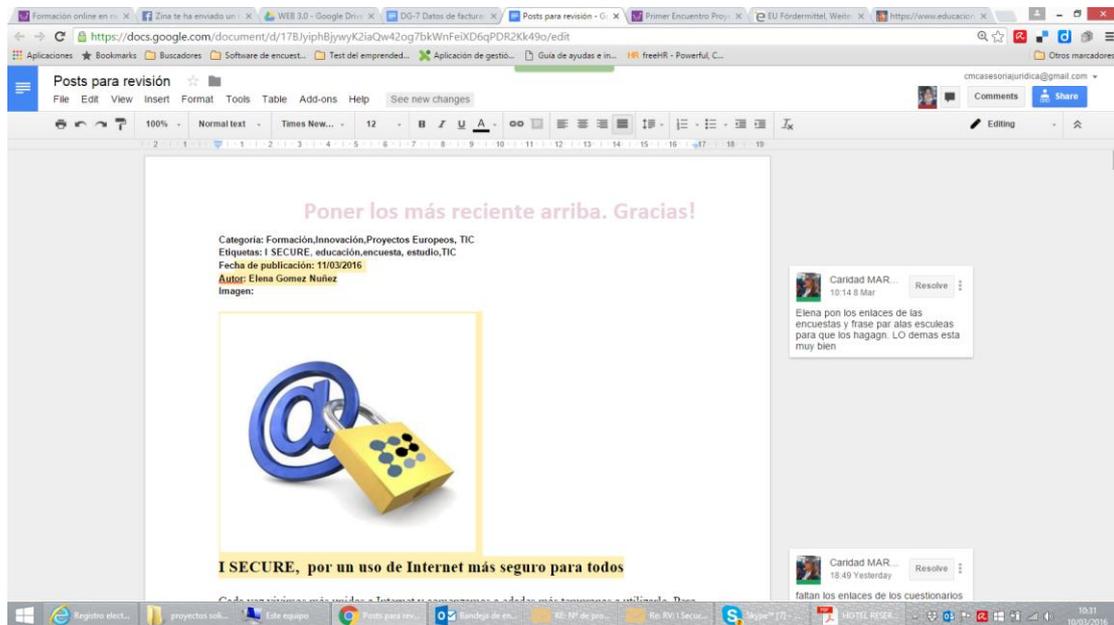Teaching creativity in engineering

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INERCIA DIGITAL S.L.

4.4 Report describing the Learning programme for tutors and face-to-face teachers along with a description of the teaching materials.

Introduction: To update the content of the course is necessary to know what is going to be updated, so that we need to once conducted a pilot course to obtain both the tutor and the student, information on which guide update. This information would insert a questionnaire in the platform with the most important points of the course, that can be updated to get their impressions and would be sent to the student and tutor.

Besides mastering Tecrino course topics, tutors and teachers should have communication skills and experience in online mentoring. Tutors should be familiar with the LMS.

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This course procures 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.

Moreover, it is also provided a guide for the student that explains the methodological process that you have to follow in order to do the course, and the management of all the options and tools that have the online platform.

3.2.1. Description of the teaching materials.

TECRINO online platform or Virtual Space is based on a Moodle platform, adapted to provide autonomous learning method, where you are the one who plans learning. There are no timetables.

The contents, didactic material and communication tools are available through menus, activities, resources or modules in different multimedia formats:

• SCORM.
• Documents and presentations.
• Videoconferences.
• Questionnaires.
• Forums, chats, messages...

Also there are different tools:

• Relation and communication with other students and tutors.
• Evaluation.
• Report visualization.

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You will be able to share information and/or "debate" about any subject linked with the course.

Training Resources and Activities.

In the central part of your screen you will find all the necessary resources to develop your training. These resources are in time sequence order. You should just start your training from the first chapter and follow the steps we suggest you.

You have the following elements:

- Participants:
    - Who takes part in the course.
    - Related Blogs.
    - My notes: personal and the course ones.
    - My profile.

- Badges: milestones achieved along the course.

- General o Access to Forums.

- Chapter 01:
    - Social Forum.
    - Formative Content.
    - Forum consults on the training content.

- Chapter 02:
    - Social Forum.
    - Formative Content.
    - Forum consults on the training content.

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- Chapter 03:
  - Social Forum.
  - Formative Content.
  - Forum consults on the training content.

To carry out the training, we should choose the section "Access to the course contents".

Chapter 01

💬 Social forum

📦 Formative content

💬 Forum consultations on the training content

Here you can leave all queries about the training content

📕 Formative content (Spanish)

📕 Practice exercises (Spanish)

📕 Formative content (Croatian)

📕 Practice exercises (Croatian)

📕 Formative content (Romanian)

📕 Practice exercises (Romanian)

📕 Formative content (Polish)

📕 Practice exercises (Polish)

ovation

📕 Cap1. Format content and exercises (English)

Other tools:

- Search Forums. Searching for conversations at forums related with the course.

- Latest news. It allows you to:
  - Have access to the latest news.
  - Incorporate new pieces of news.

- Upcoming events: it allows you to:
  - Have access to the course calendar.
  - Incorporate new items

- Recent activity. It allows you to review the last activities done along the course and ask for an activity report.

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ONLINE USERS

(last 5 minutes)

Jose Manuel Luna

MESSAGES

No messages waiting

Messages

SEARCH FORUMS

[   ] Go

Advanced search ⑦

LATEST NEWS

Add a new topic...

(No news has been posted yet)

RECENT ACTIVITY

Activity since Tuesday, 1 March 2016, 1:21 PM

Full report of recent activity...

Nothing new since your last login

Evaluation Monitoring.

The evaluation process is very important in virtual training. The tutor finds that he/she has to complete some appreciations about his/her students, which would be directly or more immediately in being-present training, with other mechanisms the system offers.

To measure the students' learning results, the tutor evaluates the exercises and communications with the student, then he/she documents the personal student's report with the knowledge he/she has acquired in each stage of his/her progress.

On the contrary, the monitoring of a course is done through the reports about the student's performance and results obtained from the platform:

- Data of the course.
- Participants.
- Tutelages.
- Progress.
- Evaluations…

Teachers and tutors' programme formative content

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Example of the programme formative content:

Formative content

Contents
- Chapter 01 - Recognizing Creativity
- Chapter 01 - Recognizing Creativity
  - Introduction
  - Objective
  - Conceptual map
  - What makes creative products be creative?
  - Practice Exercises
    - 1. What common elements do these objects have?
    - 2. Is there any similarity between these objects?
    - 3. What is the connection between these objects?
    - 4. Why makes these artwork images creative?
    - 5. Reflect on the quote that makes the motto of this chapter. Do you believe that W. Somerset Maugham was right?
    - 6. Find more examples of objects similar to those shown in figure
    - 7. Build 4 congruent equilateral triangles using 6 identical matches, or pencils.
    - 8. Analyze the creative elements of the following joke:
    - 9. Which of the T-shirts in figure is more creative and why ?
    - 10. And, since we mentioned T-shirts, it is worth to analyze – from the perspective of creativity - the following remark of jerry Seinfeld:
    - 11. Try to design a monument or a fountain starting from the models shown in figure
    - 12. What is the connection between a chain, a mail armour, and a text written in Braille?
    - 13. Try to assess, using benchmarks ranging from 1 to 10, the « level of creativity » manifest in the following quotes:
    - 14. Knowing that the bus in figure 1.24 is in motion, specify whether it moves to the left or to the right.
    - 15. Identify the innovative elements of the objects in figure
  - Resources to expand knowledge on these topics
    - The bored panda
    - Some creative advertising clips
    - And some unexpected ways to use everyday objects. Example 01
    - And some unexpected ways to use everyday objects. Example 02
    - Collections of images of unusual monuments. Example 01
    - Collections of images of unusual monuments. Example 02
    - Samples from the work of a brilliant cartoonist Pawel Kuczynsky.
  - Bibliography References

Chapter 1. Understanding and recognizing creativity in creative products

Define the conceptual framework, including definitions of the main concepts related to creativity, as well as the main theoretical approaches used for explaining the creativity.

Chapter 2. Recognizing creative people and assessing one's own creativity

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We focus on creative people, and we will to determine to what extent the creativity can measure.

We introduce one fundamental creative thinking skill, "divergent thinking", and we discuss how to assess the overall creativity of people (including our own creativity), starting from observing divergent thinking.

We also outline several distinctive personality traits of creative persons.

Chapter 3. On Creative People

In this chapter, we try to answer the following question: "How to generate (multiple) new ideas?" To this purpose, we explore several popular methods to stimulate creative thinking at individual or group level: the six thinking hats technique, brainstorming, SCAMPER, attribute listing, etc.

Chapter 4. TRIZ – Towards systematic creativity

This chapter is a synthetic and simplified presentation of the main ideas of TRIZ (see also Rantanen, 2010), along with several examples and exercises. Though this presentation is far from covering all the instruments developed by TRIZ, it still has the merit of giving the reader a chance to understand the basic concepts of TRIZ. Readers will also find here references to some resources available to develop their abilities of creative problem solving with TRIZ.

Chapter 5. The material dimension of creativity

In this chapter, we attempt to identify the main environmental factors that influence creativity, and to outline the reasons to use them to stimulate creativity, with a focus on the educational environment.

Chapter 6. Intellectual property protection

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The following chapter deals with the intellectual property protection and problems associated with it. At that point the market will challenge the protected concept, product, procedure, creation … i.e. competitors - and subsequently the Intellectual Property Offices where protection is sought. We present the road map for the intellectual property protection and focus on typical pitfalls.

Summary

On the platform the tutor find a guide on how to perform their didactic process and management of online tools platform. There will also be a guide for the student to explain how to take the course and management tools platform.

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- A guide for trainers
- A guide for trainers (Spanish)
- A guide for trainers (Romanian)
- A guide for trainers (Croatian)
- A guide for trainers (Polish)
- Presentation and access guide students
- Presentation and access tutors guide

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