

EDITION IN ELECTRONIC SUPPORT OF DIDACTIC MATERIAL FOR INTERACTIVE SELF-LEARNING

Maria Santisteban^{1,2}, Jose Miguel Davila^{1,2}, Aguasanta M. Sarmiento^{1,2}, Juan Carlos Fortes^{1,2}, Jose Antonio Grande^{1,2}

¹Department of Water, Mining and Environment. Scientific and Technological Center of Huelva, University of Huelva (SPAIN)

²Sustainable Mining Engineering Research Group. Department of Mining, Mechanic, Energetic and Construction Engineering. Higher Technical School of Engineering, University of Huelva (SPAIN)

Abstract

The creation of a new social-virtual space for human interrelations is necessary for new information and communication technologies. This new environment, which is being developed in the area of education, enables new processes of learning and transmission of knowledge through modern communication networks. All this invites us to support ourselves in the principles of hypertext education and autonomous learning together with the collective and cooperative.

The aim is to reinforce learning through an interactive learning technique based on problems and self-evaluation. To achieve these objectives, it would be necessary to combine teacher-guided learning, the personal work of the learners and the working group.

The project consists of the interactive didactic material electronic edition related to the subjects dealt with in the subject Geological Foundations (Degree of Engineering in Exploitation of Mines and Energy Resources) and Geology, (Degree in Engineering in Exploitation of Mines and Energy Resources). For this purpose, all the contents are integrated into a digital document with digital with sufficient links for the student to navigate throughout the subject.

The objectives are: Compilation of the theoretical and practical contents of the subjects; Development and updating of a set of activities for the assimilation of the contents; Integration of all contents in a digital format document with sufficient links for student navigation throughout the subject; Incorporate links to websites of interest that allow the extension of the contents of the subject; Familiarize students with learning.

To achieve the objectives proposed in the project, the following methodology is proposed: Phase I. Preparation of teaching material; Phase II Creation of an interactive virtual platform with the didactic material developed: Once all the didactic material has been developed and available, a navigation environment will be programmed with Frontpage (or similar) with which the student can easily access the developed contents.

In this way, once all the didactic material has been prepared and available in digital format, a navigation environment will be programmed with which the student can be able to easily access the developed contents. With this didactic material, a publication will be made which will be easily accessible for all interested students. The student will have the theoretical contents developed, as well as a collection of representative problems solved, which will serve as a guide for the study of the subjects mentioned above. In addition, interactive tests will be carried out that allow the student to self-evaluate the theoretical-practical concepts worked on.

In this way, this work can be considered as a first phase of the total virtualization of all the subjects.

Keywords: self-evaluation; interactive learning; didactic material; autonomous learning.

1 INTRODUCTION

The new information and communications technologies allow the creation of a new social-virtual space for human interrelations, this new environment is in the area of education, because it allows new learning processes and knowledge transmission through Modern communications networks.

This environment is becoming more important every day, because to be active in the new social space, new knowledge and skills are needed that must be learned in the educational processes [1]. In

addition, adapting the university and training to the new social space requires creating a new system of instruments and methods for educational processes. All this invites us to support the principles of hypertextual education, autonomous learning together with the collective and cooperative.

In order to adapt to the European requirements on higher education, it is necessary, not only the adequacy of the Spanish education system to the requirements of continuous training throughout life, As UNESCO [1] states, "if the teacher does not change, relevant changes cannot be made in the educational processes so that they are compatible with the need generated by social demands", but also, and as a consequence of this, the remodeling of teaching methodologies in the sense of motivating the student to a personalized learning that, guided by the teacher, lead to the obtaining of skills and competences essential for its transmission to the European labor market.

On the other hand, in addition to the change in the teaching methodology, a change in the mentality of the teaching staff is necessary for protocols to this new system, since you acquire more importance the queries of resources outside the classroom, virtual training, etc. relegated to the background.

For all the above, the objectives of this work are the following:

- Collection of the theoretical and practical contents of the subjects.
- Development and updating of a set of activities for the assimilation of the contents. Incorporation of self-assessment exercises.
- Integration of all the contents in a digital format document with sufficient links for student navigation throughout the subject.
- Provide links to interactive programs that facilitate the understanding of concepts.
- Incorporate links to web pages of interest that allow the extension of the contents of the subject.
- Familiarize students with learning.
- Development of a final teaching publication that is available to students.

2 METHODOLOGY

To achieve the objectives proposed in the project, the following methodology is proposed:

Phase I. Preparation of teaching material:

- The initial stage of this phase consists in the elaboration of the theoretical and practical contents of the subjects. Teaching has been used in these, to be collecting, updating and developing all the material. In this sense, it must be commented that the opinion of the students has been taken into account in order to choose the most appropriate form of content presentation.
- The second stage of this phase has been the elaboration of self-assessment tests with a level of requirement similar to that requested in the different exams, so that the student can know and correct in advance the main difficulties he has had in Your assimilation of content.

Phase II Creation of an interactive virtual platform with the didactic material developed:

Once all the didactic material has been developed and available, a navigation environment will be programmed with Frontpage (or similar) with which the student can easily access the developed contents.

The completion of the project has been estimated in about 6 months for the preparation of Phase I, which was between the months of March and September 2019, and in about 6 months for Phase II, from October 2019 to April 2019.

3 RESULTS

Of the proposed objectives, Phase 1 has been completed in its entirety, resulting in a teaching publication that is available to all interested students through the publications service of the University of Huelva [2].

Thanks to this teaching material that has been developed, the student has the theoretical contents, as well as representative problems solved, which will serve as a guide for the study of the subjects in the

mentioned subjects, as well as tests that allow the student to self-evaluate Theoretical-practical concepts.

Fig. 1 shows one of the exercises included in the published teaching notes. In the first place, the statement of the unresolved exercise appears and then the exercise already resolved. Fig. 2 shows an example of an explanatory illustration of the theoretical contents collected in the teaching material created.

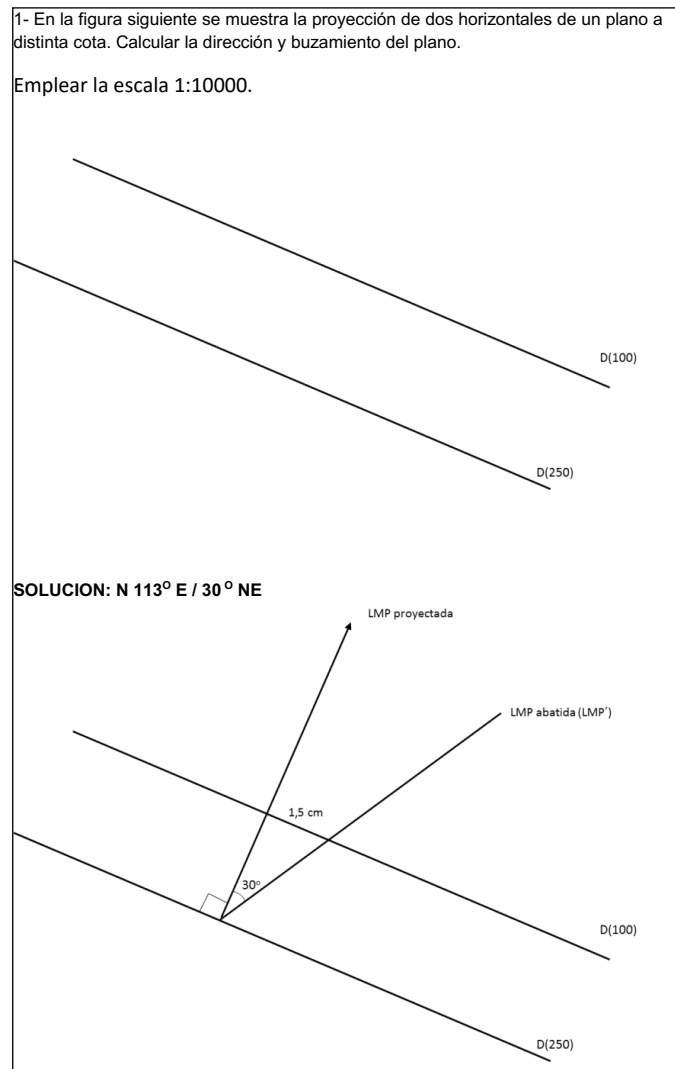


Figure 1. Example of one of the exercises raised in the teaching material created.

Each chapter, is headed by a brief theoretical introduction, related to the concepts used in each section, which is followed by a practical explanation of some interesting and generalized cases, which by approaching some "type problem", tries to approach the more possible to geological reality. With this it is pursued that the student assimilates better those basic and indispensable geological concepts for the formation of the Technical Mining Engineer.

At the end of each chapter, we propose a series of exercises with which the different techniques used in each case can be exercised individually.

Phase 2 is currently under development and is expected to reach its totality by the date indicated above.

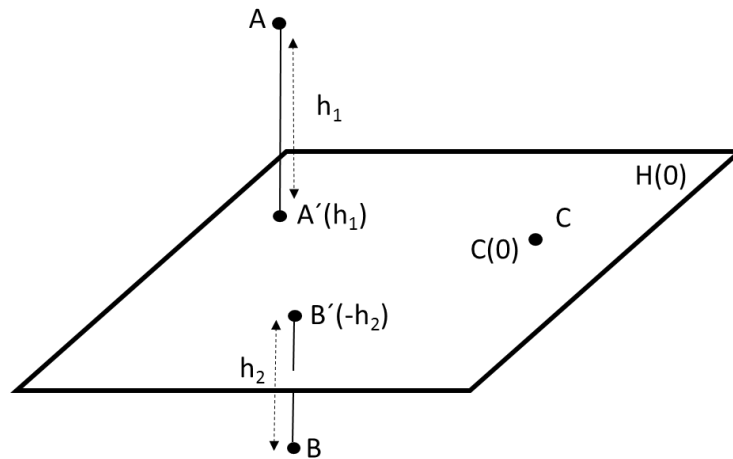


Figure 2. Example of an explanatory illustration of the theoretical contents collected in the teaching material created.

4 CONCLUSIONS

Thanks to this previous result obtained, the student has the theoretical contents, as well as solved representative problems, which will serve as a guide for the study of the subjects in the aforementioned subjects. All these exercises will be available on the web that is being developed, as well as the development of the resolution of the exercises in an interactive way, in this way, the students will have to see step by step and in real time how to solve the problems posed, which It will help the compression and learning of the subject.

Once all the didactic material has been prepared and available in digital format, a navigation environment will be programmed with which the student can be able to easily access the developed contents. The student will have the theoretical contents developed, as well as a collection of representative problems solved, which will serve as a guide for the study of the subjects mentioned above. In addition, interactive tests will be carried out that allow the student to self-evaluate the theoretical-practical concepts worked on. In this way, this work can be considered as a first phase of the total virtualization of all the subjects.

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