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innCREA

Standards for implementing programs aimed at discovering and developing creativity, pioneering in pursuit of innovation

InnCREA Methodology

I. Introduction

InnCrea methodology is designed for academic staff who would like to boost their students' creativity but do not know where to start. The InnCrea – Discovering and Developing Creativity Course was designed by a consortium of six academic institutions and companies from Bulgaria, Finland, Greece, Italy, and Poland.

The methodology is a guide that will lead a lecturer through the different aspects of creativity, explain how the audit tool works, and give simple recommendations and tools for running a creativity course.

1.1 Conceptual Framework of innCREA Guideline

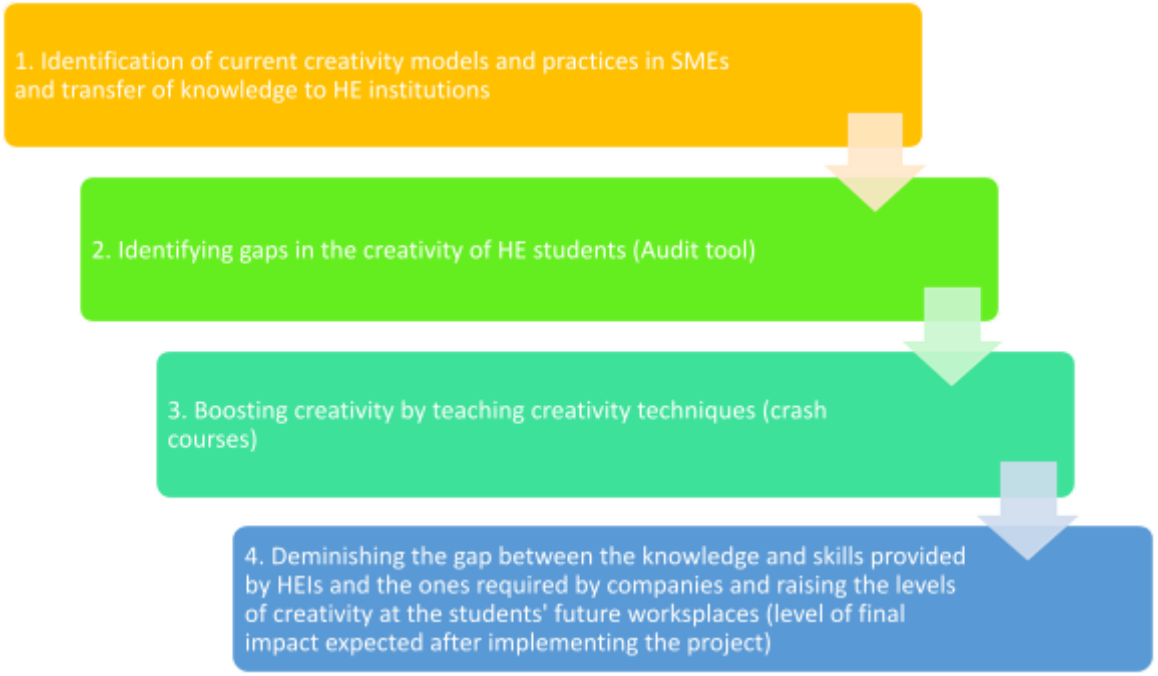
Aimed at bridging the gap between the training programmes provided by HEIs and the requirements of business, the innCREA project provides a comprehensive programme triangle that addresses each of the main labour market stakeholders: HE students, academic staff, and employers. Strengthening the students' creativity requires promoting research on current best practices in the field of creativity, promoting the importance of developing those skills among students and providing academic staff with a suitable methodology that will empower them with ways of boosting creative thinking in both academic staff and students involved in their courses. Being a highly-sought demanded skill in the labour market, teaching creativity skills is important for students in different fields of study, which makes the results of the innCREA project important for a wide range of stakeholders who might be interested in the topic of creativity.

The innCREA Guideline shows how to implement new creative techniques when working with HE students. It starts with comprehensive information on the structure of the Audit tool as the main entrance to the innCREA project (chapter 2 of this guide: Creativity Audit Tool), providing a general description of the tool. Following the logical process of actual work on creativity, the second output of the project provides tips for diagnosis and analysis of four different spheres of creativity adopted in the project: individual, team, organisational, and leadership. Fully acknowledging the fact that these spheres are internally connected and merge at different points, the project consortium decided to keep them separated to enhance the training opportunities and the opportunity for targeted work on a certain type of creativity.

Despite that, boosting creativity in one of the areas inevitably triggers creativity in the others. After going through the Audit tool in one or more areas, the respondents will receive recommendations for completing different creativity exercises in order to boost the soft skills most

related to the specific type of creativity. This information should support Higher Education teachers when taking advantage of the crash courses developed under the innCREA project. It should be taken into account that dividing four areas of creativity does not diminish the fact that in real working life they influence one another. For example, there is a high probability that a lack of creativity in team, leadership, or organisational levels will affect a person who is creative on an individual level, or a person with strong leadership creativeness will inevitably influence their organisation, etc.

Logically, the process of bridging the gap between the skills cultivated by HE institutions and the ones required by business includes comparing the current best practices in the business environment, identifying the gaps in the skills and knowledge taught by HE institutions and finding the best ways to bridge them. This could be illustrated by the following graphics:



For the innCREA project, the first step was to conduct desk research on world best practices and in-depth interviews in all partner countries, which aimed at collecting valuable working models of creativity applied in all the countries involved in the project. This information was carefully analysed and summarised in chapter 3 of the current guide "Our experience – research conducted by project partners". This practical experience is an especially important part of the transfer of knowledge of working creativity models in actual companies towards HEIs and the process of diminishing the gap between business and HE institutions regarding the creativity skills required. The xsuggested real-life working practices additionally empower trainers with information that can be used in the form of case-studies and examples at any stage of implementation of the crash courses.

The next chapter of the Guideline (Practical tips for assessing creativity with the use of the innCREA tools) goes through the actual process of assessing different groups of users of the project outputs including HE staff and students, as well as some business users. There is information on the preparation for the assessment, conducting the assessment, and analysing the results. Especially important is the part on analysis of the results and the ways to develop creativity using the information received. Separate advice is provided to different target groups that could take

advantage of the provided 20 best techniques/exercises in the field of creativity with a focus on impact and benefits. Using the advice provided in the Guideline and following the recommendations received after completing the Audit tool, innCREA exercises, selected through desk and field research, can be easily applied in both academic and business environments, and used in the implementation of both individual and group training.

Based on the experience gained from business, the developed innCREA methodology is universal and can be implemented at universities, companies, and other institutions that require creative work from their employees. Being a major tool in reaching a wider impact of the project, the innCREA methodology is not only targeted at university departments but also SMEs, R&D organisations, vocational training institutes, business associations, and other interested parties. The material is directed at academic staff and lecturers as well as people who do not have overall knowledge of the many-faceted elements of creativity and pioneering as a part of innovation management but who wish or indeed need, to know more about it. Therefore, we also address students or continuing professional development trainees who might use it as “a guide” for creativity and pioneering innovation related subjects. Business consultants might wish to use it as an additional tool to support their clients or to give them a general understanding of creativity and pioneering as a part of innovation management issues.

The innCREA methodology makes the provided creativity and pioneering programs more functional, providing tips for their further implementation and boosting the impact of the project. This methodology has been implemented, tested, and refined by the HEIs involved in the project (WSA, LUISS, VAMK), who fully benefit from this framework to support initiatives to develop students’ creativity in different areas. The tested methodology provides HEIs with a ready-to-use step-by-step methodology for how to implement the innCREA program and suggest real working examples. Thus the methodology itself is fully in line with the overall aim of the innCREA project to link education with business requirements in the field of creativity.

The innCREA methodology is part of the integrated set of knowledge resources and practical tools that contributes to lasting, sustainable engagement between the target groups of the project. It promotes better integration of graduates in the labour market, reducing youth unemployment and shrinking the gap between skills offered and skills needed in the present and future companies.

1.2 About the Project

The overall aim of the innCREA project is to transfer, adapt and develop an integrated training programme package (material and methodologies) for teaching creativity and pioneering in the working place aiming to support European HEIs and local companies to benefit from this knowledge and use it in a practical manner in their everyday activities.

The project is aimed at the following specific target groups:

- HE Students from partner universities’ faculties/courses with lower levels of employability
- HE Teachers and other academic staff
- HE Stakeholders: companies, social economy organizations, local/regional/national authorities, students’ associations/representatives, previous students from the involved HEIs and EU organizations

The overall aim of the innCREA project: to transfer, adapt and implement an integrated training programme package (material and methodologies) for teaching creativity and pioneering in pursuit of innovation in order to develop HE students soft skills and, at the same time, contribute do diminish the gap between skills in demand in the labour market and the skills offered by HE courses.

Other purposes and objectives of the project:

- strengthen the entrepreneurial skills of HE students a
- provide European HEIs with a fully documented training material in creativity and pioneering management,
- provide HEIs with the necessary tools in order to better develop abilities to identify their obstacles to creativity and pioneering and take necessary actions,
- increase the competitiveness and the innovation capacity of HEIs
- increase the European business and high education community awareness about creativity and pioneering
- increase the adaptability of the business culture in the high education process
- engage into systematic and permanent dialogue HE institutions, employers and all relevant stakeholders

1.3 Defining Creativity

Although intuitively creativity seems a simple phenomenon usually defined as making something new, its essence is quite complex. However, setting a clear definition is a crucial starting point that should be made clear to anyone who wants to take full advantage of training materials and resources developed under the project.

The concept of creativity has been studied in relation to many fields, including art, philosophy, psychology, science, artificial intelligence, etc. The perspective that the innCREA project would like to adopt is one of business.

Main assumptions of the innCREA project are that:

- Creativity can and should be taught.
- Creativity is a complex skill including a number of sub-skills. Working on these sub-skills can trigger the creative processes.
- There are four spheres of creativity: individual, team, leadership, and organisational. Developing one of those spheres positively affects the others. Creativity is “contagious”.

Creativity comes from the Latin term creates, literally “to have grown”, and its equivalents are the English words creator and creative. It is the ability to create new solutions. At the same time, it is a mental process that results in creating new concepts, ideas or new associations. Creativity refers to the activation of new perspectives and the creation of new possibilities. It is the process of developing and presenting innovative ideas to satisfy needs or solve problems. Features of creativity include:

- requires the use of imagination (originality and effectiveness),

- creative action is a purposeful act, directed towards achieving a result,
- the result of creative activity is an original work,
- the effect should be valuable in the concept of the objectives set
- each individual has access to three components of creativity: knowledge, creative thinking skills and motivation.

The following definition has been adapted in the development of the innCREA project:

Creativity is the ability to ask how something can be done differently, better, combined with the ability to design widely understood changes. It is the ability of creative thinking, adaptive flexibility resulting in finding creative, original solutions that go beyond the accepted patterns.

Our current understanding of the concept of creativity, including the understanding that has been adopted in the innCREA project, is a result of a rather long historical development. Although the concept of creativity is an old one, it was discussed in terms of divine grace or as the innate capacity of a genius for a long time. Of course, this excluded any possibility for teaching creativity.

The scientific approach to creativity dates back to the middle of the 20th century and was triggered by rather political events. In the middle of the Cold War as part of the race for sending the first man to the moon, the United States launched a programme aimed at developing a scientific psychological creativity test that would permit the recognition and promotion of creative individuals. This was the first step toward the idea that creativity can be studied and eventually taught. A turning point in this process was the work of Paul Guilford who developed a creativity theory in which he described skills and attitudes that play an important role in creative thinking. That was a crucial point from which creativity was recognised as a thinking ability everybody has, and that can, at least to a certain degree, be improved.

The idea of creativity as a problem-solving ability dates back to the ideas of Alex F. Osborn and his book “Applied Imagination”. An important point in his work was introducing techniques and principles that can be used to improve the creative problem-solving process. From there on, various researchers developed methods and techniques known today as “creativity techniques”. The idea that creativity can be developed by teaching some effective creativity techniques is adopted in the innCREA project.

Creativity techniques are activities that support the effectiveness of creative thinking, encourage development and support in undertaking creative activities. Creativity techniques include different types of activities (word games, written exercises and different types of improvisation or problem-solving algorithms and others). Among the most well-known and applied creativity techniques described in the literature is Brainstorming.

Creativity techniques are methods that encourage creative actions, regardless of field. They focus on a variety of aspects of creativity, including techniques for idea generation and divergent thinking, methods of reframing problems, changes in the affective environment and so on. They can be used as part of problem solving, artistic expression, or therapy.

Some techniques require groups of two or more people while other techniques can be accomplished alone. These methods include word games, written exercises and different types of improvisation, or algorithms for approaching problems.

A further development in understanding the interactive character of the phenomenon of creativity, in which it is also assumed that a creative achievement is always reached through an interaction between individual thinking and a socio-cultural context, was developed at the end of the 90s. This theory considers creativity in terms of the interactions of the individual within a system, which recognizes the social factors which affect the creative abilities of the individual. This is also an important point that leads to the idea that creativity should be taught in areas that reflect the whole working environment. In the innCREA project these are respectively the spheres of team, organizational, and leadership creativity.

Studying the concept of creativity from the perspective of business becomes even more important in the context of the changing requirements for employees. One of the most demanded skills is creativity but this is also the most challenging and vague one in terms of teaching and developing.

In 2020, the World Economic Forum published the top 10 job skills of tomorrow, justifying the need to reskill and upskill people in the next five years. This is a widely recognized need on the European level. The the World Economic Forum list includes the following 10 skills that will be highly valued in the next few years:

Creativity has been classified as one of the problem-solving skills and combined with “originality” and “initiative”. A closer look, however, as well as everyday practice in a business

environment makes clear that creativity cannot be defined just as a problem-solving skill. Moreover, creativity is inherent in some of its aspects in all the other skills that are expected to be highly demanded in the next 5 years according to the Future Jobs Report for 2020 of the World Economic Forum. Whether to update technological knowledge or to develop skills in problem-solving, leadership, or self-management, people need to think creatively. This vagueness and intersections with other skills and abilities make the definition of creativity from the perspective of the business especially complex. However, although having a clear concept of creativity is important, this is not a final objective of the innCREA project. That is why it is more convenient to define creativity as a complex skill including a number of sub-skills that are also important in the working environment.

The innCREA crash courses have been organised using exactly such a comprehensive list of skills that have to be developed in order to trigger potential in one of four areas of creativity that have been chosen for the project. Each of the exercises/techniques that are included in the crash courses developed under the project is targeted to working on several of these skills. The innCREA list of sub-skills that are important in developing the more complex creativity abilities include the following:

- ✔ Adaptability
- ✔ Attentiveness
- ✔ Communication
- ✔ Confidence
- ✔ Collaboration
- ✔ Critical Thinking
- ✔ Curiosity
- ✔ Initiative
- ✔ Inventiveness
- ✔ Leadership
- ✔ Negotiating skills
- ✔ Problem-solving
- ✔ Resilience
- ✔ Self-discipline
- ✔ Strategic thinking
- ✔ Visualisation
- ✔ Others

This list is a result of comparing data of both desk research and analysis from in-depth interviews with representatives of companies based in all the partner countries included in the project.

Creativity, broadly conceived, is essential to all successful business ventures including developing new products, innovating services, defining markets, promoting, making unconventional deals with providers, partners and lenders, etc. Creativity is becoming increasingly important in the context of new markets demanding innovative products, and the technologies that minimise the need for the human touch in “non-creative” tasks in all professions. Narrowly speaking, there is a growing sector of `creative industries", which rely on the increasing importance of the creation and

exploitation of intellectual property. Regions with higher concentration of ``creative people", such as hi-tech workers, artists, musicians, etc. tend to show a higher level of economic development, which means that creativity is becoming a particularly important factor for the economic well-being of employees, companies, and even countries.

In many cases in the context of examining creativity in organisations, it is useful to explicitly distinguish between "creativity" and "innovation." In such cases, the term "innovation" is often used to refer to the entire process by which an organisation generates creative new ideas and converts them into novel, useful, and viable commercial products, services, and business practices. "Innovation" is used to explain the organisational aspects of creativity, while the term "creativity" is reserved to apply specifically to the generation of novel ideas by individuals, as a necessary step within the innovation process.

II. Creativity Audit Tool

2.1 Audit Tool Description

The innCREA Creativity and Pioneering Audit Tool is an interactive resource, available online on the project website, which should be followed to better conduct a creativity audit.
The creativity audit has an analytic role and it constitutes one of the first steps an organisation has to follow before launching a policy supporting creativity.

Purposes of the audit tool are:

- to investigate the organisation's or team's creativity,
- to identify the factors and variables influencing the creative potential of students and personnel at an individual, organisational, leadership and team level,
- to develop an analytical tool (typically questionnaire) tailored to the needs, personnel, the nature of work etc. including all the above-mentioned factors and variables,
- to try to evaluate these factors by developing suitable scales of measurement and quantification,
- to analyse the data statistically in order to identify the problematic areas (factors) requiring improvement to better focus management and team efforts,
- to progressively and synthetically propose an initial set of actions which should be followed so as the organisation/team begins its first steps in implementing an initial action plan nurturing creativity at work.

The major goals of the audit tool are:

- assess creativity in all spheres (individual, team, organisational, leadership);
- try to evaluate the needs of labour at individual, organisational, leadership or team level by building proper scales of measurement;
- support HEIs and local companies so that they can benefit from creativity and pioneering innovation in the Universities' teaching programs and working place;

- provide HEIs with the necessary tools to better develop abilities to identify students' obstacles to creativity and pioneering innovation and take necessary actions;
- increase HEIs innovation capacity by providing them with the necessary creativity tools and encourage HEIs to use the tools in a practical manner in everyday activities.

The innCREA Creativity Audit Tool will not only refer to organisations but also to individual respondents like students. It may apply to individual respondents, working groups or student's working groups during educational courses, organisations or leadership.

2.2 Procedure for assessing the level of creativity

The innCREA Creativity and Pioneering Innovation Audit Tool is composed of four different questionnaires related to individual, team, organisational, and leadership creativity.

The respondent fills in the online questionnaire by answering a series of questions. At the end, the system indicates the respondent's result calculated on the basis of answers given.

2.1.1. Individual sphere questionnaire

Questionnaire to be filled in by a respondent: employee, student, leader, academic staff requesting they to assess the level of their creativity.

On the first part, when answering the questionnaire's questions, the person must rate their creativity-related characteristics according to a scale with "Very high", "High", "Medium", "Low", "Very low" values.

These creativity-related characteristics concern:

- openness and tolerance: ability to keep an open mind in processing information and consider a variety of concepts and perspectives; willingness to embrace new things, fresh ideas, and novel experiences joined with the ability to embrace differences; not closed to ideas and customs different from one's own
- ability to accept criticism: ability to listen closely to criticism without interrupting; thinks that criticism is a way to gather feedback and sees opportunities to get better and evolve; does not defer critical reflection but rather enhances and improves ideas by considering criticism
- sensitivity to problems that emerge after everything has been going smoothly: capacity to consciously recognize problems along with inspiration to take action and influence every part of the creative process, from the creation of the initial idea, to the problem solving required to course correct and see a project through until the end
- ability to take risks: ability to look for new ways of doing things and new ideas that may result in loss or failure and be able to use it in a positive way

- readiness in taking action: preparedness for actions in refusal of habitual schemes and stereotypes of behaviour, perception and thinking; independence of judgments; originality, courage of imagination and thought, etc.
- flexibility in taking action: the capacity to adjust to short-term change quickly and calmly, so that you can deal with unexpected problems or tasks effectively. Flexibility involves having an open, team-centred attitude, being open-minded and looking at situations from different perspectives
- originality in taking action: ability to come up with an idea or a course of action on your own and to explore and try out by your own initiative something that's never been done or thought previously
- courage to submit and share original ideas: capacity to lean into discomfort and vulnerability to share an idea, or to dare sharing ideas with others without doubts, fears, insecurities and all the other difficult feelings that come with opening oneself up to feedback from others
- curiosity and initiative in taking actions: ability to be inquisitive and open to new experiences also by having self-initiative, a proactive approach and perseverance in overcoming difficulties that arise in the pursuit of a goal
- willingness and openness to cooperate with your other people: capability to consider other perspectives and to be favourably disposed or inclined to successfully work toward a common goal with others.

The respondent is asked:

- which characteristics best describe them among:
- how often they recognize the need to develop creativity skills how often their obligatory activities like job or studies cause stress
- how often obligations make them act under pressure

2.1.2. Team sphere questionnaire

Questionnaire to be filled in by each member of a team requesting that they assess the level of their team's creativity.

Concerning their organisation, the respondent is asked to rate:

- if teams are formed to increase creativity
- organisation employees or students willingness to participate in the work of the teams responsible for generating new ideas and solutions
- "What tasks are set for teams responsible for creating new ideas and solutions":
- if there are any conflicts between co-workers within a team rating
- the quality of cooperation of the team of which they is a member;
- the level of motivation to cooperate with colleagues;
- the level of independence of team members in achieving organisational goals;
- the level of team's autonomy in organisational decision-making;
- the willingness of individual team members to take responsibility for the work of the team;
- the willingness to share knowledge among team members.

2.1.3 Leadership sphere questionnaire

Questionnaire to be filled in by a respondent, a leader in an organisation, team leader requesting them to assess the level of creativity in their organisation.

In this case the respondent is asked to indicate:

- for what purpose is creativity used in their organisation
- in their organisation what creativity is related to
- what enhances creativity in their organisation
- how pro-innovative leadership styles are developed in the organisation.

2.1.3. Organisational sphere questionnaire

Questionnaire to be filled in by a respondent: academic staff, employees of other departments, e.g. administrations, management, marketing, business requesting their to assess the level of creativity development and application in their organisation.

On the first part, when answering the questionnaire's questions, the respondent must rate their organisation's employees creativity-related characteristics according to a scale.

As for organisational sphere questionnaire, these creativity-related characteristics concern:

- openness and tolerance
- ability to take criticism from a supervisor
- sensitivity to emerging problems that occur after everything has been going smoothly
- ability to take risks
- readiness to take action
- flexibility in taking action
- originality in taking action
- courage to submit and share original ideas
- curiosity and initiative in taking actions
- willingness and openness to cooperate with their colleagues

Then the respondent is asked to rate:

- if there are conflicts between co-workers in their organisation according
- which qualities characterise employees in their organisation
- how often employees report the need to develop their creativity skills
- rate if working in the organisation cause stress to employees
- if employees' daily tasks at work cause stress
- if strategic or programmatic documents of their organisation include the importance of developing creativity and how creativity is important in the institution in everyday actions on a practical level
- if they have ever undertaken a creativity audit in their organisation
- if their organisation supports its employees in developing their creative thinking and creativity

- if their organisation identifies potential sources for the development of innovative ideas
- if there any mechanism in their organisation which makes it possible to use the creative potential of members at each level:
- if their organisation culture focuses on the development of creativity:

2.2. Assessment and interpretation of results

Once the respondent has completed the questionnaire, the system provides a result based on the answers given. This result measures the current creativity knowledge in the sphere in which the audit was undertaken.

The audit tool can be used periodically to measure progress and the techniques offer the flexibility to be used repeatedly by changing topics and increasing complexity and difficulty.

The resultant analysis helps the respondent to be aware of which soft skills to improve and to identify the problematic areas requiring enhancement to better focus efforts.
For each area, five short courses related to creativity and pioneering innovation techniques are suggested to promote and develop creativity soft skills.

Diagnosis in particular areas for particular organisations will require a correlation of the type of course with the results obtained in a given area. Therefore, to ensure flexibility, the respondent can choose from the courses indicated by the tool that best suits the specificities and needs, selecting one of the indicated courses.

2.2.1. Individual sphere

The following scale for the assessment of the results obtained is:

- low level of creativity score up to 17 points: try at least 4 short exercises;
- an average level of creativity obtained from more than 18 to 34 points: try at least 3 exercises;
- a high level of creativity obtained with a score of more than 35 to 52 points: try at least 2 exercises;
- a very high level of creativity with a score over 52 points: try at least 1 exercise,

The exercises indicated for this level are the following:

1) Moodboards
2) Biomimicry
3) Six questions
4) Morphological analysis
5) SCAMPER

2.2.2. Team sphere

The following scale for the assessment of the results obtained is:

- low level of creativity score up to 14 points: take at least 4 short courses;
- an average level of creativity obtained from more than 15 to 27 points: take at least 3 short courses;
- a high level of creativity obtained with a score of more than 28 to 41 points: take at least 2 short courses;
- a very high level of creativity with a score over 41 points: take at least 1 short course,

The exercises indicated for this level are the following:

1) False rule
2) LOESJE
3) Do Nothing
4) Lotus Blossom
5) Swot Analysis

2.2.3. Organisational sphere

The following scale for the assessment of the results obtained is:

- low level of creativity score up to 18 points: take at least 4 short courses;
- an average level of creativity obtained from more than 19 to 37 points: take at least 3 short courses;
- a high level of creativity obtained with a score of more than 38 to 56 points: take at least 2 short courses;
- a very high level of creativity with a score over 56 points: take at least 1 short course,

The exercises indicated for this sphere are the following:

1) Focus Group
2) Six Thinking hats
3) Bionics
4) 5W2H Method
5) TRIZ

2.2.4. Leadership sphere

The following scale for the assessment of the results obtained is:

- low level of creativity score up to 11 points: take at least 4 short courses;
- an average level of creativity obtained from more than 12 to 23 points: take at least 3 short courses;
- a high level of creativity obtained with a score of more than 24 to 35 points: take at least 2 short courses;
- a very high level of creativity with a score over 35 points: take at least 1 short course,

The exercises indicated for this level are the following:

1) Worst possible idea
2) Mind Mapping
3) Headstand Technique
4) Synectics
5) Phillips 66

2.3. Description of the Courses to Develop Creativity

University professors can increase the quality and effectiveness of the higher education that they offer their students in their courses by building a bridge between university education and the dynamics and needs of the world of work. In fact, as well as cultivating students from an academic point of view, professors must help students to know and develop soft skills, and in particular creativity.

The proposed teaching activities can be delivered in class or online, alternating between in-person and distance learning, and are designed to truly support students and their potential. Appropriate courses have been identified for each level, so they are detailed below divided by level.

Conducting a crash course will make academic staff aware of which soft skills they should promote and develop in students. InnCREA crash courses are designed to provide a method for:

- developing creativity skills using specific innCREA creativity and pioneering innovation techniques
- adjusting the techniques to the level of competence of students
- raising awareness among students of the importance of these skills for personal success and development in current and future dynamic labour markets

And also HEI teachers and other academic staff will:

- boost their own qualification through the innCREA tools
- improve their professional performance and career plans
- gain knowledge of the growing importance of soft skills for successful integration in the current and future labour market
- have the competence and knowledge to boost their students' soft skills using the creativity and innovation techniques with regard to improving their career prospects
- adopt updated teaching strategies according to students' competence levels and labour market needs and future trends
- gain knowledge of how to raise awareness among students on the importance of these skills for personal success and development in the current and future dynamic labour market

The crash courses offer lesson plans for focusing on each of the four identified types of creativity important in work environments (crash course chapters 2. individual, 3. team, 4. leadership, 5. organizational), an overall introduction and overview (crash course chapter 1), and the audit tool and assessment (crash course chapter 6). The innCREA audit tool and exercises can also be utilized separately, modified to suit course content, and incorporated into HEI curriculum.

InnCREA crash courses include the following features:

- The soft skills most important at the individual level and their importance in the labour market
- Learning objectives for students and HEI staff developing creativity soft skills in the specific areas of individual, team, leadership and organizational creativity
- Course structure, learning method and delivery
- Lesson plan
- Learning content
- How the specific soft skills can be developed/taught and measured/assessed
- Strategies for teaching the soft skills required for business and work life
- Activities/exercises to increase creativity
- Additional resources

Through desk research, survey, and interview processes, the innCREA partners identified the most important soft skills to develop for work life and grouped them as (1) an individual, (2) a team member, (3) a leadership role, and (4) the organisational level.

The 20 exercises included in the innCREA teaching materials were chosen by a process of desk research by the innCREA project partners. These 20 exercises were chosen as the most effective for developing creativity and pioneering innovation skills.

2.3.1 Individual level

The five exercises chosen to develop individual creativity are listed by judged degree of difficulty as follows:

1. **Moodboard**

The Moodboard method can be used for presenting the essence and the idea of something visually, for example, a dream house, dream university work space, a dream job or a person. Moodboards are used for developing concepts, for communicating ideas to other team members or to externals (e.g. stakeholders) to keep a goal and its essence in mind. Its visuality can also open minds for new ideas. A moodboard can also be used as a guiding document" to remind what is wanted during the working process.

2. **Six Questions**

The Six questions in this method are Who, What, When, Where, Why, How. Six questions is one of the most common and effective techniques for analysis and creative thinking. These questions allow users to see the problem from different perspectives and stimulate their thinking. The technique is also known as 5W1H.

3. **Morphological analysis**

Morphological Analysis is a creativity method and product/process development tool which details elements of a product and then starts to combine them into new and unique solutions for the defined problem. Morphological Analysis is a creativity method which uses observation and analysis of different dimensions of a product as the starting point for finding solutions to the issue at hand by combining them into new and unique solutions.

4. **SCAMPER**

The SCAMPER method is a collection of nine idea-spurring prompts for transforming any object, service, or process into something new. The aim is to improve the product/service by finding new viewpoints in a systematic way. The method can be applied to an existing product, or it can also be used during the product development phase for ideas or for concepts.

SCAMPER is a mnemonic for:

- (S) Substitute;
- (C) Combine;
- (A) Adapt;
- (M) Modify or Magnify;
- (P) Put to some other use;
- (E) Eliminate;
- (R) Reverse or Rearrange.

5. **Biomimicry**

Biomimicry is a creativity technique which takes inspiration from the solutions in nature for product development and problem solving. For example, the shape of bird wings has inspired the shape of aeroplane wings. Similarly, colour camouflage is inspired by nature. In biomimicry structures, technical solutions, colours, functionalities etc. from nature are studied and transferred into product development and problem solving. Biomimicry is hence part of normal product development, but inspiration is looked at from nature, and therefore a normal product development or problem solving process can be used.

2.3.2 Team level

The five exercises chosen to develop team creativity are listed by judged degree of difficulty as follows:

1. **Do Nothing**

Do Nothing is a method to be used in a situation when we make the assumption that something must be done about a particular issue or problem. Instead, ask what happens if we “do nothing”? This usually leads to one of three possible outcomes:

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

The technique is not as straightforward as the title suggests and is easily misunderstood. It does not mean that one should ignore a problem and it will go away, although that may be a solution in some cases.

2. **LOESJE**

The basis of the technique is to write short thematic slogans that invite constructive discussion. The slogans can also be presented as posters. It is a technique based on playing with words, which allows one to go beyond the usual language patterns and effectively activate creative thinking.

The texts that are placed on printed materials (posters, postcards, stickers) are usually created in the framework of creative writing workshops, and they aim to share ideas and concepts, to express one's own opinions using short slogans. Loesje workshops are an opportunity to express one's views and inspire action, especially in the immediate environment.

3. **Lotus Blossom**

In Lotus Blossom, the petals around the core of the blossom are figuratively “peeled back” one at a time, revealing a key component or theme. This approach is pursued in ever widening circles until the subject or opportunity is comprehensively explored.

This technique can be used in scenario planning and is very useful for forecasting strategic scenarios. It is designed for groups and is used to provide a more in-depth look at various solutions to problems. It begins with a central core idea surrounded by eight empty boxes or circles. Using brainstorming, eight additional ideas (solutions or issues) are written in these boxes. In the next step, each of these eight ideas becomes the core of another set of eight surrounding empty boxes, which are filled in by new ideas using brainstorming. The process continues until a satisfactory solution or a sufficient number of ideas have emerged

4. **Swot Analysis**

SWOT Analysis is a technique used to assess the **Strengths**, **Weaknesses**, **Opportunities** and **Threats** of a project, business, product, service, or any other situation in which a decision must be made to achieve a goal.

Each of these factors needs to be carefully examined to plan the growth of the organisation by making the information gathered about a specific issue systematic and providing key information for defining strategies and positioning in the market.

5. **False Rule**

False rule creativity technique is a provocation technique that uses the free association process our mind triggers trying to connect a problem situation with a rule or restriction that has no obvious connection with it. Thus, it stimulates breaking the rules, which is the hidden origin of creativity and raises attention to the organizational challenges to creativity.

The main goal of this technique is to support creative thinking by “getting out of the box” assumptions in combination with random stimuli. The technique may be used in team sessions, or individually, to support participants to change their initial perspective and facilitate the idea flow.
Although the steps may look simple to follow, this technique may be challenging for people without previous experience in the field of creativity.

2.3.3 Organisational level

The five exercises chosen to develop organisational creativity are listed by judged degree of difficulty as follows:

1. **Focus Group**

The focus group technique is one example used to explore the opinions, knowledge, perceptions, and concerns of individuals in regard to a particular topic.
The focus group typically involves six to ten individuals who have some knowledge of or experience with the topic. The group discussion is led by a moderator who guides participants through a series of open-ended questions. The information gathered can provide important clues to human attitudes and values as they relate to the topic. The technique can also be used successfully in conjunction with other research tools, such as surveys, either to help develop a questionnaire or to explain specific survey results.
In promoting creativity, focus groups can be a great tool as it allows for more open discussion and open-ended questions.

2. **Six Thinking Hats**

The six hats technique can be used to improve problem solving skills in a group by looking at a problem from the different perspectives the six hats represent. It encourages flexible thinking and working together with different kinds of people.

- White hat – neutral objective defined by facts, information, data and figures.
- Red hat – emotional view defined by feeling and intuition, hunches and gut instincts.
- Black hat – judgement defined by caution and problems and judgement.\
- Blue hat – process control defined by managing thinking, organising and controls.
- Yellow hat – logical positive define benefits and sunny.
- Green hat – creativity defined by creativity and solution, energy and new ideas.

The six hats thinking aims to bring different and new viewpoints into a decision making or development. The technique uses roleplay channelled through hats of different colours each representing a different way of thinking. In this technique you “put on” or “take off” one of the six thinking hats to indicate what type of thinking is being used. The person with a specific hat on, e.g. a green hat, will act and thing according to the hat “personality”, “hat’s” way of thinking,
Each hat will provide their different viewpoints to the problem/topic which e.g. a moderator can collect and overall facilitate the discussion.

3. **5W2H Method**

Solving a problem and implementing corrective actions that will be effective first requires identifying the causes of the problem. The 5Why technique enables a team to find answers to questions about the cause of recurring problems. This method mobilises employees to think analytically and try to identify the problem independently, which positively affects their involvement in the life and functioning of the company or organisation. It's about arriving at a problem through deduction, detailed analysis of the problem from different viewpoints.

Appropriate use of the 5W2H method helps to verify the problem from a broader perspective and enables more accurate decisions to be made.

4. **TRIZ**

The basis of the technique is to identify and define the problem that is the basis for seeking a solution, and the areas of application are primarily technical problem-solving.

The main features of this technique are:

1. No matter what field of knowledge or industry the patents are from, the abstracted problems and the way they are solved will be the same.
2. The evolution of technical systems manifests a certain tendency, which results in analogous methods of problem-solving.
3. Actual innovations can often only be formulated by scientifically examining one's own field of activity from outside.

5. **Bionics**

Bionics technology can be used at any level and at any institution. It can be used for developing creativity at the company level by directing thinking towards the development and improvement of products through the observation and use of solutions created by nature, or in education to develop the creativity of pupils or students and direct their development according to market needs.

In this case, the technique has been used pioneering to solve problems at the state level where there is a deficit of skilled workers.

2.3.4 Leadership level

The five exercises chosen to develop leadership creativity are listed by judged degree of difficulty as follows:

1. **Phillips 66**

The Phillips 66 discussion technique is very well suited to situations in which you have many creative, willing people at your disposal, but the challenge is how to use this potential so that everyone gives something.

The technique is one of the varieties of Brain-storming and is characterised by:

- Working in small teams
- Focusing on finding the idea that will best solve the problem
- Allows ideas to flow within groups and share ideas with others for development
- Allows all group participants to contribute

2. **Headstand Technique**

In the Headstand technique, users will focus on approaching their problems from an opposite angle, for instance what does not work, what may go wrong or which activities will never solve a problem. As such, this technique allows users to exploit their frustration for the better. In order to solve the problems, they will need to firstly try to solve them.

Headstand technique can be completed individually or in teams, but is recommended to be used in a group of minimum 2 participants. For instance, instead of asking “Why aren't my oranges selling?”users may ask “How do I make my oranges not sell?”. Through this, users will know plenty of reasons for their unsatisfactory sales of oranges.

3. **Worst Possible Idea**

The Worst Possible idea creativity technique is based on some of the main characteristics of creativity. It stimulates ‘combinatorial creativity: the dissonance of a bad idea prompts the brain to reorient and redesign until a related "good" idea pops out: “Often it’s only when comparing two ideas that the best idea – a hybrid of the two – is discovered.” It facilitates challenging assumptions – every bad idea reveals an alternative way of thinking and the idea illustrates important aspects of the problem that may have been overlooked. The Worst Possible Idea creativity technique successfully overcomes most of the drawbacks of classical brainstorming (personal shyness, eliminate the pressure of having to come up with good ideas, awkwardness, when, instead of developing ideas in diverging directions, dominant team members suppressing other maybe better ideas).

4. **Mind Mapping**

Mind mapping works by writing an idea or a topic in the middle of a sheet of paper, and then expanding the idea or writing sub-topics by writing more details around it and linking them visually, e.g., with lines. These sub-ideas or sub-topics will again divide into smaller ideas around each sub-idea or topic it is directly linked to. This helps to obtain the overall idea of the idea in hand and what is related to it in order to obtain an overall idea of the elements and ideas linked to the initial topic. A mind map helps to identify and visualise all the aspects linked to the idea.

5. **Synectics**

The Synectics method is a heuristic method of conceptual design and creative problem solving through the use of analogies and metaphors. It uses the almost unlimited capacity of the human mind to search for solutions by, among other things, comparing contrasting elements of a system and by supporting the thought process by creating an environment and carefully selecting inventors, the so-called "Synectors''.

2.3.5 Soft Skills Associated with the 20 Selected Exercises

In the area of **individua**l creativity, the following five soft skills were judged to be most important for an individual worker: **adaptability, attentiveness, critical thinking, inventiveness,** and **problem-solving**. These skills can be developed by the exercises **Moodboard, Six Questions, Morphological Analysis, SCAMPER** and **Biomimicry**.

Soft skill ability	Exercises to develop this skill
adaptability	biomimicry, moodboard, SCAMPER, Six Questions
attentiveness	biomimicry, morphological analysis, Six Questions
critical thinking	biomimicry, moodboard, morphological analysis, SCAMPER, Six Questions
inventiveness	biomimicry, morphological analysis
problem-solving	biomimicry, moodboard, morphological analysis, Six Questions

The five exercises chosen to develop individual creativity are listed by judged degree of difficulty as follows:

1. **Moodboard –** for scores below 20%
2. **Six questions** – for scores 20%-40%
3. **Morphological analysis** – for scores 40%-60%
4. **SCAMPER** – for scores 60%-80%
5. **Biomimicry** – for scores over 80%

Someone with a lower score of individual creativity, would be advised to start with the **Moodboard** exercise and then try the next exercise, **Six Questions**, and then continue down the list as they gain more experience and familiarity with using creativity exercises. Someone with a higher score, might start with a more challenging exercise.

In the area of **team** creativity, the following five soft skills were judged to be most important for team members: **communication, collaboration, leadership, negotiation skills,** and **problem-solving**. These skills can be developed by the exercises **Loetsje, Lotus Blossom, SWOT, False rule** and **Do Nothing**.

Soft skill ability	Exercises to develop this skill
communication	Loetsje, Lotus Blossom, SWOT, False rule
collaboration	Loetsje, Lotus Blossom, False rule, Do Nothing
leadership	SWOT, False rule
negotiation skills	Loetsje, Lotus Blossom, SWOT
problem-solving	Loetsje, Lotus Blossom, SWOT, False rule, Do Nothing

The five exercises chosen to develop team creativity are listed by judged degree of difficulty as follows:

1. **Do Nothing** -- for scores below 20%

2. **LOESJE** – for scores 20%-40%
3. **Lotus Blossom** – for scores 40%-60%
4. **Swot Analysis** – for scores 60%-80%
5. **False Rule** – for scores over 80%

Someone with a lower score of individual creativity, would be advised to start with the **Do Nothing** exercise and then try the next exercise, **LOESJE**, and then continue down the list as they gain more experience and familiarity with using creativity exercises. Someone with a higher score, might start with a more challenging exercise.

In the area of **leadership** creativity, the following five soft skills were judged to be most important for leaders: **adaptability, confidence, collaboration, curiosity** and. These skills can be developed by the exercises **Phillips 66, Headstand Technique, Worst Possible Idea, Mind Mapping,** and **Synectics**.

Soft skill ability	**Exercises to develop this skill**
adaptability	Worst Possible Idea, Mind Mapping, Headstand Technique, Phillips 66
confidence	Worst Possible Idea, Mind Mapping, Headstand Technique, Synectics, Phillips 66
collaboration	Worst Possible Idea, Mind Mapping, Synectics, Phillips 66

The five exercises chosen to develop leadership creativity are listed by judged degree of difficulty as follows:

1. **Phillips 66** -- for scores below 20%
2. **Headstand Technique** – for scores 20%-40%
3. **Worst Possible Idea** – for scores 40%-60%
4. **Mind Mapping** – for scores 60%-80%
5. **Synectics** – for scores over 80%

Someone with a lower score of individual creativity, would be advised to start with the **Phillips 66** exercise and then try the next exercise, **Headstand Technique**, and then continue down the list as they gain more experience and familiarity with using creativity exercises. Someone with a higher score, might start with a more challenging exercise.

In the area of **organisational** creativity, the following five soft skills were judged to be most important for an organisation: **adaptability, communication, collaboration, problem-solving,** and **resilience**. These skills can be developed by the exercises **Focus Group, Six Thinking Hats, 5W2H Method, TRIZ** and **Bionics**.

Soft skill ability	Exercises to develop this skill
Adaptability	Six thinking hats, Focus group
Communication	Six thinking hats, BIONICS, Focus group, 5W2H

critical thinking	BIONICS, Focus group, 5W2H
problem-solving	TRIZ, Six thinking hats, BIONICS, 5W2H
Resilience	Six thinking hats, Focus group

The five exercises chosen to develop organisational creativity are listed by judged degree of difficulty as follows:

1. **Focus Group** – for scores below 20%
2. **Six Thinking Hats** – for scores 20%-40%
3. **5W2H Method** – for scores 40%-60%
4. **TRIZ** – for scores 60%-80%
5. **Bionics –** for scores over 80%

Someone with a lower score of individual creativity, would be advised to start with the Focus Group exercise and then try the next exercise, Six Thinking Hats, and then continue down the list as they gain more experience and familiarity with using creativity exercises. Someone with a higher score, might start with a more challenging exercise.

III. InnCREA Experience

Contemporary society is characterised by rapid and complex change processes that encompass all spheres of life. Creativity has been identified both as a key factor for adequately addressing the challenges caused by these changes as well as a major driving force towards knowledge creation and social and economic advancement through the development of a knowledge society.

Creativity has received a high degree of attention from scholars, professionals and policy makers alike in recent years. A growing number of publications and conferences have explored the subject from various angles, and some governments have explicitly singled out this topic as a policy priority. Despite the significant overall interest in creativity, so far relatively little attention has been paid in Europe to how creativity and innovation can be enhanced within and by academe.

This is particularly unexpected given the key role of higher education for the development of a knowledge society and for achieving the Lisbon objectives of the European Union (2000). Progress towards a knowledge-based society and economy will require that European higher education and its partners in society and government give creativity their full attention. The complex questions of the future will not be solved “by the book”, but by creative, forward-looking individuals and groups who are not afraid to question established ideas and are able to cope with the insecurity and uncertainty this entails. As centres of knowledge creation, European universities have to provide a milieu that favours the creativity of the human potential, which in turn needs to receive appropriate support from governments and other stakeholders.

3.1 Recommendations to Academic Teachers

If Europe should not succeed in this undertaking, the very goal of a European knowledge society would be at stake. Purely mechanistic approaches geared towards reaching predefined targets would certainly not allow European higher education institutions to contribute towards this ambitious objective.

As a result of the in-depth interviews, the following recommendations were made:

- Techniques should be incorporated within university courses so that students can grow their creative and problem solving techniques. Also in order to prepare them for the working life where these techniques are used;
- The professor should be supported by experts in the techniques, such as designers and creatives;
- It is important to create a positive environment in which students collaborate with each other. They should not influence others or make fun of those who propose absurd and strange ideas, because sometimes these are successful.
- Teachers should understand their students, their needs and the structure and content of the class.
- Teachers should plan in detail how they want to implement the techniques, and also any possible situations that may happen.
- Techniques used to solve specific needs and problems are tailored to the specific situation, and to the team solving the problem with a particular technique.
- Regardless of the technique used, group participants must have a good understanding of the problem to be solved.
- It is necessary to create an atmosphere that allows for a creative approach to the problem and motivation to take a new look at the possibilities of solving it.
- Employees' creativity and pioneering skills should be developed systematically and continuously.

3.2 Recommendations to students

Today's job market is very competitive, and it is increasingly important that students have the right skills and methods to facilitate their entry and return to working life skills. The expectations of employers and the needs of universities should be balanced so that the graduates of these universities have not only knowledge and professional skills but also acquire soft skills that allow them to be creative in their future professional lives.

This is a critical aspect of preparing a modern employee because it makes them more flexible and adaptable to the changing expectations of employers. The development of individual creativity by students is essential because it increases motivation and self-development.

An employee's creativity is increasingly appreciated and necessary because it is one of the most important elements affecting a company's competitiveness and determining its development. The creative employee is also more open to change and diversity. The increased focus on creativity is also

a response to the policies of the European Union in the field of education, labour market, and increasing employment of young people.

Recommendations from innCREA interviews that can guide students include the following:

- The techniques used to solve specific needs and problems should be tailored to the specific situation, and the team solving the problem with a particular technique.
- Regardless of the technique used, group participants must have a good understanding of the problem to be solved.
- It is necessary to create an atmosphere that allows for a creative approach to the problem and motivates participants to take a new look at the possibilities of solving it.
- Incorporating game elements in the team-building process can be of great benefit to the inclusion of creativity and innovation.
- Provoking reverse thinking can be a great asset in the problem-solving process.
- Engaging visual aids to support day-to-day work can help all team members easily identify concepts and ideas.
- Including different team members' points of view in the decision-making processes is fundamental for the development of organisations.
- Taking team members' opinions into consideration is important for creating a sense of belonging to the organisation and responsibility for its future development.
- Using creativity techniques is crucial for their role in designing new products
- Introducing creativity techniques in everyday work is important for every company because, besides all of the other benefits, it creates a sense of belonging and a good mood which leads to better performance.
- Creativity techniques should be part of every company's everyday work.

IV. Practical Tips for Assessing Creativity with the Use of innCrea Tools

Creativity - the ability to ask *how something can be done differently, better,* combined with the ability to *design* widely understood changes. It is the ability of creative thinking, adaptive flexibility resulting in finding creative, original solutions that go beyond the accepted patterns.

The innCREA audit tool assesses creativity levels that are related to types of creativity skills used in work environments separated into those used by individuals, by teams working together to find solutions, by leaders in their leadership roles, and those used across organisations. Because each role, working alone, working in a team, leading a team, being part of a larger organisation, has specific characteristics, the assessments focus on the soft skills most needed for each role/level separately.

4.1 Preparation for the Assessment

The innCREA audit tool is designed to be used in conjunction with the innCREA crash courses and individual creativity exercises.

- To get the most benefit from the assessment, the audit tool should be used before or at the beginning of the crash course or before trying any of the innCREA creativity exercises.
- The results of the audit tool will give suggestions for exercises that will be most efficacious for developing creativity softs skills based on the audit tool users' current assessed level of creativity.

It can be helpful to share the innCREA definition of creativity with audit-takers before they take the audit, so that they will have a better sense of what is being measured. The innCREA project defines creativity as follows:

- Audit tool users may select to test their own creativity in individual, team, leadership or organisational roles. Before taking the assessment, audit tool users should be instructed or will need to choose which of the four kinds of creativity (individual, team, leadership, or organisation) they want to assess.
- The audit tool can be used individually in offices on computers or in smart classrooms or other facilities with devices connected to the internet.

Primarily designed to be used as a teaching tool in conjunction with innCREA creativity exercises in an innCREA crash course or incorporated into an HEI course curriculum, the audit tool is freely available on the world wide web for anyone to use.

The innCREA audit tool can be accessed online at https://www.inn-crea.eu/audit-creativity. It is advisable to take the test at a time and place conducive to focusing and giving undivided attention for up to 15 minutes.

4.1.1 Assessment in Higher Education Institutions: Institution and Staff

The primary target group of the innCREA project is HEI students, however, developing creativity skills can also benefit HEI staff. Utilising innCREA tools can benefit HEI staff at the individual, team, leadership and organisational levels.

- HEI staff may find it useful to audit their own levels of creativity in advance of teaching the innCREA creativity techniques or for the purpose of assessing and developing their own levels of creativity.
- Developing creativity skills in HEI teaching staff benefits students who will learn from more innovative teaching methods. In much the same way that developing creativity and soft skills can enhance career opportunities for students, those same skills can augment the tools HEI staff have at their disposal. This may serve them throughout their own careers. This also

benefits the HEI institution as a value-adding activity that expands what staff have to offer the institution.

- Correspondingly, developing creativity and soft skills at the leadership level can enhance the leadership abilities of HEI teachers and HEI staff in leadership roles. Team creativity techniques can be used to strengthen working relationships at the team level and organisation-level techniques can be used across the university in contexts such as staff days or in, for example, launching institution-wide initiatives.

4.1.2 Assessment in Higher Education Institutions: Students

Students are the primary intended beneficiaries of the innCREA tools. Students can be assigned to use the audit tool in a classroom or computer resource room setting or on their own. The audit tool can be used to give a baseline for individual students' levels of creativity and can be used to retest the same students to measure progress.

It is helpful for students to understand that developing creativity skills is one of the ways they can make themselves more attractive to future employers.

Tip: students may find it especially challenging to audit their leadership and organisational skills if they have limited experience in the labour market for frame of reference. It may be helpful to conduct a warm-up exercise to help students think about a team they are part of or even to have students develop personas in scenarios that allow them to imagine an office culture (organisational) or what to consider in a leadership role. The students could answer the audit questions from the point of view of a person that works, for example, for a large energy company, or is a department manager.

4.1.3 Assessment in Business: Work Environment

The innCREA project is a response to a challenge to help HEIs develop in their students the skills that the business world demands. Businesses may find the innCREA tools useful for improving the creativity skills of their organisation, leadership, teams and individual employees.

The audit tool can be used in various contexts such as onboarding, team-building, staff workshop days, or simply as a tool that is provided as an optional activity for staff to choose to use themselves to strengthen their own soft skill capacity. However, the innCREA audit tool is not intended to be a tool for management to evaluate employees.

- The audit tool can be used in a group or individual environment.
- Businesses can provide training to use the innCREA audit tool and creativity exercises or make them available for staff use. The audit tool can be used in preparation for running a crash course for staff or for using a baseline result to select exercises to build creativity skills.
- Because many of the creativity exercises are intended for groups, an employer may want to make the innCREA audit tool assessment an organised staff activity in preparation for having staff work together on the inCREAse creativity exercises.

4.2 Conducting Assessments

For best results, users of the innCREA audit tool should answer each question to the best of their ability and as honestly as possible. Results are immediately available at the end of the audit and a point system is used to evaluate an individual's current level of creativity at the given level. In addition to their score, audit tool users will be given suggestions for how many innCREA exercises to try out to develop their creativity soft skills based on their current assessed abilities.

4.2.1 Higher Education Institutions: Institution and Staff

HEI teaching staff can assign the use of the audit tool to their students before teaching a crash course on creativity or any of the exercises. This will give a baseline assessment to indicate how creative the students are at the starting point and to measure their progress after they have completed an innCREA crash course or worked on their creativity soft skills using specific innCREA exercises.

One of the suggestions from innCREA desk research and interviews was that to encourage creativity, grading should be deemphasized so that students feel free to try new things without worrying about results. For this reason, it may be desirable for the student alone to see and track their assessment results and for the assessments to not be used as a basis for assigning a grade for using innCREA tools. Another option would be to collect the assessments without identifying information so that the individual students may remain anonymous and the HEI instructor can judge the needs for creativity development of the students in their class as a whole.

HEI students are the targeted primary beneficiaries of the innCREA tools. However, HEI teachers and other staff may find it valuable to assess and develop their own creativity and soft skills.

- In HEIs, the audit tool can be used by individuals, teams, classes, leaders, or the entire organisation.

4.2.2 Higher Education Institutions: Students

Students can use the audit tool in a smart classroom or computer lab, on their own or their institution's internet-connected devices in a classroom, or on their own outside of class. HEI instructors can decide if they want students to share their results with the instructor as a benchmark or let students record the result for themselves for future reference to compare when they later reassess their abilities with the innCREA audit tool.

- Students will need to be directed to use the audit tool for the creativity level (individual, team, leadership, organisational) that corresponds to the innCREA crash course that their instructor will be teaching.

4.2.3 Business and Work Based Environment

Businesses can have employees use the audit tool in the context of organised activities such as staff development workshops or offer the tool as a resource that staff members can freely choose to use on their own if they so choose.

- The innCREA audit tool should not be used as a means of formal employee evaluation but rather as a helpful tool for staff development.

4.3 Analysis of the Results and Selection of Short Courses to Increase Creativity

At the end of the audit, users will see their score and a list of score ranges. Skills are assessed by points given for answers. Higher scores indicate higher levels of creativity. Based on the score, audit users will be given suggestions to try one or more creativity exercises that are included in the innCREA training programme.

The number of exercises that an individual will be encouraged to try out will correspond to their current level of creativity as determined by the audit tool. A person with a lower score will be given a recommendation to do more exercises than a person with a higher score.

Individual creativity exercises have been ranked by order of difficulty. It is recommended that individuals with lower scores try more accessible, lower ranked exercises and before attempting more challenging ones.

4.3.1 Higher Education Institutions: Institution and Employees

When analysing the audit results and selecting short courses to increase creativity in HEIs keep in mind:

- The audit tool will be most useful if used to assess the baseline level of creativity that students possess before they are taught the innCREA creativity techniques.
- The audit tool can be used to retest and measure progress over time.

Audit results can be used to determine how many creativity techniques may be necessary to achieve desired results. For example, if most students score low, such as in the 20th percentile for creativity at say the team level, the HEI instructor would know that it would be most beneficial to run the crash course on team level creativity or find another way to incorporate all five of the team level creativity exercises into their curriculum. If, on the other hand, students already show 80% mastery, an instructor might decide to select only the one, most challenging technique to build on the students' already high level of competency in that area.

Another consideration may be testing and training students in more than one kind of creativity (individual, team, leadership, organisational).

Crash courses for the different levels of creativity are designed to provide a time efficient way to teach the creativity techniques of each course to students. Beyond the crash course format, individual exercises can be incorporated into teaching methods and curriculum.

Because skills at all of the levels are important for students to develop for their future career success, chapters 1 and 6 offer ways to introduce students to techniques from each of the levels (individual, team, leadership, and organisational)

4.3.2 Higher Education Institutions: Students

When analysing the audit results and selecting short courses to increase creativity in students keep in mind:

- The audit results indicate current level of creativity and gives guidance for increasing creativity soft skills. The results can be used to measure progress over time: they are not intended to be used as an evaluation tool in assigning letter grades.
- Especially for students who are assessed at lower levels of creativity or who have limited to no experience with creativity enhancing exercises, it will be important to create a relaxed, judgement-free environment for them to practice these new skills without the pressure or fear of failure.

4.3.3 Business and work environment

Because creating a non-judgmental atmosphere is needed to allow creativity to flourish in a work environment, employees should ideally be allowed to keep their innCREA audit tool assessment scores to themselves. The assessment is not intended to be used for the evaluation of employees by their employers, but it is a tool the employer may offer to aid employees in their soft skills development.

4.4. Conducting short courses to increase creativity

The innCREA crash courses are designed to offer a time effective way to introduce students to creativity exercises that can enhance their soft skills and thereby help them develop into valuable employees and team members.

- The exercises can also be taught or used individually.
- The innCREA exercises can be modified for use in any field of study.
- More time can be allotted for completion of any of the exercises.
- The exercises can be used repeatedly in HEI curriculum and in work life.

In the innCREA crash courses, students will learn:

- why soft skills are important for their current and future careers.
- which soft skills are most important for individual, team, leadership, or organisational creativity.
- five exercises chosen for their efficacy in enhancing the most important soft skills.

In preparation for a crash course or teaching innCREA creativity exercises, consider success factors for encouraging creativity from the innCREA interviews. These success factors can be used as guidance to enhance the effectiveness of teaching innCREA courses and exercises.

Create a conducive space:

- Keep the mood positive and atmosphere relaxed in the group.
- The physical space should suit the exercise.
- It is necessary to create an atmosphere that allows for a creative approach to the problem and motivates participants to take a new look at the possibilities of solving it.
- Create working conditions that allow for independent thinking, use of knowledge, experience in achieving goals.
- Create a climate and organizational culture conducive to finding solutions, inquiring, taking the initiative.
- Exercises can often be carried out by telephone and video-conferencing. This is especially useful when it is impossible to meet in person as has been the case during parts of the COVID-19 pandemic.

Consider how and why a team is assembled:

- Working in a team, e.g., on a project, can enable faster results and more effective detection of emerging errors, deficiencies, or inconsistencies.
- Benefits come from the synergy effect as there is more knowledge and experience in the group.
- Some exercises work better with fewer or larger numbers of participants.

- Incorporating game elements in the team-building process can greatly benefit creativity and innovation.
- Ensure diverse points of view through engaging team members with different functions in an organisation.

Prepare participants to succeed:

- Regardless of the technique used, group participants must have a good understanding of the problem to be solved.
- Gather as much information as possible.
- Gather as many ideas as possible.
- Engaging visual aids to support day-to-day work can help all team members easily identify concepts and ideas.
- Techniques used to solve specific needs and problems are tailored to the specific situation, and the team solving the problem with a particular technique.
- Employees' and students' creativity and pioneering skills should be developed systematically and continuously.

Encourage a non-judgmental ideation process:

- Never attempt to classify an idea as foolish, or not appropriate.
- Be aware that even absurd ideas can be valuable. Individuals and group members should look for ideas that are as original as possible. Everyone should encourage each other to develop ideas and create new combinations or developments of ideas.
- Each person in a group should be given the opportunity to put forward their idea on how to solve a given problem without fear that the idea will be negatively evaluated or rejected.
- Provoking reverse thinking can be a great asset in the problem-solving process.
- Participants need to have the ability and patience to listen to the ideas and arguments of other group members.
- Disregard for inexperienced people, the negation of ideas, lack of imagination are the elements that reduce the effectiveness of creativity techniques.
- Open group discussion can be led by the participants.

Incorporate time for reflection, analysis and synthesis:

- If possible, in a separate session, sort out the most relevant ideas (others can be kept as a valuable resource for the future sessions.)
- Motivate all group members to think creatively and search for solutions using the submitted ideas.
- Sometimes in order to be really useful, it is essential to come back to the analysis to evaluate it again, and to repeat the activity.

4.4.1. Higher education institutions – institution and staff

In preparation to conduct innCREA training, it could be beneficial to consider incorporating suggestions and success factors from innCREA's project research. Findings from innCREA interviews highlighted the following factors encouraging creativity and pioneering in higher education:

- **More space for creativity and the implementation of creative techniques:** Institutions can support teachers in developing more creative classrooms and learning experiences for students. Teachers need more opportunities for observant learning to become familiar with standards, officialising creativity techniques throughout the curriculum, not only in the art departments but in all departments. Creativity techniques should be made systematic for use by all teachers.
- **From teacher-centred to learner-centred approach:** Teaching should focus on giving more space for students to develop their critical thinking skills. This involves students more and motivates them. However, some controls should in place for analysing results of creativity exercises.
- **Assessment system:** Grading systems should be deemphasised because they increase the fear of failure and hinder the creativity in students. Assessments needs to be modified and developed.
- **Addressing industry-related issues:** Creativity should also be practical and address real-life problems and ways to solve them – instead of imagining only. This merges the gap between courses in institutions and work in industry.
- **Role of teachers:** The role of teachers in fostering creativity and pioneering innovation in students should receive more attention and support from institutions. Institutions should prepare or allow a range of resources for teachers to try, test and fail; and encourage teachers to participate in a supportive and collaborative teaching culture. They should be more aware of the workload of teachers and working conditions that institutions provide teachers as they influence teachers' capabilities to implement the creative techniques.

In higher education, factors inhibiting creativity and pioneering are:

- **Lack of sufficient knowledge:** Weisberg (1999) considers knowledge a fundamental, undeniable hindrance to creativity. Previous studies proposed a U-shaped curve relationship between creativity and knowledge. This suggests that limited knowledge in the sector(s) would hinder creativity as much as abundant sectoral knowledge and that there is a sweet spot in the middle where creativity can more easily thrive.
- **Non-creative learning and teaching style:** Within the current pedagogical curriculum, learning favours memorisation and teaching refers to the imparting activity. This does not actively involve all students and their abilities to reinforce creativity and pioneering innovation. A culture of one-correct-answer stops learners from being willing to make mistakes. Instead, students learn to guess what answer the teacher expects to hear.
- **Assessment construction:** Typically, assessment focuses on the summative function that aims to judge or grade students' achievements. Formal, national assessment, especially in the form of tests, enforces comparison and competition among students and schools.

National or end-of-year tests place enormous pressure on teachers and students as these assessments focus on getting a better grade instead of innovative practices.

- **Role of teacher:** Some teachers are traditional, while others are innovative. Traditional teachers tend to discourage students' individual autonomy, which ultimately inhibits creative performance. Additionally, traditional teachers seem to judge good students as ones who are conformist and considerate rather than risk taking.

By providing a supportive environment and innovative teaching methods, HEI institutions and teachers can help their students to develop their creativity and soft skills. The use of innCREA tools will be more effective in an environment that supports innovation.

4.4.2. Institutions of Higher Education: Students

Considering the ways that HEI institutions can encourage creativity, teachers can create more conducive settings for their students to develop the soft skills offered in the innCREA training tools.

When HEI students use the innCREA creativity exercises:

- Students should have adequate knowledge and preparation in the topics of study that will be used in the crash course exercises so that they can feel confident and comfortable using their creative abilities and offering their ideas.
- The classroom environment should be comfortable and ergonomic so that students can be optimally productive.
- Teachers should endeavor to create a supportive environment in which students can trust their teacher, fellow students and themselves as they face a learning curve practicing new skills and risk making mistakes.
- Students should not be pressured to succeed or master but instead to try-out and experiment.
- Students should be discouraged from judging their own tentative, spontaneous ideas or those of others.
- Understanding the importance of creativity soft skills in business and work environments can encourage student engagement.

4.4.3. Business and work environment

Similarly, supporting innovation and creativity in a business environment will enhance the development of creativity and pioneering innovation skills. Businesses can capitalise on the benefits of working with innCREA exercises by maximising factors that enable creativity and pioneering innovation and minimising those that inhibit.

In work life, factors enabling creativity and pioneering innovation are:

- **Sufficient domain-related knowledge and skills:** Employers should allow opportunities and conditions for employees to grow and develop capacity in their fields.
- **Reasonable amount of resources:** The availability of resources nurtures creativity and innovation.
- **Creativity-valued and supportive working environment:** including leader support for goal setting, space for autonomy, persistence, open and permissive environment of diverse ideas, and reward systems that encourage experimentation and allow mistakes and failures.

In work life, factors inhibiting creativity and pioneering innovation are:

- **Lack of sufficient knowledge:** Weisberg (1999) considers knowledge a fundamental, undeniable block to creativity. Previous studies proposed a U-shaped curve relationship between creativity and knowledge. This suggests that too little knowledge in the sector(s) would hinder creativity as much as abundant sectoral knowledge.
- **Lack of sufficient resources:** Finance, people, time, and other tools and materials influence creative performance. Unrealistic deadlines and lack of access to a minimum level of resources hinders creativity and pioneering innovation. Overwhelming with too many resources has similarly negative impacts on creativity.
- **Inadequate organisational support:** This is the responsibility of an organisation's leaders, who must put in place appropriate systems or procedures and emphasize values that prioritise clearly the role of creativity in employees. Infighting, politicking, and gossip are found to be damaging to creativity because they take employees' attention away from work.
- **Lack of autonomy and freedom to work:** The lack of autonomy and freedom to choose how to work discourages creativity. Micro-managements that direct individuals on exactly how to perform their job take the ability to work and generate ideas from them. The continuous interruptions of an individual's working process by leaders negatively influences the intrinsic motivation which is considered an important component of creativity.
- **Intolerance towards failures and mistakes:** This factor decreases the risk-taking level and initiatives of employees, while increasing fear of experimentation.

4.5 Conclusions from the assessment and conduct of the courses

The innCREA audit tool and crash courses offer concrete ways to measure and develop creativity soft skills.

- After running one or more crash courses, participants can re-audit their creativity to measure gains. Because each crash course offers a three-hour introduction to five creativity techniques, results may not show improvement so soon. Ideally, the audit could be taken after a longer period of more significant engagement with the exercises to develop creativity.

- Using the innCREA audit tool will give a way to concretely measure levels of individual, team, leadership and organisational creativity.

- In the crash courses, students will become better-familiarised with the importance of developing creativity and soft skills in support of their future careers.

- Students will be introduced to creativity techniques in the crash courses that they can use repeatedly in other contexts to develop their own abilities and to offer those skills to current and future employers.

V. Summary and Conclusions

Creativity and pioneering, as a part of innovation management is critical for all organisations and companies where knowledge creation and use is part of their everyday activities. Creativity constitutes the ability to come up with ideas on how something can be done differently, in combination with the ability to design widely understood changes. The concept of creativity encompasses the ability of creative thinking, adaptive flexibility resulting in finding creative, original solutions that go beyond the accepted patterns. Many studies suggest that European institutions are 'reinventing the wheel' and they should boost their creativity in order to be innovative and competitive in the research community. The quality of the people is the distinguished feature of successful organisations. This is the reason recently emerged management disciplines such as knowledge management.

Creativity techniques are methods that encourage creative actions, whether in the arts or sciences. They focus on a variety of aspects of creativity, including techniques for idea generation and divergent thinking, methods of reframing problems, changes in the affective environment and so on. They can be used as part of problem solving, artistic expression, or therapy.

InnCREA is an European social innovation project that aims to transfer, adapt and implement an integrated training programme package (material and methodologies) for teaching creativity and pioneering in pursuit of innovation in order to develop HE students soft skills and, at the same time, contribute do diminish the gap between skills in demand in the labor market and the skills offered by HE courses. This initiative also aims at engaging into systematic and permanent dialogue between HE institutions, employers and all relevant stakeholders: HE students, community, local/regional authorities and other organisations across the EU.

The innCREA project objectives are in line with Europe 2020 priority for inclusive growth through delivering a high-employability economy, and directly will contribute to achieving one of the strategy's targets "employment rate of the population aged 20-64 should increase from the current 69% to at least 75%". The innCREA project outputs aim to provide a comprehensive program, addressing main labour market stakeholders with regard to diminishing the mismatch between HE students' skills and the skills sought by the market and thus reducing youth unemployment.

This innCREA Guideline constitutes the second intellectual output of the project and was developed with the participation of all the project partners. The innCREA Guideline answered the question how to implement new creative techniques, such as diagnosis, analysis, method selection,

etc. to effectively and efficiently work with students individually and in groups as well as in other organisations such as companies. Furthermore, it has also included new techniques that have been developed within the framework of the innCREA project. This has enabled the implementation at the university of additional programmes to teach soft skills, required in the labour market. Based on the experience gained from business, the developed innCREA methodology will be manifold since it can be easily implemented at universities, companies and other institutions that require creative work from their employees.

The innCREA methodology is not only targeted at university departments, but also at SMEs, R&D organisations, vocational training institutes, business associations and other interested parties.

The innCREA Guideline is directed at academic staff and lecturers as well as people who do not have overall knowledge of the many-faceted elements of creativity and pioneering as a part of innovation management but who wish or need to know more about it. Therefore, the innCREA Guideline also addresses students or continuing professional development trainees who might use it as a guide for creativity and pioneering management related subjects. Business consultants might wish to use it as an additional tool to support their clients or to give them a general understanding of creativity and pioneering as a part of innovation management issues.

The innCREA Guideline is divided in five separate sections. Firstly, Introduction followed by Creativity Audit Tool. The innCREA audit tool determines creativity levels that are related to types of creativity skills used in work environments separated into those used by individuals, by teams working together to find solutions, by leaders in their leadership roles, and those used across organizations. Because each role, working alone, working in a team, leading a team, being part of a larger organisation, has specific characteristics, the assessments focus on the soft skills most needed for each role/level separately.

The innCREA audit tool is designed to be used in conjunction with the innCREA crash courses and individual creativity exercises. The audit tool can be used in various contexts such as onboarding, team-building, staff workshop days, or simply as a tool that is provided as an optional activity for staff to choose to use themselves to strengthen their own soft skill capacity. It includes assessment and interpretation of results. Once the respondent has completed the questionnaire, the system provides a result based on the answers given. This result measures the current creativity knowledge at the level on which the audit was undertaken. The audit tool can be used periodically to measure progress and the techniques offer the flexibility to be used repeatedly by changing topics and increasing complexity and difficulty. The innCREA Guidelines also include description of the courses to develop creativity, divided by individual, team, organisation and leadership level.

The following part of the innCREA, examines the research conducted by project partners. Structured in-depth interviews have been conducted by each partner with university lecturers or employers. The purpose of this activity was to develop the new standards of creativity techniques. Each interview consisted of a description of the main goal of the technique and for what situations it is useful; step by step how the technique is applied; the preconditions for applying the technique successfully; and situations when the technique was applied and the results that were achieved. Subsequently, each partner has analysed and documented the results from the interviews in in-depth interview reports.

It can be concluded that the innCREA Course offers concrete ways to measure and develop creativity and soft skills. The innCREA will provide a way to concretely measure levels of individual, team, leadership and organisational creativity.