Module 2. Creativity and innovative entrepreneurship

Introduction

The goal of this module is to provide students with knowledge on creativity and creative thinking as an essential competitive skill in the fast changing information and knowledge society. In this module students will gain practical skills on creative thinking and will be able to use them after their studies in their professional life – either it is a company or any other private or public organisation.

The 2nd module consists of four chapters. The first chapter reveals that the human resources with their competences are the integral and essential part of innovation process, ensuring the competitiveness of companies. The first chapter defines the environment concepts for innovation and creative thinking – information society, knowledge economy, innovative organisation and innovative company. The second chapter deals with definitions and interpretations of creativity, and explains different types of thinking and their importance in innovation process. As well, the chapter provides information on stimulating and disincentive factors for innovation in company.

The third chapter provides information on creative thinking tools, providing overview of whole creative thinking process and providing more detailed description on several creative thinking tools, such as defining focus, brainstorming and different ways of supporting the brainstorming, as well as the idea treatment and assessment methods. The description of creative thinking tools is enriched with examples and exercises, which will help the students to comprehend the methods and to utilize them after the studies in their professional life.

The fourth chapter is devoted to one idea assessment method – six thinking hats. The students will gain the theoretical and practical background of the method. This background knowledge and skills will be further developed in the practical face-to face lesson in the end of the module, and after that the students will be able to implement it in their companies. The third and fourth chapters are based mainly on Edward de Bono theories, with references to his books and internet resources.

For efficient use of the study material, read all the content and follow the internet links for additional information. It is recommended to study deeper the topic of the module using the information provided in the additional sources of information, mentioned in the references.

In this module, there are altogether 20 tasks. Some of the tasks are related to each other; therefore you should not miss any of them. As the creative thinking is a skill, which can be achieved and further developed in training, in this module the tasks are an essential part of learning – you will learn by doing the tasks. To complete all the tasks you will need at least five hours.

The module will be successfully completed when you have done all the tasks, successfully fulfilled the self-assessment test, this way preparing for the face-to face meeting. Then you must successfully accomplish the practical work in the face-to-face meeting, getting positive evaluation from the tutor.
Learning Objectives.

After completing this module student will:

1. Have formed an understanding about innovative entrepreneurship.
2. Know that creativity is essential part of innovative business and a competitive human competence in information society.
3. Know the various meanings of creativity – ability, competence, attitude, process;
4. Know different types of thinking – divergent, convergent, lateral thinking and their meaning in creative thinking processes.
5. Know the basics of lateral thinking tools.
6. Be able to use the brainstorming tools in idea generation in everyday business.
7. Be able to use lateral thinking, particularly, six thinking hats method, in evaluation of problems/ideas.

Table of Contents

Introduction................................................................................................................................1
Learning Objectives....................................................................................................................2
Table of Contents.......................................................................................................................2
1. Innovative entrepreneurship and demands on competence of human resources...........3
   1.1. Innovative entrepreneurship in information and knowledge society. .......................3
   1.2. Innovative company and innovative entrepreneurship.............................................4
   1.3. Competences of human resources in innovative company.......................................6
2. Creativity in innovation process...............................................................................12
   2.1. Concept of creativity. Concepts of creative thinking and lateral thinking...................12
   2.2. Creativity in entrepreneurship – competitive advantage of a company......................14
   2.3. Obstacles for creative thinking in company. Factors, stimulating creativity in company. ..............................................................................................................................................15
3. The lateral thinking tools..........................................................................................18
   3.1. Overview of the creative thinking process............................................................18
   3.2. Brainstorming techniques and methods using brainstorm elements. .....................20
   3.3. Focus: the basics, creative hit list, redefining and refining.......................................22
   3.4. Alternatives and concept extraction........................................................................26
   3.5. Challenge, arising provocations...............................................................................29
   3.6. Random entry...........................................................................................................32
   3.7. Harvesting, treatment and assessment....................................................................34
4. Six thinking hats........................................................................................................37
   4.1. The essence of the six thinking hats method..........................................................38
   4.2. Explanation of the creative thinking under six colour hats ......................................39
Summary ..................................................................................................................................50
Module 2. Final assessment.....................................................................................................50
Bibliography..............................................................................................................................51
1. Innovative entrepreneurship and demands on competence of human resources.

In this chapter the students will get introduced to the significance of innovation in society. Students will learn new terms - innovative entrepreneurship, innovative organisation and their role in information society. Students will learn how to define an innovative organisation, and what are the organisation/company innovation criteria. Students will learn about the essential role of human competences in the competitiveness of the company.

1.1. Innovative entrepreneurship in information and knowledge society.

In order to define an innovative entrepreneurship in information and knowledge society, let us start with the terminology.

An information society is a society in which the creation, distribution, diffusion, use, integration and manipulation of information is a significant economic, political, and cultural activity. The knowledge economy is its economic counterpart whereby wealth is created through the economic exploitation of understanding\(^1\). The knowledge economy is a term that refers either to an economy of knowledge focused on the production and management of knowledge in the frame of economic constraints, or to a knowledge-based economy. In this course we will use the second meaning: knowledge-based economy. It refers to the use of knowledge technologies (such as knowledge engineering and knowledge management) to produce economic benefits as well as job creation\(^2\).

A knowledge-based economy is defined as an economy directly based on the production, distribution and use of knowledge. We have now progressed from the knowledge-based economy to the knowledge driven economy, emphasizing the fact that the current contribution of knowledge is very much as the driving force of our economy.

The knowledge-driven economy brings new challenges for business. Markets are becoming more global with new competitors, product life cycles are shortening, customers are more demanding and the complexity of technology is increasing.

The knowledge-driven economy affects the innovation process and the approach to innovation. In knowledge-driven economy knowledge plays a crucial role in fostering innovation. Organisations are developing methodologies and tools to support entrepreneurship and the management of innovation in business\(^3\). The society, where the basic economy is knowledge-driven economy, may be called knowledge society.

---


Companies realize that innovation can no longer be the main area of the R&D department, and innovation team or a small strategic planning group. Innovation needs to be embedded in the basis of the company’s operation and culture, a part of normal day-to-day operations.

Edward De Bono says that today companies cannot compete with new technologies and raising productivity. He sees that the best solution for competitiveness is creativity: “In a free-trade world the only differentiator is going to be creativity. With creativity you use the commodities to deliver new products, new services and new values. Creativity can also design new and better ways of delivering old and established values. Creativity can also design new values directly – and then find ways of delivering these new values”\(^4\).

For example, the Baltic and Nordic countries are rich in forests, which are excellent raw material for different wood products. The easiest business is to sell the wood - timber logs. Logs are wooden products without any value added. However, using human mind – knowledge, skills, creativity, different technologies and design, it is possible to develop smart products from the same raw material and to develop successful and long lasting products: furniture, toys, insulation materials, pieces of arts, medicine, etc.

Therefore we will pay a lot of attention to the creativity concept in this module, but before that we will realize where lies creativity from another perspective – as a value of an innovative company and a human skill.

1.2. **Innovative company and innovative entrepreneurship.**

There are several ways of defining innovative company. According to EU Innovation Survey definition, *innovative company* is a firm that has introduced new or improved products, processes or services within previous three years\(^5\).

One of the most popular concepts of innovative company includes measurable assessment of company, assessing company’s expenditure in R&D, the number of company’s new products, its sales and profit from new products and services, increase of annual turnover from the new products or services. This is the way business people and economists evaluate innovativeness of the company.

For example, in the catalogue of *Innovative Companies in Latvia 2007*\(^6\), a company is considered to be innovative if:

- It has launched at least one product or service or has implemented new technology to increase its competitiveness over past three years

- The new product or service is knowledge-based and new knowledge is created directly within company or in cooperation with universities, research laboratories, industrial experts or co-operation partners in Latvia or abroad.

- The proportion of R&D expenditure to annual turnover is more than 1% in the last year, or at least two of the following three criteria are fulfilled:

- At least 25% of current sales are made up of products that have been introduced or significantly improved over past five years,

\(^4\) Think! Before It’s too Late, Edward De Bono, Vermilion, London, 2009, p.23  
\(^5\) Innovation Management and the Knowledge-Driven Economy, ECSC-EC-EAEC, Brussels, Luxembourg, 2004, p.156  
\(^6\) Innovative companies in Latvia 2007, Latvia, 2007, Latvian Technological Center, p.5.
- Profit generated by new products or services not older than five years is at least 10% of gross profit

- Sales derived from the introduction of products or services new to the market have increased annual turnover by more than 5%.

This definition is very precise, but not easy for use. This and similar innovative company definitions have one important disadvantage – there is no direct assessment of human knowledge and skills, which are needed to enable innovation. This concept of innovative company is oriented to measurable results.

However, there are another ways, which analyse a structure of the company and integrated set of components which work together to create and reinforce the kind of environment which enables innovation to flourish. In Table 1 you can see another concept of innovative company, the components and key features of innovative organisation.

Table 1. Components of innovative organisation.

<table>
<thead>
<tr>
<th>Component</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared vision, leadership and the will to innovate</td>
<td>Clearly articulated and shared sense of purpose</td>
</tr>
<tr>
<td></td>
<td>Stretching strategic intent</td>
</tr>
<tr>
<td></td>
<td>Top management commitment</td>
</tr>
<tr>
<td>Appropriate structure</td>
<td>Organisation design which enables creativity, learning and interaction</td>
</tr>
<tr>
<td>Key individuals</td>
<td>Promoters, champions, gatekeepers and other roles which facilitate innovation</td>
</tr>
<tr>
<td>Effective teamworking</td>
<td>Appropriate use of teams to solve problems; requires investment in team selection and building</td>
</tr>
<tr>
<td>Continuing and stretching individual development</td>
<td>Long-term commitment to education and training to ensure high levels of competence and the skills to learn effectively</td>
</tr>
<tr>
<td>Extensive communication</td>
<td>Within and between the organisation and outside. Internally in three dimensions- upwards, downwards and laterally.</td>
</tr>
<tr>
<td>High involvement innovation</td>
<td>Participation of staff in organisation-wide continuous improvement activity.</td>
</tr>
<tr>
<td>External focus</td>
<td>Internal and external customer orientation. Total quality culture.</td>
</tr>
<tr>
<td>Creative climate</td>
<td>Positive approach to creative ideas, supported by relevant reward systems.</td>
</tr>
</tbody>
</table>


^8* Managing Innovation, Joe Tidd, John Bessant, Keith Pavitt, p.314-342
Learning organisation | High levels of involvement within and outside the firm in proactive experimenting, finding and solving problems, communication and sharing of experiences, and knowledge capture and dissemination.

Learn more about components of the innovative organisation⁹.

Innovative entrepreneurship is closely linked to innovative organisation. The concept of innovative entrepreneurship includes “individual’s ability to turn ideas into action. It includes creativity, innovation, and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day-to-day life at home and in society, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity”¹⁰. In another words – innovative entrepreneurship is business, where innovation skills and knowledge are required to achieve commercial benefit. Creativity is one of the core competences.

**Task 1.1.**

Read the definition of innovative company, and evaluate if your company would fit the criteria of innovative company in the catalogue “Innovative companies in Latvia 2007”. (10 minutes)

**Task 1.2.**

Explore the Table1 and find out and formulate the importance of creativity as a success factor of innovative company (10 minutes)

Evaluate the criteria of innovative organisation for your company – to what extent does your company meet the criteria of innovative organisation? (10 minutes)

**1.3. Competences of human resources in innovative company.**

**Importance of human resources in innovation**

If we look back in recent history, most of talking and thinking around innovation was about technologies, R&D, processes and structures. However, innovation starts and ends with human beings. Human beings with their competences and motivation are the driving force of the innovation. “The future innovation is about people”, says Dr Abbie Griffin from University of Utah, USA ¹¹.

The human factor is the most important element of the innovation potential in the company. The development and the successful implementation of innovation are mostly considered as a creative process. The human factor in the innovation process is constituted by the following elements – creative personality, creative environment, teamwork, system for creating and managing knowledge. On a larger scale when talking about human assets at regional level, local communities constantly strive to attract and retain

---


¹⁰ *Commission Communication “Fostering entrepreneurial mindsets through education and learning”. COM(2006) 33 final*

innovation companies by investing in the skills and technical knowledge of the workforce. In addition skilled labour is considered as such an important asset that many communities have made it the central theme of their regional marketing efforts. At the heart of improving local skills and labour capacities lies the education and lifelong learning systems development. Economic developers must account for all three factors — available workforce, specialized or skilled workforce, and quality of educational institutions — when evaluating local assets for innovation 12.

Thinking about innovation, future business and future markets, there will be required people, who can cope with change: self-motivated, self-confident, self-initiative, flexible, energetic; individuals who know where and how to connect new networks but remain autonomous. Future researchers must have “dual” mind: both technical and market-driven, realistic and creative, individuals who can take the initiative and good team players. People, who can observe, communicate, collaborate and innovate in a complex, fast-changing environment”, says Miloš Ebner, R&D director from Slovenia 13.

Why are human resources competences important for innovation?

Innovation does not happen because of some process that has been installed in the organisation. People make innovation happen. And for future innovation – it is quite bleak unless and until firms invest more time and energy in supporting the people who deliver innovation 14.

The future specialists will need a set of important knowledge and skills, and the current educational systems in Europe are not able to follow the fast changing market.

Education, learning and training for innovation

One of the biggest tasks for the current European education systems is to create the study programs, which would ensure that the knowledge and skills of the graduates meet the market requirements. This is especially difficult task, as the market changes rapidly, the technologies develop fast and schools and universities are not able to follow these rapid changes. But instead all schools and universities can integrate in their study programs the knowledge and skills necessary for work in fast changing environment.

There have been lots of studies done about correspondence of the study program to the market needs. In the context of this course, the key of the future study programs is the skills and knowledge necessary to participate and manage innovation. That includes fundamental and technological knowledge, knowledge about innovation, knowledge management, project management, IT literacy, presentation skills, creativity, etc. But event more the graduates are expected to be trained and motivated to think in different ways and to learn fast and to adapt for different working environments.

As stated in the Chapter 1.2, one of the innovative organisation’s features is continuing and stretching individual development and continuous learning. According to J.Bessant,

12 http://www.innosupport.net/index.php?id=6065
the most innovative organisations are the learning organisations. Learning organisation means not only staff training, but learning as a part of company’s culture – learning from experience, learning from competitors, learning from each other and learning from own and others’ mistakes. Learning process in organization is going on according a simple learning cycle, as illustrated in Figure 1. Reflection is one of the essential parts of the learning cycle.

Figure 1. Learning process in organisation.

The learning process components are:

2. Conceptualizing – capturing and codifying the lessons learned into frameworks and eventually procedures to build on lessons learned.
3. Experimentation – the willingness to try and manage things differently next time, to see if the lessons learned are valid.
4. Honest capture of experience (even if this has been a costly failure) so we have raw material on which to reflect.

There is a variety of tools and mechanisms, how to promote effective learning in an organization, such as post-project reviews, policies and procedures, benchmarking, auditing, learning with others. You can read more about learning organization and these methods in *Managing Innovation* by Joe Tidd, John Bessant, Keith Pavitt.

The required human competences for innovation.

In innovative company the main human competences are: the knowledge (both technical and business), skills (how to use the knowledge in practice) and motivation. A very essential human driver of innovation is motivation – both inner and external motivation.

---


If the knowledge and skills we described and listed above, another important human competence for innovation is motivation.

Well-qualified, creative employees, capable of working in dedicated teams, ready to participate in the organisational processes and to commit themselves to the organisational objectives, are not easy to find on the labour market. Even if the company was able to find these type of employees, their skills must be updated/developed, and their motivation and commitment sustained by the management. The most motivated person might loose their motivation and commitment if they do not find what they have been looking for in terms of work, working conditions, financial and non-financial rewards, opportunities for development and career, etc. in the company 17.

The most motivated are the people who love their job. And the most successful ain the business are the people who are the best motivated. “The desire to do something because you find it deeply satisfying and personally challenging inspires in the highest levels of creativity, whether it’s in arts, sciences or business”, about the role of inner motivation says Teresa Amabile, HBS professor 18.

However, the external motivation – innovation culture in the company, values, processes, stimulus, and award system is dependent on the company management and should be integral part of any innovative company’s innovation strategy.

In the next chapter we will find out what is a role of creativity knowledge and creativity as a human skill in innovation process, and what benefit companies form these human knowledge and skills.

**Task 1.3.**

Think 5-10 minutes about your personal knowledge, skills and motivation for innovation. Put your answers in the table – the existing skills and knowledge in one column, but the desired ones, which you would like to acquire – in another column.

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Desired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Task 1.4.**

Take 5 minutes to think – what are your motivating factors for innovation? Think both of internal and external innovation. List at least 3 motivation statements.

18 [http://hbswk.hbs.edu/item/5902.html](http://hbswk.hbs.edu/item/5902.html)
In the case, if there is no motivation, instead of listing statements, explain what is disturbing your motivation. (10 min)

_____________________________________________________
_____________________________________________________
_____________________________________________________

Task 1.5. (optional)
Evaluate your company innovation capacity. Innovation capacity is a company’s ability to innovate – to produce new, innovative, competitive, market demanded products.

Answer to the 24 questions in the table below, and you fill get a fast assessment of the company’s innovation capacity, according to 9 dimensions: awareness, search, expertise, strategy, accessibility, acquisitions, implementation, learning and collaboration. Your results will be scored and will be used to draw a “spider” diagram, emphasizing the status of innovation capacity in your company – its advanced dimensions, gaps and areas for development. Learn more about the innovation capacity measurement /innovation audit tool:
http://www.innosupport.net/index.php?id=2229

Innovation Capacity self assessment:
A simple questionnaire tool will help the company to evaluate its innovation capacity by simply answering 24 questions.

Evaluate the declarations in a scale of 1 to 4:
1 – Strongly disagree;
2 – Disagree
3 – Agree;
4 – Strongly agree.

<table>
<thead>
<tr>
<th>COMPANY:</th>
<th>evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technology plays an important part in my firm’s business strategy</td>
<td>Awareness</td>
</tr>
<tr>
<td>2. My firm is well aware of the technologies most important to its business</td>
<td></td>
</tr>
<tr>
<td>3. My firm is well equipped to assess technological opportunities</td>
<td>Search</td>
</tr>
<tr>
<td>4. My firm can assess technology threats without difficulty</td>
<td></td>
</tr>
<tr>
<td>5. My firm has special technological strengths which it is able to exploit</td>
<td>Expertise</td>
</tr>
<tr>
<td>6. My firm knows which technologies to outsource and which to develop internally</td>
<td></td>
</tr>
<tr>
<td>7. Our management is skilled at formulating a technology strategy to meet business</td>
<td>Strategy</td>
</tr>
<tr>
<td>8. Our firm knows its main technology priorities</td>
<td></td>
</tr>
<tr>
<td>9. Our firm has a well developed technology „vision”</td>
<td></td>
</tr>
<tr>
<td>10. Our company knows how to select the technology needed for its business</td>
<td>Accessibility</td>
</tr>
<tr>
<td>11. Our firm knows which are the best sources of technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12. Our firm is effective at acquiring technology from external sources</td>
<td>Acquisition</td>
</tr>
<tr>
<td>13. Our firm has good links with important external suppliers of technology</td>
<td></td>
</tr>
<tr>
<td>14. Our technology activities (e.g. engineering and R&amp;D) are organized effectively within our firm</td>
<td>Implementation</td>
</tr>
<tr>
<td>15. We have clear processes for carrying out technology projects</td>
<td></td>
</tr>
<tr>
<td>16. Our firm has a good system for assessing technology projects</td>
<td>Learning</td>
</tr>
<tr>
<td>17. Our firm carries out post-project reviews</td>
<td></td>
</tr>
<tr>
<td>18. We are able to learn from one technology project to another</td>
<td></td>
</tr>
<tr>
<td>19. Government policies encourage us to invest in technology</td>
<td>Collaboration</td>
</tr>
<tr>
<td>20. We use external organizations (e.g. consultancy firms) to assist us with technology assessment</td>
<td></td>
</tr>
<tr>
<td>21. We use outside bodies (external experts) to help us develop technology</td>
<td></td>
</tr>
<tr>
<td>22. External organizations help us assess our technology performance</td>
<td></td>
</tr>
<tr>
<td>23. We work with universities in key technology projects</td>
<td></td>
</tr>
<tr>
<td>24. We work with government research institutes in important technology projects</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
</tr>
</tbody>
</table>

You will get your innovation capacity self assessment in a form of:

![Innovation Capacity Self Assessment Diagram](chart.png)

In order to get more information and explanations about this tool, please attend the [http://www.innosupport.net/index.php?id=2229](http://www.innosupport.net/index.php?id=2229).

Another tool - auditing innovation management, you can find in the book *Managing Innovation* by Tidd, Bessant, Pavitt.\(^{19}\)

---

2. Creativity in innovation process.

In this chapter students will learn different meanings of creativity, and creativity as a human competence role in innovative organisation. Students will learn about different types of human thinking and will learn that creative thinking or lateral thinking is essential for innovation and competitiveness. Students will learn, what are the usual obstacles for creativity in organisation, and what are the creativity stimulating factors in company.


Creativity is usually considered to be an essential part for the beginning of innovation process – idea generation. However, creativity and knowledge are the basic ingredients in innovative thinking, and can be considered like a horizontal component in whole innovation process. In Module 1 we had a picture of innovation process, where it was clearly stated that the innovation process consist of idea, research, development, implementation and product/service commercialisation in the market. If we add the creativity to the same figure, then it is obvious that creativity is important in all stages of innovation process. (see Figure 2)

![Creativity in all phases of innovation process](image)

The relation of creativity and innovation is following:

1. Creativity is thinking of novel and appropriate ideas.
2. Innovation is the successful implementation of those ideas within organisation and bringing them to market.

Implementation – putting ideas into practice – is made up of three aspects: idea selection, development and commercialization. Creativity is an essential block for whole innovation process.

There is always discussion on the question – is creativity a talent or skill?

---

20 Handbook on innovative Thinking – A Collection of methodologies and technological intelligence tools to improve innovation through creativity(2005), Institute for Industrial Promotion, p.10.

“Creativity does have a reputation for being magical. One myth is that it’s associated with the particular personality or genius of a person – and in fact, creativity does depend to some extent on the intelligence, expertise, talent, and experience of an individual. But it also depends on creative thinking as a skill that involves qualities such as propensity to take risks and to turn a problem on its head to get a new perspective. That can be learned”, says Harvard Business School professor Teresa Amabile. In this e-learning course, we will refer mainly to Edward De Bono’s knowledge, experience and interpretation of creativity. Edward De Bono has studied the question of creativity, developed the famous term of lateral thinking, and developed numerous methods and tools for facilitating creative thinking and successfully implementing them for innovative business development.

According to Edward De Bono, idea creativity is a skill which everyone can learn, practice and apply. As with any skill, such as tennis, skiing and cooking, some people will be better at the skill than others. Everyone, however, can acquire a usable level of skill. Idea creativity can be taught and used formally as mathematics. At the same time, creativity is also ability, attitude and a process.

Creativity is ability: to imagine or invent something new. Creativity is not the ability to create something out of nothing, but ability to generate new ideas by combining, changing, reapplying existing ideas and information.

Creativity is the attitude: to accept change and newness, a willingness to play with ideas, information and possibilities, a flexibility of outlook, the habit of enjoying the good, while looking for ways to improve it.

Creativity is a process: creative people work hard and continually to improve ideas and solutions, by making gradual alterations and refinements to their works.

Creative thinking is a way of thinking where are exploited all the expressions of creativity – ability, attitude, process.

Creative thinking is generating new, original ideas or reapplying existing ideas with a purpose to find new, original and applicable solutions.

The concept of creativity is closely linked with different types of thinking. We will look at some of them.

Convergent and divergent thinking. There is a link between creativity and human psychophysical features. In the left hemisphere of the human brain is the centre which is defined as “convergent thinking”, that is the intellectual ability to logically evaluate, critique and choose the best from a selections of ideas. In the right hemisphere of the brain, there is a centre of the “divergent thinking”, that is the intellectual ability to think of many original, diverse and elaborate ideas. Both abilities are required for creative output. Divergent thinking is essential to the novelty of creative products, but convergent thinking is fundamental to the appropriateness.

---

22 http://hbswk.hbs.edu/item/5902.html
24 Handbook on innovative Thinking – A Collection of methodologies and technological intelligence tools to improve innovation through creativity(2005), Institute for Industrial Promotion, p.16
25 Handbook on innovative Thinking – A Collection of methodologies and technological intelligence tools to improve innovation through creativity (2005), Institute for Industrial Promotion, p.17
2.2. Creativity in entrepreneurship – competitive advantage of a company.

“In business, people can go only so far by doing things the way they have always been done. In entrepreneurship especially, it is essential to perceive opportunities that others have not, and to pursue them in novel yet appropriate ways at every stage of the game. Such creative solutions will be necessary for managers to help solve the socioeconomic challenges of the future – for their own businesses and for the world,” about creativity role in future entrepreneurship says Teresa Amabile, HBS professor 26.

In the recent years innovation is becoming more and more important for enterprise competitiveness.

“Within organisation there is fundamental tension between the need of stability and the need of creativity. On one hand, companies require stability and static routines to accomplish daily tasks efficiently and quickly. This enables the organisation to compete today. On the other hand, companies also need to develop new ideas and new products to be competitive in future. Hence they need to nurture a creative environment where the ideas can be tested and developed. This poses one of the most fundamental problems for management today 27”. Technology is becoming a commodity. Everyone can have access to it. Manufacturing process and efficiencies are also becoming a commodity available to everyone. China and India are rapidly developing as manufacturing countries – and at a much lower cost. In a free-trade world the only differentiator is going to be creativity 28.

In a business context, “creativity is producing novel, workable solutions to problems or ideas that help organisations to achieve their goals” – this way Teresa Amabile defines creativity in business 29.

Creativity development techniques are an integral part of building a culture of innovation. They involve the generation of new ideas or the recombination of known elements into something new, providing valuable solutions to everyday problems and challenges.

Creativity development processes are used by many private and public sector organisations of all kinds, from manufacturing to services, banking and construction companies. All companies can use creativity techniques to increase efficiency and quality, especially in their research, strategic planning and marketing departments. Smaller companies implement creativity development techniques to help solve problems and improve the use of skills, techniques and processes. Creativity tools can be applied in almost any functional area of the company: strategic planning, corporate business strategy, product development, improvement of services, functional strategy, finance, human resources, marketing, management of collection of information, product design, software design, quality management, etc.

26 http://hbswk.hbs.edu/item/5902.html
29 http://hbswk.hbs.edu/item/5902.html
Creativity tools can be implemented by all firms and public organisations that confront to solve the problems, and that need to focus on innovation in processes, products or services.

Fundamental concepts for all creativity development techniques are:

- The suspension of premature judgement and reducing the negative filtering of ideas.
- Use of the intermediate possible.
- Creation of analogies and metaphors, through symbols, etc., by finding similarities between the situation that we wish to understand and another situation which we already understand.
- Build imaginative and ideal solutions (invent the ideal vision).
- Find ways to make the vision happen.
- Relate things or ideas which were previously unrelated.
- Generate multiple solutions to a problem.

You will learn about several creativity methods in chapters 3 and 4, but before that let us find out what are the reasons, why individuals and companies are not creative.

2.3. Obstacles for creative thinking in company. Factors, stimulating creativity in company.

Many researchers have studied the conditions for ability to innovate – both obstacles and the success factors. Referring to John Bessant, innovation management professor in the School of Management at Cranfield University, and Teresa Amabile, professor at Harvard Business School, the main reasons of not being able to innovate are:

At the individual level
- They do not know, how to do it – lack of skills,
- They are not permitted to express opinions or offer ideas- do as you’re told,
- They feel shy or anxious about offering an idea,
- They feel it is not their place – someone else’s job,
- They fear what others in the group might say, or do – peer pressure,
- They feel it is not worth their while – why to bother?

In order to fight against these obstacle, the company should develop the skills – through training, encourage expression of ideas (e.g. through brainstorming), expand the responsibility for implementing ideas (e.g. through job enlargement and team-based activities) and motivation (e.g. through changing the reward or recognition system).

At a group or organisation level there are more innovation disturbing obstacles:
- No time or space to make it happen – too busy doing the “real’ job,

---

• No reward – why should we bother?
• The existing structures and procedures do not support it:
  • Lack of communication,
  • No sharing of learning, the same problems are confronted again and again in different places – “re-inventing the wheel”,
  • No tradition of reflecting and reviewing in order to learn, so the same mistakes keep getting made,
  • Lack of understanding of overall strategic direction – people feel there is no point of making changes.

The solution of the above mentioned problems can be different for every company – e.g. cross-functional team working, post-project review meetings to capture learning, establishing new communication paths, etc.

Example. British research conducted by the National Endowment for Science Technology, and the Arts (NESTA) surveyed over 850 managers, and found the barriers to innovation, and the ways to overcome these barriers. Overview of the survey results in the table below. The barriers and the ways to overcome them are listed in order of importance.

<table>
<thead>
<tr>
<th>SMEs barriers to innovation</th>
<th>SMEs suggested ways to overcome barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive financial constraints</td>
<td>Management support and openness</td>
</tr>
<tr>
<td>Lack of time</td>
<td>Leaders’ modelling behaviours</td>
</tr>
<tr>
<td>Lack of resources</td>
<td>Setting up the right team</td>
</tr>
<tr>
<td>Risk aversion and fear of failure</td>
<td>Autonomy and freedom</td>
</tr>
<tr>
<td>Organisational hierarchy</td>
<td>Tolerance of failure</td>
</tr>
<tr>
<td>Unclear leadership</td>
<td>Networking opportunities</td>
</tr>
<tr>
<td>Insufficient incentives</td>
<td>Dedicated resources</td>
</tr>
<tr>
<td>Insufficient training</td>
<td>Incentives and rewards</td>
</tr>
<tr>
<td>Insufficient talent</td>
<td></td>
</tr>
<tr>
<td>Lack of autonomy</td>
<td></td>
</tr>
</tbody>
</table>

However, one solution, suitable for all companies is to initiate creativity, to develop environment favourable for creativity.

Knowing the value of creativity, companies may ask “What can be done to increase creativity in a business organisation?” There is no one answer to this question. It depends on the type of company, its management, culture and human resources competences.

One of the answers is: the most important thing about creativity is to take it seriously. The progress of company depends on creativity. There are two reasons why creativity is not taken seriously:

We do not understand creativity. We can see the results but do not know how it happened.

---

We do not know how to do about it. We assume that ideas just happen from time to time and there is nothing we can do about it. We can also borrow copy or steal ideas from others. Most people do not realise that they can use creativity formally and creatively. They can sit down and generate new ideas.

Creativity greatly enhances the existing assets and potential of any organisation, not just businesses. It is not enough just to wait for it to happen. You need to take it seriously and to take action. \(^ {33}\).

However, they need to know – how to do it. The Chapter 3 will give an overview of creative thinking methods and some examples – how to do it in your company.

HBS research results show that one of the strongest findings is that to be creative, **people need to feel good about their work**. Pride in accomplishment and positive feelings about oneself and one’s colleagues give a cognitive bump to the creative process. What makes people feel joyful at work? It sounds so ordinary and prosaic, but more than anything else, people just want to get their work done \(^ {34}\).

Another essential finding about creativity is about the importance of the **team work in creative process**. “When you boil down with the essence of creativity, it begins with something in the mind of individual. But when the individuals come together as a team, ideas can be built on and modified to become something larger \(^ {35}\).

The key of the success of creativity in business is love and passion to what one is doing. “Loving what you do doesn’t guarantee success, but it is the essence of creativity and entrepreneurship \(^ {36}\).”

**Task 2.3.**

Think 5 minutes and list 5 obstacles, disturbing creativity in your company. Try to find according potential factors, which might stimulate creativity, overcoming the mentioned obstacles. Put the results in the table, following the pattern (10 minutes)

<table>
<thead>
<tr>
<th>Obstacles for creativity</th>
<th>Stimulating factors for creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity is considered to be unimportant for solving problems</td>
<td>Presentation and analysis of good example or good practice from your own or competing company, where creativity has led to success; after that- training on creativity</td>
</tr>
</tbody>
</table>

1. 
2. 
3. 
4.

---


\(^ {34}\) http://www.alumni.hbs.edu/bulletin/2007/march/ideas_facultyqa.html

\(^ {35}\) http://www.alumni.hbs.edu/bulletin/2007/march/ideas_facultyqa.html

\(^ {36}\) http://www.alumni.hbs.edu/bulletin/2007/march/ideas_facultyqa.html
3. **The lateral thinking tools.**

In this chapter students will get introduced to the creative thinking process. Students will learn several useful tools for facilitating creative thinking: brainstorming, defining and redefining the focus, developing a concept fan, challenging and arising provocations and random entry. Students will get introduced to the basic idea treatment and assessment methods. Students will exercise the tools on the real problems of their own company.

3.1. **Overview of the creative thinking process**

In most cases, the creative thinking process consists of four main steps:

Step 1: Select and define the focus. A problem, challenge or opportunity is identified. The focus is carefully defined and precisely redefined.

Step 2: Generate ideas. One or another lateral thinking tool is selected and used to produce a range of new ideas and concepts.

Step 3: Capture and work with output. The new thinking is harvested to produce an organized and robust yield from idea generation. Ideas are treated to make them more usable. They can be assessed against various criteria.

Step 4: New concepts and ideas are chosen to take further.

For example, a company has got a problem of decreasing sales. In the first step the problem has to be clearly defined, and the targets set – what result the company wants to achieve by solving this problem. In the second step the ideas are generated. In this process one can use the most appropriate method (see Chapters 3.2- 3.5). Generating ideas we look for solutions – how to solve the problem, e.g. develop new products, revise the raw materials, work on marketing, develop new packaging, etc. When there is a long list of possible solutions, in the third step of the creative thinking process they have to be grouped, selected, redefined, and assessed by using some assessment method. We will learn about formal idea assessment in chapter 3.2. This process is called harvesting, treatment and assessment. In the fourth step the final new ideas are listed and the company can take them further – for more detailed assessment and implementation.

The creative thinking process graphically is presented in Figure 3.

---

Usually creative thinking associates with brainstorming. It is a well-known method, utilized by majority of organisations for generating ideas. Some people may even think that brainstorming and idea generation are synonyms. However, also brainstorming has certain rules and framework, in order to be successful. Edward De Bono contribution in creative thinking process, is provision of different tools for supporting the “well-known” brainstorming, making the idea generation process more effective, but the ideas more related to business, focused and ordered.

**Task 3.1.**
Think for 5 minutes and identify at least 3 problems which you have faced in your company, and, to your mind, they might be solved by creative thinking process. (10 minutes). These ideas you will have to use also in other tasks of this chapter, therefore try to find reasonable problems.

1. __________________________________________
2. __________________________________________
3. __________________________________________

---

Edward de Bono’s Lateral Thinking Full course, The Power of provocation (2006), De Bono Thinking Systems
3.2. Brainstorming techniques and methods using brainstorm elements.

Brainstorming is one of the best known and most used tools in the business world based on creativity processes for problem solving. It is a method of getting a large number of ideas from a group of people in a short time. It can be used for generating solutions for well-defined strategic or operational problems, such as engineering design process. Brainstorming also forms a basic framework or constitutes the initial phase for the implementation of many other creativity tools.

Brainstorming sessions ideally take place within a group of 6-10 people. The presence of leader is necessary to stimulate the generation of ideas, as well as preparation phase to gather the necessary data and information to approach the problem. Before the brainstorming session, there is clearly defined the aim of the session or the problem statement. A scribe writes the problem statement, and the ideas generated by the group on the white board.

The four basic rules of brainstorming are:

- No criticism and no prior judgement of any idea.
- All ideas, even the most absurd, are welcome.
- Quantity has value, the more ideas, the better. If a large quantity of ideas is generated, then the idea pool very likely would contain some high quality ideas.
- Sharing and combining the ideas, and constructing ideas based on those developed by other members of the group, to produce new ideas.

Usually the brainstorming is done in a limited time (e.g. 30 minutes). After the brainstorming the generated ideas are ordered, redefined, prioritized and assessed according to the criteria, selected by the brainstorming group. The method was first popularised in the late 1930s by Alex Faickney Osborn, in a book called *Applied Imagination*. You can read more about brainstorming in [http://www.innosupport.net/index.php?id=2109](http://www.innosupport.net/index.php?id=2109).

There can be different varieties of brainstorming. In the case if the group is shy, or there is any other reason why the group does not want to speak the ideas loud, there can be organised a written brainstorming session. The beginning of the session is the same like for usual brainstorming session – setting the aims, problem statement. Then each of the participants writes down on the piece of paper at least three ideas- solutions for the problem. After that the paper is forwarded to the next participant, who reads the ideas already developed and creates new ideas basing on the developed ones. After that he forwards the peace of paper to the next person. If there are 6 persons in the group, and each of them develops three ideas, and forwards the paper five times, then there are created altogether 6x3x5 ideas, which constitutes 90 ideas. This method is known as brainstorming technique, called 6-3-5. Method 6-3-5 was first developed by Rohrbach in 1969. You can find more information about 6-3-5 method in [http://www.innosupport.net/index.php?id=2032](http://www.innosupport.net/index.php?id=2032).

Another brainstorming technique with a purpose to classify and explore ideas, is mind mapping. The technique is based on the potential strength of associating ideas, and was

---

initially named by its author Tony Buzan the “ideas tree” method. Mind mapping consists of identifying a first word that represents the nature of the problem under exploration or the progress to be made. This word is written within a bubble in the centre of a white board, and then ideas that are suggested by this word are noted in concentric circles around the central word. Lines are traced from one idea to another and the process is repeated until all ideas have been mentioned. The result is a visual representation of the problem. You can read more about mind mapping and other types of brainstorming in [http://www.innosupport.net/index.php?id=2114](http://www.innosupport.net/index.php?id=2114).

A brainstorming technique, where are important different views and opinions of the tackled problem, is called focus group discussion. The specifics of this brainstorming technique lie in the difference of the participants – they may represent different areas and levels (e.g. government, municipality, university, research, company, competitors, cooperation partners, customers). However, the tackled problem has to be topical for all the represented groups. The result of such brainstorming might be broader view to the problem solution, bring in unusual solutions for a company, and therefore can provide more effective results.

**Task 3.2.**

Nowadays almost everyone, living either in rural or urban areas, faces transport problem. In 10 minutes time develop the potential solutions for your case in solving transport problem to get from your home and back.

Write down your developed ideas in the table below.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

When you have generated at least 10 ideas, try to define at least three assessment criteria for your problem solutions (e.g. price, practicality, seasonality, reliability, etc.), and assess formally your ideas according these criteria. (5 min)

Write down your developed assessment criteria:

1. _________________________________

---

Evaluate the ideas you developed, according to your assessment criteria, and put the results in the table below. For positive answer give 3 points, for neutral – 2 points, for negative – 1 point. (15 min)

After summarizing all the results, select and mark the three best ideas.

<table>
<thead>
<tr>
<th>Nr of idea</th>
<th>Criteria 1</th>
<th>Criteria 2</th>
<th>Criteria 3</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E. De Bono: “Brainstorming does have a value, but it is very weak process compared with some of the formal tools of lateral thinking. The traditional process of brainstorming sometimes gives the impression of shooting out a stream of (often crazy) ideas in the hope that one of them might hit a useful target.⁴¹” Therefore the lateral thinking tools will be further discussed which might make the brainstorming process more effective.

### 3.3. Focus: the basics, creative hit list, redefining and refining.

Focus is a very important part of applied creativity. According to the creative thinking process scheme (see Figure 3, Chapter 3.1.), defining a focus is the very first step of creative thinking process. If we cannot define our focus, we cannot generate ideas deliberately. We would just have to wait for ideas by chance. There are two broad types of focus: area focus and purpose focus.

**With area focus** we simply define the area **where we want the new ideas**, but not the why we want them. Thinking about area focus, we think about areas we have to address to achieve our aim. Area focus allows us to think about anything at all, not just about solutions to problems. This can be very powerful as it often leads to thinking about areas

---

that no one else has given any attention. The topic can be narrow or broad, e.g. new ideas about public transport, and new ideas about electric transport.

**Purpose focus** is a type of focus we are most familiar. There is a problem that has to be solved. There is a process to be simplified, a task to be achieved. There is a conflict to be resolved, or there is an improvement to be made, etc. With purpose focus it is always possible to state the purpose very clearly. It is like travelling towards a destination. You know where you want to get to.

Purpose focus statements include a verb that tells specifically what we want to do about the subject. For example, how do we improve the underground transport? Or – how do we obtain the staff timely arrival at work in the mornings?

If we want to have a desired outcome or problem to solve, we use purpose focus. If we are looking for new ideas in an area, we use area focus. Usually in creative sessions, first the area focuses are defined (the areas to be addressed) and then the purpose focuses are specified.

In order to record the creative ideas/focuses, it is worthwhile putting them down, forming a list of them. According to E.De Bono, the list may be called **creative hit list**. It is a formal target list of focuses that need creative thinking. Creative hit list is a start of a creative session. No discussion should start without a creative hit list. Creative hit list provides a target and demand. The items on the list would be a mixture of purpose focuses and area focuses. While developing the Creative hit list, people can make suggestions to new focuses which might be added to the list.

**Task 3.3.**

Imagine that you are a manager of a small production company, facing a problem of competitiveness (staff, products, price, market etc.). Think about fifteen items, including a range of types of focus statements. One third of the focus statements should relate to problems as such. The rest should be a mixture of improvements, tasks and area focuses. Develop the creative hit list: put the ideas down in the table, following the pattern.

**Purpose focus, problems**

4. How to raise competitiveness  
5. How to reduce regular costs (electricity, heating, water)  
6. ____________________________________________  
7. ____________________________________________  
8. ____________________________________________

**Purpose focus, improvements**

1. Encourage innovation  
2. Improve quality  
3. ____________________________________________  
4. ____________________________________________  

---

Area focuses
1. New ideas on new products
2. New ideas on marketing
3. ________________________________
4. ________________________________
5. ________________________________

After development of the creative hit list, we choose one or two problems (focuses) for further discussion. The other topics can be discussed later.

Usually the conditions change, and there is a need to redefine the chosen focus by expanding or shrinking it.

In order to redefine the focus, follow the indicated steps.
1. Select the purpose and put the selected purpose in the Focus box
2. Stretch the focus by asking “why?”
3. Shrink the focus by asking “what’s stopping us?” or “what are the contributing factors?”
4. Select a focus to work with.

Example. If we would like to redefine our purpose focus – How to encourage innovation, we follow the 5 steps, and identify one or more new, more specified focuses to work with. (Figure 4)

Figure 4. Five steps for redefining focus.
**Task 3.4.**

Try to redefine another purpose focus, (e.g. How to improve production quality?), or another purpose focus, developed in the previous exercise. Use the template below. You can add more boxes if necessary. (15 min)

**Refining the focus.**

Both area and purpose focus statements often require some refinement – improvement, perfection, completion of the statement. In order to refine the focus, one should consider broader implications of the focus, the importance of contributing factors and the perspective of various stakeholder groups – persons having interest in the situation or will be affected by any changes made. For example, in Task 3.3., one of the focus statements was “new ideas on new products”. Thinking deeper about this focus, we can refine it, and find alternate refined statements:

- Improvement of the features/quality/price of the existing products;
- Ideas of totally new products for company;
- Development of a new product line.
**Task 3.5.**
Take one from the focus statements (Task 3.3, 3.4.). Look the ways to refine the wording. (10 min)

Focus statement__________________________________________________________

Alternate refined statements:
1. ________________________________________________________________
2. ________________________________________________________________
3. ________________________________________________________________

**3.4. Alternatives and concept extraction**

This chapter will help to learn how to extract concepts from ideas to create more alternative ideas.

Creating alternatives is one of the basic operations of lateral thinking. We start with the belief that there are always several ways of doing things and we should think of many alternatives before deciding on one. Alternatives give us options for achieving the same purpose.

Alternatives are not random. Alternatives must have a connecting point. We can find the connection between alternatives by asking – both of these are ways to do what?

For example, both oranges and chocolates are ways to have a snack, and both oranges and tennis balls are ways to play catch. The connections that link alternatives are called “fixed points”. In the first case the fixed point is a snack, but in the second case – means to play catch.

If we define a fixed point for some item, then the alternative is the other way of doing it. For example, if we look at the boat, and the fixed point is a way to cross a river, then the alternatives can be – a bridge, a float, a ferry, swimming, freezing water and walking, etc.

If we define different fixed points, they may lead to different alternatives.

**Task 3.6.**
Take 5 minutes to think the alternatives for the word “brick” with a fixed point – way to build houses, and a “vase” with two different fixed points – way to display flowers and “vase” as an interior element. Follow the pattern.(5 min).

<table>
<thead>
<tr>
<th>Item</th>
<th>Fixed point</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>boat</td>
<td>Way to cross a river</td>
<td>bridge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>float</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ferry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>swimming</td>
</tr>
</tbody>
</table>

---

*Edward de Bono’s Lateral Thinking Full course, The Power of provocation (2006), De Bono Thinking Systems, p.18*
Concepts. A fixed point can be called a concept. A concept is a general approach to doing something. Concepts are vague and non-specific. An idea is a way to carry out a concept. Idea is more specific. Example:

Concept: storage of shoes
Ideas: on the floor, in the shelf, cupboard, boxes, cloakroom.

In Concept extraction we develop alternatives and new ideas by “extracting the concept” and then looking around for other ways to deliver this concept by means of a specific idea.

From E. De Bono experience, an exciting practical example of concept extraction comes from Australia. In a small village there was a problem that the car drivers left their cars on a shopping street for full day, and this way people going shopping could not find free parking places. The usual solution would be to put in parking meters in order to limit parking. However, it is expensive. The concept here was a need to find a way to limit the time people could leave their cars parked in the street. As alternative solution, there was developed an idea that the cars can stop at the shop only with their headlights on. One could not leave the car there for very long, because he would be running the battery down. There was no way to leave the car for a full day, one could park, rush for shopping and then drive off.

In order to do concept extraction, one should follow the steps:

1. Have a starting idea
2. Define a purpose
3. Generate one idea
4. Extract the concept from the idea
5. Use the extracted concept to breed more ideas

From each alternative way of achieving the desired purpose, we can seek to extract a concept and then to find other ways of carrying out this concept.
For example, if we have an idea “to go to job”, we define a purpose “to earn one’s living”. Then we define the concept or the fixed point, which is earning money, and after that we can look for alternatives to earn money – such as- to take part in competitions, lotteries; to create own business, based on own skills; search for rich predecessors and inherit money; to rob the bank, etc.

Example:

<table>
<thead>
<tr>
<th></th>
<th>Have a starting idea</th>
<th>Go to job</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Define a purpose</td>
<td>To earn living</td>
</tr>
<tr>
<td>2</td>
<td>Generate one idea</td>
<td>Earn living by work</td>
</tr>
<tr>
<td>3</td>
<td>Extract the concept from the idea</td>
<td>Earning money</td>
</tr>
<tr>
<td>4</td>
<td>Use the extracted concept to breed more ideas.</td>
<td>To participate in lottery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To create own business</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To rob the bank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To seek for rich predecessors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To sell some real estate</td>
</tr>
</tbody>
</table>

Task 3.7.

Following the example above, try to create alternatives for an idea “to go to job”, if the concept/fixed point is “to develop professional skills”. List at least five developed alternatives (10 min).

1. __________________________________________
2. __________________________________________
3. __________________________________________
4. __________________________________________
5. __________________________________________

In order to use the concept extraction and finding alternatives for solving wider problems, one may use the cascade effect. In each point of finding alternatives, we develop a new level of finding ideas. This way we can develop a broader solution of the idea. Edward De Bono calls it a Concept fan, and he encourages to use it as a powerful way of opening up alternative ideas and concepts to achieve a defined purpose. Concept fan is like a scheme for development of solutions in several different directions. For example, if we have a purpose to solve a problem – how to reduce electricity expenses (purpose), at a first step we can develop several directions or ways how to reduce electricity expenses. After that, on the next step, we can develop the concepts-how to realize each of the solutions, and on the next step generate ideas to find different ways how to utilize the developed solutions. Let us go step by step to develop a concept fan.

1. **Purpose** – to save money for electricity
2. **Directions**
   1) reduce the electricity consumption,
2) find access to cheaper electricity,
3) improve electricity production efficiency and to reduce the electricity production price

3. Concepts:
   - For the 1\textsuperscript{st} direction – to limit the use of electricity, to save it; to buy more efficient (energy saving) electric devices;
   - For the 2\textsuperscript{nd} direction: to buy electricity from another provider; to produce own electricity (from renewable sources - wind, biogas, solar cells, etc.);
   - For the 3\textsuperscript{rd} direction: to modernize the existing electricity production facilities, to change the electricity production source; to find elaborate state subsidies for electricity so that consumers can get it for lower price.

4. After that, we can develop unlimited number of new alternative ideas for the developed concepts.
The Concept fan is presented in Figure 5.

![Concept fan diagram](image)

**Figure 5. Example for a template of the concept fan.**

**Task 3.8.**
Try to develop a Concept fan for a problem in your company. You defined some problems in Task 3.1. Take one of them, and define a purpose to solve the problem. Then try to organise your concept fan, according to the template in the Figure 4. (20 min)

**3.5. Challenge, arising provocations.**

Challenge is a fundamental tool of creative thinking. It works on the assumption that there may be different and better way of doing something, even if though the current approach is adequate. Challenge is a part of any change process.
Challenge process is never an attack or a criticism. If you treat challenge as criticism, you will look only for faults, deficiencies and problems. The challenge as a creative thinking method is an assumption that there is nothing wrong, but we will challenge things anyway to see if we can get new ideas. As well, we challenge when improvement is needed – when something is good but we still want to improve it.

Challenge can be explained with a simple example. Every day you come home from your work using the way directly from W to H (see Figure 6). You have accustomed to it and you know that in the rush hours that is the best way to do it. However, once there is a big obstacle – a car crash in your usual way. In this case it a challenge to try another route – from W through C to H. It may happen that this way you will find another route, which you will start using after this case.

Another lateral thinking tool is to set up provocations. Provocation can be used to break the existing thinking patterns, which are disturbing generation of new ideas. Provocation allows us to make a statement that does not make sense, may contradict experience and may be totally illogical. Instead of just sitting and waiting for ideas, provocation provides a means by which one can unsettle the mind in order to increase the chance of having a new idea. Provocation lies outside of normal experience.

There are several ways to set up a provocation:

- Escape – cancel or drop what you have taken for granted.
- Reversal – reverse the normal direction of action.
- Wishful thinking – create a fantasy wish (wouldn’t it be nice if…)
- Exaggeration – suggest a measurement that falls outside the normal range.

For example, if we use the previous case (Figure 6), then the ways to set up provocation can be: escape – I will not go home and find another place to stay overnight; reversal – I will stay overnight at work; wishful thinking – someone could bring me home on a helicopter; exaggeration – I will patiently wait while the police and ambulance will come

![Figure 6. Illustration example of challenge.](image-url)
and then the crashed cars will be taken away from the road. Of course, there can be hundreds of other provocative ideas in this situation.

How to use the provocation tool? Here is an example of using provocation tool step by step, in the case if we are willing to find ideas how to improve our life by creating work-life balance.\footnote{Edward de Bono’s Lateral Thinking Full course, The Power of provocation (2006), De Bono Thinking Systems, p.60-61}

1. Focus statement: \textbf{Ideas for creating work-life balance}.

2. List what you take for granted about the focus:
   - Work from 9 a.m to 5 p.m
   - Drive a car to work
   - Drop the children at school
   - Spend one hour to communicate via e-mail
   - Spend half of a day in meetings
   - Having late dinner after work
   - Take a dog for a walk two times a day
   - Reading and relaxing after dinner

3. Set up provocations using provocation tools.
   - Escape – cancel or drop what you take as granted:
     - Spend one hour communicating via e-mail: there is no e-mail
     - Spend half of a day in meetings: there are no meetings
     - I drive my car to work: there is no car
   - Reversal – reverse the normal direction of action
     - I drop off the children: children drop me off
     - Reading and relaxing after dinner – reading and relaxing during working time
   - Wishful thinking: create a fantasy wish
     - Read and relax after the job – read and relax during working time, by changing job
     - Drive a car to work – move the work in a walking distance from home
   - Exaggeration:
     - take a dog for a walk: become a dog nanny
     - Exercise 3 times a week: I exercise every day
3.6. Random entry.

The random entry technique is easy to use and very effective at breaking people out of thinking patterns. Random entry technique uses random words, objects, pictures or sounds to promote idea generation. This method seems totally illogical and unlikely to work, but at the same time it is very powerful and actually it is totally logical.

Random entry is very effective when you have a brand new situation and you need a starting point, or you cannot find new ideas – the same ideas keep coming up over and over; or – ideas are needed fast. In order to use the random entry technique, one would need random words, objects, pictures, sounds or whatever. In order to use the random entry, one may use not only a verbal, but also other senses – visual (photos, films, pictures), touch (objects), sounds (music, noise). Random word is one of many types of random entries, and the most popular one.

The simplest way is to choose a random word, preferably a noun, which is randomly picked up from a book, newspaper or vocabulary.

The essence of the techniques is that if you have to create a new idea or new solution, you can use any random word as a supporting structure to develop the ideas. Usually it is used when there is no inspiration, no mood or just lack of new ideas. When brainstorming new ideas, one is using a random word and the entire stimulus (associations, links, etc.), created by random word in your mind. This way, choosing a random word and creating new ideas connected to it, one may get original solutions. Developing new ideas using another random word may bring to totally another solutions.

The use of the random word technique is very simple. First, one should select a focus – it is a problem which has to be solved or a task to be done, respectively the topic where new ideas are needed. Then there has to be chosen the random word. After that the random word should be placed next to the focus, and there are generated ideas to connect the random stimulus to the focus.

The random entry process step by step is graphically illustrated in the Figure 7.
Task 3.10.
For students, there is a popular problem – lack of presentation skills. Try to generate new ideas on the topic – how to develop presentation skills?

For the idea generation, choose one of the listed random words (zipper, shovel, basket, butterfly, snake, bottle, egg). Follow the scheme, presented above. First, list the associations or concepts connected between the focus and the random word. After that, create ideas using each of these concepts. Before you start the exercise, you can look at the example, where there are developed ideas using the random word “tree” (15 min)

Chosen random word - tree
List the concepts (based on associations between the focus and random word)
1. growing plant with roots, branches and leaves
2. source of paper
3. high object where to climb up and see around
List at least two ideas for each concept.
1.1. analyse the reasons of lack of presentation skills,
1.2. develop a scheme of training of presentation skills, appointing responsibilities
2.1. develop a road map about improving the presentation skills
2.2. develop a presentation on a paper, as a starting point for skills development
3.1. look around and do research on existing presentation skills courses
3.2. find a method, how to train presentation skills on the stage

Chosen random word ____________________________
List the concepts (based on associations between the focus and random word)
1. ______________________________________
2. ______________________________________
3. ______________________________________

List at least two ideas for each concept.
1.1. __________________________________________
1.2. __________________________________________
2.1. __________________________________________
2.2. __________________________________________
3.1. __________________________________________
3.2. __________________________________________

Task 3.11.
Pick up a problem at your company. You can use one of the problems you listed in Task 3.1. Choose one of the random words (zipper, shovel, basket, butterfly, snake, bottle, egg), or any other random word, and repeat the exercise. (15 min)
Problem/focus __________________________________________
Chosen random word ____________________________
List the concepts (based on associations between the focus and random word)
1. __________________________________________
2. __________________________________________
3. __________________________________________

List at least two ideas for each concept.
1.1. __________________________________________
1.2. __________________________________________
2.1. __________________________________________
2.2. __________________________________________
3.1. __________________________________________
3.2. __________________________________________

At the end of the creative thinking session, one is often faced with a broad range of new ideas and concepts that have emerged. Yet sometimes people rush to action by selecting few ideas to pursue further while ignoring the rest of output. It is like farmer who sows a large crop but only harvests a quarter of it, leaving the rest to rot in the fields.
The harvesting tool reminds us to take a longer look at all the creative thinking session output. The harvesting phase includes extracting new and interesting concepts and looking for relationship between ideas.
In order to organise harvesting, the creative thinking session participants should go through all the ideas and to differentiate them according to their importance. The output of the creative thinking session may be organised in a table:

**Table 2. Output of the harvesting process.**

<table>
<thead>
<tr>
<th>Focus statement:</th>
<th>Broad concepts</th>
<th>Concepts</th>
<th>Specific ideas</th>
<th>Beginning ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Find links between several concepts to identify broader approaches</td>
<td>Find general directions or themes in the output</td>
<td>Note valuable, practical, usable, but specific ideas</td>
<td>Note interesting starter ideas that are not yet in a usable format</td>
</tr>
<tr>
<td>Changes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe any changes in thinking or perspective that have occurred during or as a result of the creative thinking process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This harvesting organiser will be the document you have after the session. There will be listed all the main ideas, but also the ideas which are not important at the moment but may be very useful later.

**Task 3.12.**

Take the ideas, generated in the Task 3.11, and try to organize them using the template of the harvesting organiser above. You can write the results directly in the template above. (10 min)

In many cases, harvesting produces an array of ideas that require additional work to retain their originality while at the same time making them practical. The creative thinking process can continue with treatment of ideas by shaping them and strengthening.

**Shaping** means using the real life constraints to modify an idea into another one, that is practical and usable. During shaping we try to fit the idea to real cost, legality, timelines, technical feasibility, etc.
**Strengthening** means taking the strongest points of the idea and seeking to make them even stronger. One approach is to consider the key stakeholder groups and what kind of value the idea can offer to each one of the groups.

After shaping and strengthening the ideas, they should be assessed. As the first assessment the preliminary assessment can be done – fast determination of the feasibility of the ideas. If an idea fares well through the assessment, it can be investigated and pursued in more detail. If it does not perform well, more treatment may be required.

For preliminary assessment two approaches may be used—rating scale and Six thinking hats. Six thinking hats will be discussed more in the Chapter 4.

However, rating scale is similar to formal idea evaluation, described in chapter 3.2 on brainstorming. Using assessment rating scale approach, we pose a series of critical questions to determine how well an idea measures up. Rate each idea relative to each question, using a score from 1-10 with 10 being the highest score.

In order to use the rating scale, you may use the following steps:

1. Put the ideas to be cultivated at the top of the grid.
2. For each idea, answer each of the relevant assessment questions.
3. Give each idea a score from 1-10 for each of the relevant items on the assessment checklist.
4. Add up the score for each idea.

**Table 3. Example of the checklist.**

<table>
<thead>
<tr>
<th>Ideas:</th>
<th>Idea 1</th>
<th>Idea 2</th>
<th>Idea 3</th>
<th>...</th>
<th>Idea N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scoring of the Idea 1</td>
<td>Scoring of the Idea 2</td>
<td>Scoring of the Idea 3</td>
<td></td>
<td>Scoring of the Idea N</td>
<td></td>
</tr>
</tbody>
</table>

**Critical questions**

- **Need**
  - Is there a perceived need for this idea?

- **Benefits**
  - Who will benefit and in what ways from this idea?

- **Feasibility**
  - Can this be done? Is it practical?

- **Acceptability**
  - Is this idea acceptable internally?

- **Cost**
  - Does the idea fit within cost constraints?
<table>
<thead>
<tr>
<th>Risk</th>
<th>Fit</th>
<th>Uniqueness</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the risk of failure?</td>
<td>Is this idea good for the organisation?</td>
<td>Is this a unique idea in the marketplace?</td>
<td></td>
</tr>
<tr>
<td>Can it be avoided?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Task 3.13.**

Try the rating scale method for 2-3 of your developed ideas generated in Task 3.11. Use the Table 3. - Example of the checklist, to score the results of your ideas. (15 min).

**4. Six thinking hats.**

In this chapter the students will learn a unique idea/problem assessment method – Six thinking hats. Students will learn the basics of the method and will learn practical hints how to use the method. Students will try the method for assessment of one of their own ideas. This chapter will provide students with the basic information for doing practical work in face-to-face meeting in the end of the module.

Six Thinking hats method was invented and developed by Edward De Bono in 1985. In this chapter, speaking about six thinking hats, we will refer to Edward De Bono book “Six thinking hats”\(^46\). The six thinking hats method is simple and effective method for structuring the human thinking process in order to solve problems. The method has been used by such world-wide companies as NASA, IBM, DuPont, Shell, Statoil, British Petroleum, etc. There are several advantages of six thinking hats method:

1. The method can be successfully used to top level executives and to pre-school children.

2. The method is using a concept of playing a game. Everyone has to obey the common rules. The rules of the game are a very powerful tool to change ones behaviour and to think, speak and behave differently, unusually in unaccustomed way. People do not have to be ashamed or concerned about their ideas. They do not have to worry that they might seem impolite. They do not have to hide their emotions. This way the process of the game guarantees the involvement and contribution of all participants, who are interested in a common problem solving outcome.

3. Six thinking hats method is a structured process. Following the rules, the participants are targeted, can avoid verbosity, and therefore it saves the discussion partners’ time. The long-term experience shows that the discussions under six thinking hats

save at least half of the discussion time, which is very important in companies, where the time is money.

4.1. The essence of the six thinking hats method.

Edward De Bono has discovered that the main difficulty of thinking is confusion. We try to do too much at once. Emotions, information, logic, hope, critics and creativity are mixed in our minds. It is like juggling with too many balls.

![Figure 8. Juggling with six coloured balls and with one colour ball.](image)

Juggling with six balls at the same time is rather difficult. Tossing up one ball at a time is much easier. The six thinking hats method allows a thinker to do one thing at a time. Putting on any of six hats defines a certain type of thinking. Every type of thinking is represented by one colour, which is associated to that type of thinking.

Each of the six thinking hats has a colour: white, red, black, yellow, green, blue. The colour provides the name of the hat.

- The white hat is neutral and objective. The white hat is concerned with objective facts and figures.
- The red colour is associated with anger, rage and emotions. The red hat gives the emotional view of the idea.
- The black colour is sombre and serious. The black hat is cautious and careful. It points out the weaknesses and threats of the idea.
- Yellow colour is sunny and positive. The yellow hat is optimistic and covers hope and positive thinking.
- Green colour is everywhere in nature – grass, meadows, forests. Green is associated with vegetation, abundance, fertile growth. The green hat indicates creativity and new ideas.
- Blue colour is cool, and it is also the colour of the sky, which is above everything else. The blue hat is concerned with control, the organization of the thinking process and the use of the other hats.
Using the six thinking hats method, the thinking process is managed by the moderator. The moderator is leading the discussion process sequentially under all six thinking hats – one by one. The moderator of the thinking session/discussion makes sure that at every moment all the participants are thinking only under one colour hat. This way all the participants are thinking parallel and all their ideas are equally good. Everyone is looking and working in the same direction. There are no critics, no fights, no response to the previous idea, no arguments against one or another idea. In the end of the discussion after every hat, the subject is fully explored.

At the end of the six thinking hats process, the participants have all viewpoints of the idea/problem/situation and they can make conclusions, reach the target of the thinking session.

**Practical hints for using the six hats**

- Any hat can be used as often as you like.
- There is no need to use every hat.
- There has to be observed discipline, following the directives of the moderator, who is changing the hats and managing the discussion.
- There is limited time for thinking under every hat. That forces people to concentrate on the thinking and reduces aimless discussions.

### 4.2. Explanation of the creative thinking under six colour hats

**White hat**

The white hat is usually used towards the beginning of a thinking session as a background for the thinking that is going to take place. The white hat also can be used towards the end of the session as a sort of assessment, evaluating if the proposals created fit in with the existing information.

The white hat is neutral. It is not for generating the ideas, but defining the environment where ideas are to be created. A very important part of the white hat is to define the information that is missing and needed. The white hat defines the questions that should be asked. The white hat lays out the means for obtaining the needed information.

When thinking under the white hat, the participants should focus to the background information. The following questions may be answered:

- What information do we have?
- What information do we need?
- What information is missing?
- What questions do we need to ask?
- How and where are we going to get the information we need?

Under the white hat the thinkers strive to be neutral and objective in the presentation of information.

The moderator should use the focusing questions in order to obtain information or to fill information gaps. The information can range from facts and figures that can be checked to soft information like common opinions and feelings.
Blue hat.
The blue hat is for management, organisation and process control of thinking. Blue hat thinking monitors the thinking and ensures that the rules of the game are observed. Blue hat thinking enforces the discipline. Usually the blue hat thinking is managed by the moderator of the thinking session, but it is open for anyone to offer blue hat comments and suggestions.

The blue hat should always be used both at the beginning and at the end of the session. At the beginning of the session the blue hat defines the situation and the purpose of the thinking. The key role of the blue hat thinking is the focus aspect. The moderator has to ensure that all the participants recognize the problem/idea and see the focus – the purpose of the thinking. Either there is a clearly formulated problem to be solved or idea to be assessed.

At the end of the session, the blue hat makes summary, identifies outcomes, conclusion and draws the next steps to be done after the thinking session. At the beginning of the session, the blue hat indicates:

- Why we are here?
- What are we thinking about?
- The definition of the problem/situation/idea
- Alternative definitions, if any
- What do we want to achieve?
- Where do we want to end up?
- What is the background of the thinking?

A plan for the sequence of hats to be used.

At the end of the session the blue hat indicates:

- What we have achieved?
- Outcome
- Conclusion
- Design
- Solution
- Next steps

Coming to the final blue hat, the decision is often obvious to the thinking session participants.

Red hat.
In a normal business discussion one is not supposed to allow emotions enter in. However, we cannot neglect the emotions and their meaning in thinking, and even more – making decisions. Emotions are like a background for the thinking. Human beings cannot avoid such strong emotions like fear, anger, suspicion, jealousy, hatred or love. The purpose of the red hat thinking is to make visible this background and to find out its potential influence to the thinking process.

The red hat provides a unique and special opportunity for feelings, emotions and intuition to be put forward. Using six thinking hats methods, the participants can express their emotions without justifying them. Using the game of six thinking hats, people
express their emotions, which in another situation they would have kept to themselves. Views expressed under the red hat are less personal than views expressed without it.

Wearing the red hat allows the thinker to say: this is how I feel about the matter. The red hat emotions and ideas can be expressed like:

- I love it
- I like it
- I am doubtful
- I don’t like it
- I am uncertain,
- I am neutral,
- I am happy/unhappy, etc.

The red hat legitimizes emotions and feelings as an important part of thinking process.

**The Black hat.**

The black hat is the most used of all the hats. Usually the black hat is the easiest for the use for the thinking session participants. According to E.De Bono, it is because the black hat thinking is based on a natural mechanism in the mind – “mismatch” mechanism. The brain forms patterns of expectation: this is the world is like. If we come across something that does not match these existing patterns, we feel very uncomfortable. This natural mechanism ensures that we do not make mistakes. It makes us to be cautious, careful, notice threats and danger. It makes us criticize everything which is suspicious.

The black hat is the hat of caution, being careful. It prevents us from doing things that are illegal, dangerous, unprofitable and so on.

The black hat thinking is always logical. There must be always a logical basis for the criticism. The black hat allows criticising the ideas, however, the rules of the six thinking hats game does not allow to be critical at any other point of discussion.

Usually the discussion under the black hat includes answers to the questions:

- What will happen if we take this action?
- Will it be acceptable?
- Do we have resources to do it?
- How will people react?
- How will competitors react?
- What can go wrong?
- What are potential problems?
- Will it continue to be profitable?

The black hat is used as a part of assessment – should we proceed with the suggested idea? The black hat points out all the matters that need attention because they are too weak, risky or harmful. The black hat identifies the weaknesses to be overcome, and what are the threats. It is important for design process. As well, the black hat makes risk assessment, pointing out the potential problems in future.
The yellow hat.
The yellow hat thinking is concerned with positive assessment of the ideas and proposals. Under the yellow hat the thinkers try to find out the possible benefits and to see how it may be possible to put the idea into practice. The yellow hat thinking is constructive thinking. The constructive thinking proposals are constructive solutions to make something better.

As well, the yellow hat helps the people to find out the value of their own ideas.
The yellow hat is special with the positive thinking. Positive thinking is a mixture of curiosity, pleasure, greed and the desire to „make the things happen“. A positive assessment may be based on experience, available information, logical deduction, hints, trends, guesses, and hopes. However all the reasons for optimism have to be justified. The justification is an attempt to strengthen the suggestion. If there are no reasons justified, then the positive emotions fit under the red hat.

During the yellow hat thinking, the participants may answer the questions:
- Will this idea work? Yes, it will, because....(justification, arguments)
- What will happen if we will do it?
- What another perspectives will this idea open?
- Will this idea open new markets?
- Will this idea create new jobs?
- Will this idea meet the market needs? Yes, it will, because....(justification, arguments)
- Will this idea be competitive? Yes, it will, because....(justification, arguments)

From yellow hat thinking come concrete proposals and suggestions. But creating new ideas, is the area of the green hat, which in the thinking session may follow to the yellow hat.

The green hat.
Usually during the six thinking hat process, new ideas, alternative ideas, different combinations of ideas appear. The green hat thinking is the moment to put these new ideas on the table.

Green hat thinking is concerned with new ideas and new ways of looking at things. Green hat thinking may make the thinkers to escape from the old ideas in order to find better ones.

The green hat thinking does not make people more creative, however, it allocates time to think about alternatives, new approaches, new ideas.

Under the green hat people are allowed to put forward „crazy“, alternative, sometimes provocative ideas. Green hat thinking is lateral thinking – generating new concepts and perceptions.

Thinking under the green hat, the thinkers have to answer to the questions
What would be the best approach to implement this idea?
Can we use this idea in another way, for another purpose?

Thinking creatively, the green hat thinking directs the thinkers towards different questions „how?“:
• How to make this idea work?
• How to improve this idea?
• How to achieve alternative solutions?
• How to make this idea more feasible?
• How to reduce expenses for realizing the idea?
• How to commercialize the idea?

The final decision of the six thinking hats session is based on the combination of the white hat (facts), yellow hat (benefits), black hat (caution) and red hat (intuition and feeling).

**Task 4.1.**

Imagine that you have been offered a very challenging, well paid, but short-term job in USA. The job would bring you benefits in your professional career. You have made a decision to move to USA for three months. Think on the situation and try to evaluate it using six thinking hats. Write the main statements in the table below.(20 minutes)
Module 2 Self-assessment test

1. Define knowledge-based economy
   - A knowledge–based economy is defined as an economy directly based on the production, distribution and use of knowledge.
   - A knowledge–based economy is economy in which the creation, distribution, diffusion, use, integration and manipulation of information is a significant economic, political, and cultural activity.
   - A knowledge–based economy is defined as an economy directly based on manipulation of knowledge and significant economic, political, and cultural activity.
   - A knowledge–based economy is economy in which markets are becoming more global with new competitors, product life cycles are shortening, customers are more demanding and the complexity of technology is increasing.

2. List the components of innovative organization
   - Shared vision, leadership and the will to innovate, appropriate structure, key individuals, effective teamwork, continuing and stretching individual development, extensive communication, high involvement innovation, external focus, creative climate and learning organization.
   - Vision, leadership, teamwork and innovation.
   - Shared vision, will to innovate, effective teamwork, extensive communication, high involvement innovation, external focus and creative climate.
   - High technologies, will to innovate, and innovation management knowledge.

3. Describe “learning organisation” according to J.Bessant. Learning organisations combine several components as a part of company’s culture:
   - learning from experience, learning from competitors, learning from each other and learning from own and others’ mistakes.
   - learning from experience, learning from experimentation, reflection and conceptualization.
   - structured and challenging reflection on the process, conceptualizing, experimentation and honest capture of experience.
   - learning from their own and others mistakes and experiences.

4. What are the learning process components?
   - experimentation, experience, reflection, conceptualization
   - experimentation, reflection, discussion, theorizing
   - observation, experience, conceptualization, memorizing
   - negotiating, experience, reflection, theorizing

5. What are three groups of basic human competencies in innovative organisation?
   - knowledge, skills, motivation
6. Creative thinking is
- generating new, original ideas or reapplying existing ideas with a purpose to find new, original and applicable solutions
- thinking using creative thinking tools
- specific way of thinking, accustomed in creative industries

7. Innovative thinking is
- thinking about innovation
- thinking about innovative products
- creative thinking for development new ideas
- combination of creative and logical thinking, with a purpose to develop innovative solutions – new, competitive and market demanded products and services

8. Lateral thinking is
- a way of thinking that seeks solution to an intractable problems through unorthodox methods or elements that would normally be ignored by logical thinking
- opposite way of thinking to logical thinking
- a combination of logical, analytic and creative thinking
- thinking in unusual way to find original solutions

9. List the creative thinking obstacles!
- A person feels shy or anxious about offering an idea
- Persons are not rewarded for initiating creative ideas
- A person does not know how to create innovative ideas
- The existing structures and procedures do not support it
- All answers are correct
- None of the answers are correct

10. Which of the following concepts do not conform to creativity development techniques?
- Design new values directly
- Relate things or ideas which were previously unrelated
- Generate multiple solutions to a problem
- Suspend premature judgement and reduce the negative filtering of ideas
11. Describe the main steps of creative thinking process!
• Select and define the focus, generate ideas, capture and work with output, choose new ideas for further development.
• Select and define the focus, generate ideas, capture and work with output, trial the output and choose the appropriate ones.
• Select and define the focus, generate ideas, choose new ideas for further development, make decisions and inform the management.
• Select and define the focus, generate ideas, look for creative solutions, choose new ideas for further development.

12. Mark the correct four basic rules of the brainstorming:
• Only new ideas are allowed to say
• No criticism and no prior judgement of any idea
• All ideas, even the most absurd, are good
• Only limited number of staff are allowed to express new ideas
• The more ideas, the better. If a large quantity of ideas is generated, then the idea pool very likely would contain some high quality ideas
• All the participants must be active
• Sharing and combining the ideas, and constructing ideas based on those developed by other members of the group, to produce new ideas.

13. Mark the qualities which do not conform to successful brainstorming session!
• Top management and department directors are not advisable for participation
• No criticism and no prior judgement of any idea are allowed
• All ideas, even the most absurd, are welcome for consideration
• Quantity has value, the more ideas the better for choosing the best solution
• Sharing and combining the ideas to create new ones is advisable

14. Mark idea generation methods!
• Brainstorming
• Mind mapping
• Idea’s tree
• Focus group discussion
• Creative thinking
• 6-2-5 Method

14. The beginning part of creative thinking process is to define focus. The purpose focus is defined in the case, if (mark the correct answers)
• a problem that has to be solved
• a process to be simplified
• a task to be achieved
• there is a conflict to be resolved
• an improvement to be made, etc.

15. The concept extraction to find new, alternative ideas includes the following steps. **Put the steps in the right sequence.**
• Have a starting idea
• Generate one idea
• Use the extracted concept to breed more ideas
• Extract the concept from the idea
• Define a purpose

16. **Define the qualities of Challenge method in creative thinking!**
• Challenge works on the assumption that there may be different and better way of doing something, even if though the current approach is adequate.
• Challenge encourages making statements that do not make sense, may contradict experience and may be totally illogical.
• Challenge is an assumption that there is nothing right and things should be challenged to make difference.
• Challenge provides means by which one can unsettle the mind in order to increase the chance of having a new idea.

17. **There are four ways to set up a provocation. Add two more to the ones, listed below:**
1) Reversal – reverse the normal direction of action.
2) Wishful thinking – create a fantasy wish (wouldn’t it be nice if…)
3) ?
4) ?

18. **Mark the correct answers. Random entry is used in the cases:**
• when you have a brand new situation and you need a starting point,
• you do not know what to do with your vocabulary
• you want to play with your childhood toys
• you cannot find new ideas – the same ideas keep coming up over and over;
• you are bored with all other creative thinking tools
• ideas are needed fast.

19. **Harvesting, treatment and assessment of new ideas are:**
• the final phase of creative thinking process
• done in order to select the best ideas and forget about the others
• done in order to record the idea generation outputs
20. **Put the appropriate meaning of the six hats in the table:**

<table>
<thead>
<tr>
<th>Hat</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>White hat</td>
<td>control, the organization of the thinking process</td>
</tr>
<tr>
<td>Black hat</td>
<td>emotional view of the idea</td>
</tr>
<tr>
<td>Red hat</td>
<td>Optimistic view, positive thinking</td>
</tr>
<tr>
<td>Blue hat</td>
<td>Objective facts and figures, neutral information</td>
</tr>
<tr>
<td>Yellow hat</td>
<td>Creativity and new ideas</td>
</tr>
<tr>
<td>Green hat</td>
<td>weaknesses and threats of the idea</td>
</tr>
</tbody>
</table>
Summary

In the Module 2 we learned about the demands of human competences in innovation and knowledge society and innovative organisation. We got introduced to the terms of knowledge society, innovative entrepreneurship and innovative company.

In the Module 2 we learned that creativity and creative thinking is one of the core competences in innovative entrepreneurship.

In order to understand better the creativity concept, we learned about different meanings of creativity and particularly about creative thinking.

In the theoretical part we have referred mainly to Edward De Bono approach and methods on creative thinking. We introduced to creative thinking as a skill, which provides a competitive advantage to a company. In order to practise the creative thinking, we learned about different creative thinking tools and tried them, solving real problems, generating ideas, looking for alternative ideas, treating and assessing them. We learned about different brainstorming techniques, and tried some of them in practice. Finally, we learned the Six thinking hats method, which is a very powerful tool for assessing ideas.

The theory provided in the Module 2, and the fulfilled tasks have provided the learners with knowledge and skills for the Final assessment of Module 2 – the practical work on idea generation and assessment in the face-to-face meeting.

Module 2. Final assessment.

Practical work in face-to-face meeting.

The students meet in the face-to-face meeting. The meeting will take place for 3-4 hours.

The task of the practical work is to try idea generation, using the idea generation tools. The task will be implemented in group work (3-6 persons).

The common task for all the students is:

- defining a problem – finding a focus if necessary – redefining and refitting can be used)
- generating the ideas for solving the problem, using the brainstorming techniques (according to the students choice – some of the additional tools can be used – such as random word, provocation, alternatives).
- treatment of the created ideas, harvesting them
- assessment of the ideas using a rating scale.
- assessment of one of selected ideas by using six thinking hats method.

The group work will be presented in a common session, and the tutor will evaluate the students’ knowledge and skills on the implementation of creative thinking tools.
Bibliography