

Next, it would be the factory owner's turn to express their ideas on the toy car, etc.
Finally, you compare all the ideas and can choose to develop them further.

Form A: Dog Eat Dog instructor

The instructor compiles the ideas (1–2) put forward by the small groups and writes them down.

The instructor puts forward the ideas one by one and records the points as shown in the table below.

Finally, the points given to each idea are added up and compared to discover who secured the lowest/ highest points. You can also develop the ideas further and make compromises to ensure that they meet the needs and wishes of as many characters as possible.

Top tip!

Why not record all the ideas and the points awarded directly on to a computer and project them on to a screen. This allows the participants to keep an eye on the situation and makes calculating the final scores very easy.

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"* *"Factory owner's idea 2"*							
The handyman *Idea 1* *Idea 2*							
Mother Nature *Idea 1* *Idea 2*							
Consumer *Idea 1* *Idea 2*							
Recyclist *Idea 1* *Idea 2*							
Ethics *Idea 1* *Idea 2*							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

Form B: Dog Eat Dog – the recycling service provider

You are the RECYCLIST. You are national or local body or a waste management manager. Your job is to make sure that the product is processed and recycled in a way that is easy, low in emissions and cheap. You can skimp on one if you can benefit from another. Bear in mind that the media are constantly breathing down your neck so you can't be completely irresponsible.

How would you like to produce this service/item and using what materials? How should the product/service be used? Think of two ideas that you could really make work in your favour if the other groups didn't get to have a say in your decision-making process. May the greediest competitor win!

Idea 1:

Idea 2:

Once everyone has come up with their ideas, the "factory owner" will share one of his ideas and everyone else scores it on their scorecard. After everyone has had a brief moment to evaluate the idea, it is the "Handyman's" turn and so on. The instructor should record all the points and tally them up at the end.

Remember to evaluate other people's ideas "in character". Mark the points in your own column (redacted).

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"* *"Factory owner's idea 2"*							
The handyman *Idea 1* *Idea 2*							
Mother Nature *Idea 1* *Idea 2*							
Consumer *Idea 1* *Idea 2*							
Recyclist *Idea 1* *Idea 2*							
Ethics *Idea 1* *Idea 2*							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

Form C: Dog Eat Dog – the consumer

You are the CONSUMER. You never have enough money and you want things to last. You are not too bothered about where things are manufactured as long as you yourself don't lose out and the things you want can be bought cheaply at your nearest supermarket.

How would you like to produce this service/item and using what materials? How should the product/ service be used? Think of two ideas that you could really make work in your favour if the other groups didn't get to have a say in your decision-making process. May the greediest competitor win!

Idea 1:

Idea 2:

Once everyone has come up with their ideas, the "factory owner" will share one of his ideas and everyone else scores it on their scorecard. After everyone has had a brief moment to evaluate the idea, it is the "Handyman's" turn and so on. The instructor should record all the points and tally them up at the end.

Remember to evaluate other people's ideas "in character". Mark the points in your own column (redacted).

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"* *"Factory owner's idea 2"*							
The handyman *Idea 1* *Idea 2*							
Mother Nature *Idea 1* *Idea 2*							
Consumer *Idea 1* *Idea 2*							
Recyclist *Idea 1* *Idea 2*							
Ethics *Idea 1* *Idea 2*							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

Form D: Dog Eat Dog – Mother Nature

You are MOTHER NATURE. You care about the flora and the fauna and renewable resources really matter to you. Life and death are a natural part of life but you fail to understand why anyone would rather be subjected to the noise from a pulp mill than hear the gentle ribbit-ribbit of frogs.

How would you like to produce this service/item and using what materials? How should the product/ service be used? Think of two ideas that you could really make work in your favour if the other groups didn't get to have a say in your decision-making process. May the greediest competitor win!

Idea 1:

Idea 2:

Once everyone has come up with their ideas, the "factory owner" will share one of his ideas and everyone else scores it on their scorecard. After everyone has had a brief moment to evaluate the idea, it is the "Handyman's" turn and so on. The instructor should record all the points and tally them up at the end.

Remember to evaluate other people's ideas "in character". Mark the points in your own column (redacted).

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"* *"Factory owner's idea 2"*							
The handyman *Idea 1* *Idea 2*							
Mother Nature *Idea 1* *Idea 2*							
Consumer *Idea 1* *Idea 2*							
Recyclist *Idea 1* *Idea 2*							
Ethics *Idea 1* *Idea 2*							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

Form E: Dog Eat Dog – the factory owner

You are the FACTORY OWNER. The hippies and beardy weirdies are snapping at your ankles as you work hard to optimise cash flow — the bottom line is the only thing that really matters to you. You are just few years away from retirement in more exotic climes and have absolutely zero interest in long-term thinking.

How would you like to produce this service/item and using what materials? How should the product/service be used? Think of two ideas that you could really make work in your favour if the other groups didn't get to have a say in your decision-making process. May the greediest competitor win!

Idea 1:

Idea 2:

Once everyone has come up with their ideas, the "factory owner" will share one of his ideas and everyone else scores it on their scorecard. After everyone has had a brief moment to evaluate the idea, it is the "Handyman's" turn and so on. The instructor should record all the points and tally them up at the end.

Remember to evaluate other people's ideas "in character". Mark the points in your own column (redacted).

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"* *"Factory owner's idea 2"*							
The handyman *Idea 1* *Idea 2*							
Mother Nature *Idea 1* *Idea 2*							
Consumer *Idea 1* *Idea 2*							
Recyclist *Idea 1* *Idea 2*							
Ethics *Idea 1* *Idea 2*							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

Form F: Dog Eat Dog – the handyman

You make the product, you are the HANDYMAN. You work at the factory from 8 til 4 to make ends meet. You are at your happiest when your work is not too taxing, either mentally or physically, and won't lead to any health problems in the coming decades.

How would you like to produce this service/item and using what materials? How should the product/ service be used? Think of two ideas that you could really make work in your favour if the other groups didn't get to have a say in your decision-making process. May the greediest competitor win!

Idea 1:

Idea 2:

Once everyone has come up with their ideas, the "factory owner" will share one of his ideas and everyone else scores it on their scorecard. After everyone has had a brief moment to evaluate the idea, it is the "Handyman's" turn and so on. The instructor should record all the points and tally them up at the end.

Remember to evaluate other people's ideas "in character". Mark the points in your own column (redacted).

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"*							
"Factory owner's idea 2"							
The handyman *Idea 1*							
Idea 2							
Mother Nature *Idea 1*							
Idea 2							
Consumer *Idea 1*							
Idea 2							
Recyclist *Idea 1*							
Idea 2							
Ethics *Idea 1*							
Idea 2							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

Form G: Dog Eat Dog – Ethics

You are ETHICS – you represent morality and sense. I perform a tight rope act trying to balance both people and nature and maximise well-being coupled with high moral scruples. You understand that people need to work for a living and a lot of products are needed in the 21st century but you firmly believe that equality, freedom and cleanliness belong to everyone.

How would you like to produce this service/item and using what materials? How should the product/ service be used? Think of two ideas that you could really make work in your favour if the other groups didn't get to have a say in your decision-making process. May the greediest competitor win!

Idea 1:

Idea 2:

Once everyone has come up with their ideas, the "factory owner" will share one of his ideas and everyone else scores it on their scorecard. After everyone has had a brief moment to evaluate the idea, it is the "Handyman's" turn and so on. The instructor should record all the points and tally them up at the end.

Remember to evaluate other people's ideas "in character". Mark the points in your own column (redacted).

Role and IDEA	Factory	The handyman	Mother Nature	Consumer	Recyclist	Ethics	TOTAL
Factory owner *"Factory owner's idea 1"* *"Factory owner's idea 2"*							
The handyman *Idea 1* *Idea 2*							
Mother Nature *Idea 1* *Idea 2*							
Consumer *Idea 1* *Idea 2*							
Recyclist *Idea 1* *Idea 2*							
Ethics *Idea 1* *Idea 2*							

3 = I like it, 1 = it's OK, 0 = indifferent, -1 = not a great idea, -3 = I don't like it

In any work having to do with teaching and training, comprehensive and working life orientated learning should take more prominence. Pure substance know-how is no longer enough as interaction, networking and problem-solving skills occupy a central role in today's working life. As a result, pedagogical approaches should emphasise processes relating to supporting and enhancing the production of innovations.

This publication is a practical guide to student centred teaching methods based on innovation pedagogy. The guide offers methods for diversifying and invigorating different teaching, training and learning situations. The authors have sought to create a resource that is both clear and accessible, and no previous knowledge of training or teaching methodologies is required. The aim of the guide is to promote the use of a wide variety of approaches in various learning and training settings.

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