

Teaching creativity in engineering

TECRINO

538710-LLP-1-2013-1-CY-LEONARDO-LMP

LEONARDO DA VINCI Multilateral Projects for Development of Innovation

WP3 Report 3.3. Education for tutors and teachers

3.3.1. Introduction

In WP3, reports a set of actions are reported in relation to the content definition, covering the technical aspects and the methodology based on which content will be defined, organised and maintained. It also covers the definition of the required materials for the tutor and teacher education.

In report ***Education for tutors and teachers*** choice of necessary skills for Tecrino course delivery are defined.

Tutors and teachers should besides have mastering Tecrino course topics have communication skills and experience in online mentoring. Tutors should be familiar with LMS and online monitoring.

Learning program for tutors and face-to-face teachers will be delivered. Teaching materials will be delivered.

In this report procedures for e-learning portal examinations are defined, as well as procedures for face to face examinations.

In preparation of this report major contribution was from The "Dunarea de Jos" University of Galati, Syntea SA, Inercia Digital S.L., Fondo Formación Euskadi and University of Zagreb with comments of others partners.

3.3.2. Teachers and tutors program content

This program is based on Tecrino course but have a tutor guide in which it is showed the proper use of all the tools that can be used in order to interact with students through the online platform.

The same material could be used as a guide for the student, in which it is explained the methodological process to be followed in order to do the course, and the management of all the options and tools which have the online platform.

Chapter 1. Understanding and recognising creativity in creative products

In this chapter the proposed definition of creativity is : “creativity is the capacity to generate ideas that are simultaneously novel (original) and useful”. With this definition for the creativity, focus is on analyzing several creative products with the aim to uncover and emphasize what makes them creative. 4 facets of the creativity have been called – for didactic reasons – “the 4 P’s of creativity (Person, Product, Process, and Place).

Chapter 2. Recognising creative people and assessing one’s own creativity

Starting with question, “How do you recognize Leonardo da Vinci, and – in general – how do you recognize a creative person?” a focus will be on the creative persons.

A creative person could be defined as someone capable to produce a large number of ideas on a given topic

We will focus on the creative persons, and we will try to determine to what extent the creativity can be measured and how to be improved.

Chapter 3. On Creative Persons

Chapter about creative persons starts with the question “How to generate (multiple) new ideas?” Creativity is not a natural process and creative thinking is different from normal thinking in many aspects.

Several popular methods to stimulate creative thinking at individual or group level are presented: de Bonos the six thinking hats technique, brainstorming, SCAMPER, attribute listing, etc.

Chapter 4. The TRIZ/TIPS fundamentals (Теория Решения Изобретательских Задач)/(Theory of Inventive Problem Solving) –

Towards systematic creativity

“Systematic creativity” may seem a contradiction in terms, the idea is of extracting the patterns of thinking and the methods used by tens of thousands inventors, and make all this available in an easy to use knowledge base. Following this idea, Genrich Altshuller, a consultant of the Patent Office of the Soviet Navy, developed ТРИЗ/TIPS. This chapter is a synthetic and simplified presentation of the main ideas of TRIZ along with several examples and exercises.

Chapter 5. The material dimension of creativity

Properly designed educational environment is powerful factor that influence creativity.

The positive influence of building mind maps on creativity seems to be related with the involvement of the right brain in the process of analysing the problem. Linguistic stimuli (speech or written text) are processed in the left brain, while images and symbols are the specialty of the right brain.

Chapter 6. Intellectual property protection

Corporate intellectual property (IP); items such as patents, trademarks, copyrights, business methodologies i.e. trade secrets; goodwill and brand recognition are all common intangible assets in today's marketplace, when properly exercised, increase intangible asset to company.

Introduction to intellectual properties and its protection is given.

This text is formed only for the educational purpose and cannot serve as a guide for obtaining any kind of legal IP protection, or advice how to start the protection.

For all applications, consultation of the registered patent attorney for help is advised, having in mind that the errors are extremely costly and dangerous for the business.

Chapter 7. Glossary

Professional glossary, together with literature links is provided as a separate chapter.

Teaching materials will be delivered at least three month before course implementation begins.

Teaching creativity in engineering

TECRINO

538710-LLP-1-2013-1-CY-LEONARDO-LMP

LEONARDO DA VINCI Multilateral Projects for Development of Innovation

Knowledge test for trainers/ examiners will be delivered as online version.

3.3.3. Examination procedures

For e-learning portal examinations following procedure is prescribed

1. Theoretical examination involves application of the e-learning portal.
2. Duration of the examination is defined separately for each module/competence.
3. Duration of the examination starts at the moment of launching examination test.
4. Duration of the examination is measured and controlled by a clock implemented in the e-learning portal. After the time set for the examination passes, the examination is automatically closed.
5. Five minutes before the end of the examination, the e-learning portal will notify examinees of this fact.
6. The examination has a form of a single-choice test. Examinees select one out of four answers.
7. After the examination ends, examinees receive a document including examination results, printed from the e-learning portal.
8. Examinees may communicate with the Examination System Operator only if technical problems arise.

For face to face examinations following procedure is prescribed

1. Examination consists in performing a set of tasks supervised by Examiner.
2. Duration of the examination is defined separately for each module/competence.
3. Examinees must not communicate with each other during the examination.
4. Examinees must not observe other examination participants' work.
5. Examinees must not leave the examination room when the examination is in

LEONARDO DA VINCI Multilateral Projects for Development of Innovation

progress.

6. Examinees must not use any books or any other materials when the examination is in progress. This does not include standard aids used in examination application.

7. Examinees must have their mobile phones and any other electronic devices (photo cameras, recorders) turned off when the examination is in progress.

8. Any attempts to copy, record, print-screen, or send examination materials (tests, tasks, working files) are strictly forbidden.

9. A person who left the examination room has no right to come back unless the examination is finished.

10. In case of emergencies or untypical situations, Examiner makes appropriate decisions.