

A STUDY ON THE CREATION OF UNIVERSITY VIRTUAL DEGREES IN THE TECHNOLOGICAL UNIVERSITY OF SAN JUAN OF THE RÍO

K. Anaya ¹, E. Herrera-Viedma, ² O. Cerdón ²

¹Dept. of Technological Innovation . Technological University of San Juan of the Río, México

²Dept. of Computer Science and A.I., University of Granada, Spain

Technology education in high school is the last stage prior to seeking employment and embarking upon a career or seeking further education. Internet proposes an innovation in educational matters, but specially in higher education. In Mexico, Distance Technological Education allows us to support the population marginated by the conventional educational services. In particular, what is proposed is to support the adults by designing special job training programmes. Distance Education Institutions arise all around the country in every level, with this modality being an excellent option to combat the educational difficulties that exist in the country. This paper tries to find the viability to create Virtual Degrees in the Technological University of San Juan of the Río (UTSJR), in the Querétaro State. Two different chances are considered to design a Virtual Degree:

- i) To re-design a presential Degree to the virtual modality.
- ii) To create a new Degree within the virtual modality.

We propose the virtualisation by means of technological tools. We will discuss the “How?” to carry it out.

1 Introduction

The World Wide Web has demonstrated its potential to change the educational model since its introduction. Schools and universities all over the world are continuously exploring the ways to use this technology for improving teaching effectiveness (Seal, K. C.; Przasnyski, Z. H., 2001). Nowadays, there is a new alternative for teaching-learning in the area of education, Distance Education. Moore & Kearsley (1996) define it as a kind of planned learning that normally occurs in a different space and time of the place of teaching. Peters (1998) complements this definition saying that it is necessary to make an extensive use of the electronic means and interactive technologies, especially for the objective of reproducing teaching materials. Distance Education constitutes a fundamental strategic means to tackle the challenge of enlarging the covering of higher education.

In Latin America, some universities have started to implement in higher education this type of modality. Concretely, in Mexico there is a need to implement educational systems based on Distance Education. The purpose of raising the quality of education, of flexibilizing the curricula offering, of stimulating that a longer number of students register in the areas that have today a greater demand, as well as to link more its programmes with the academic development.

In the centre of the country State of Querétaro is located, known by being an industrialized. The large demand of qualified staff to cover medium level jobs causes the Universities to form academically their students putting more attention in practical that in theoretical issues. The Technological University of San Juan of the Río (UTSJR), located in the Querétaro State, was created with the purpose of giving answer to the requests of qualified technical staff existing in the productive sector to cover its medium level executives. Promoting instances permitting flexible, updated and innovative programme curricula is one of its objectives.

In this paper we propose the viability to redesign or to create Virtual Degrees in the UTSJR in order to furnishing other alternative studies that permit a space-temporal flexibility. The proposal includes the use of some technological tools currently applied to Distance Education, covering from the offering of the possible viable Degrees, the design process of a presential course to become into the virtual modality and the use of some technological tools proposed to improve the communication, the interactivity and the self evaluation for the teaching-learning process in a model of Virtual University.

The redesign and creation of a Degree, provide benefits to all the involved parts. The teacher gets constant updating in the use of technological tools, formation and academic innovation, while the student obtains possibility to have a continuous formation in the higher level, didactic content technological and practice. The UTSJR achieves the raising of the quality of the education, to do more flexible the curriculum offering, to stimulate that a large number of students register in the areas that today have higher demand, to expand the covering and to increase the economic entry.

The viability to do this makes the following assumptions: 1) need of technological tools in a virtual environment, the possibility to communicate computers and its contents or to communicate people through computers opens important

opportunities. In order that text, graphics, voice and video can be integrated to obtaining a perception of teaching / learning joined to the acquired knowledge, there is a need to make use of some technological applications in virtual environments. In the teaching factor, these resources have to facilitate the perception of content of the didactical material (animations). In the learning factor, there is a need to utilise technological tools that permit that both teachers and students corroborate the acquired knowledge (evaluations). Integrating these three types of technological tools: Communication (synchronous and asynchronous), Interactivity (animations) and Evaluation (on-line exercises), we can obtain a didactic, technological content for its virtual use. 2) need of virtual learning environments, these may be used to support a range of learning contexts, ranging from conventional, classroom delivery to off-line, distance learning and on-line learning.

The paper is structured as follows. Section 2 shows the proposal to obtain Degrees in the virtual modality at the UTSJR. Section 3 presents the technical process that must be carried out to transform a presential course into the virtual modality by means of the use of some technological tools. Finally, we present our conclusions.

2 How To Incorporate Virtual Degrees in UTSJR

Two different chances are considered to design a Virtual Degree:

1) To redesign the courses of the first quarter of the Degree in order to evaluate its operation. Both the theoretical and practical courses will have a redesign in their didactic contents. Redesign means to structure something again in order to optimising its operation. The possibility of the teaching-learning process redising as a key element to take advantage of the changes that are being presented in technology and didactic for Distance Education can be applied to the curricula of a University Degree.

2) Creating a new degree to be offered in the virtual modality, expanding the covering to university level and, at the same time, making attainable the offering taking the flexibility of time and space, as above, would permit many people to continue its formation. The syllabus can be requested to another university, and the UTSJR teachers with expertise in these subjects can digitalise them in such a way that they become autonomous contents for their learning.

We propose to re/design the courses of the first quarter of the Degree in order to evaluate its operation. Both the theoretical and practical courses will have a re/design in their didactic contents. The following algorithm shows the method to follow for the re/design of any of the mentioned courses.

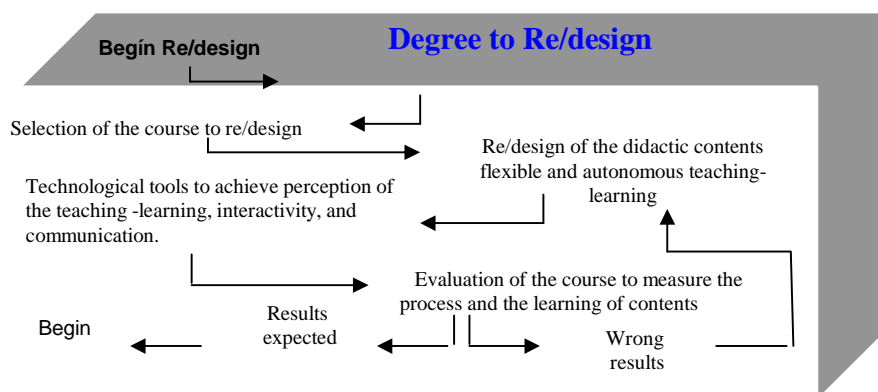


Figure 1. Re/designing a course to the virtual modality

Each of the phases is briefly described as follows:

- 1) Selection of the course to re/structure: Selection of the Degree course currently offered by the UTSJR.
- 2) Re/design of the didactic contents: The word redesign involves to structure again the contents of a course in such a way that its teaching / learning maintains an autonomy and flexibility of study when it is put available in a technological platform.
- 3) Technological tools to achieve the perception of the teaching / learning, interactivity and communication. When the contents are restructured, different tools will be considered to conforming the virtual environment required in a distance course.
- 4) Evaluation of the course: There is a need to carry out different tests to verify that the course works properly and that it really fulfills the objectives proposed in its startups, being able to compare them with those of the presential course

currently offered. If the results are correct, the process is finished. If the results are incorrect, the process will go back to the phase of redesign of the contents.

The process is cyclic, and is carried out until all the courses have been re/structured in order that their teaching / learning is autonomous in a virtualised environment.

3 How To Obtain Virtual Courses From Presential Courses

The process to design or redesign a presential course to the virtual modality depends on the difficulty of its didactic contents; the idea is to design autonomous learning units. Turoff and Hitz (1995) developed and made popular the process to follow to achieve this goal. We have complemented it with the model of Moreno and Bailly (2002) where the student accesses to the study materials and participates in any space- temporal situation. All of this will to compose our so called virtual classroom.

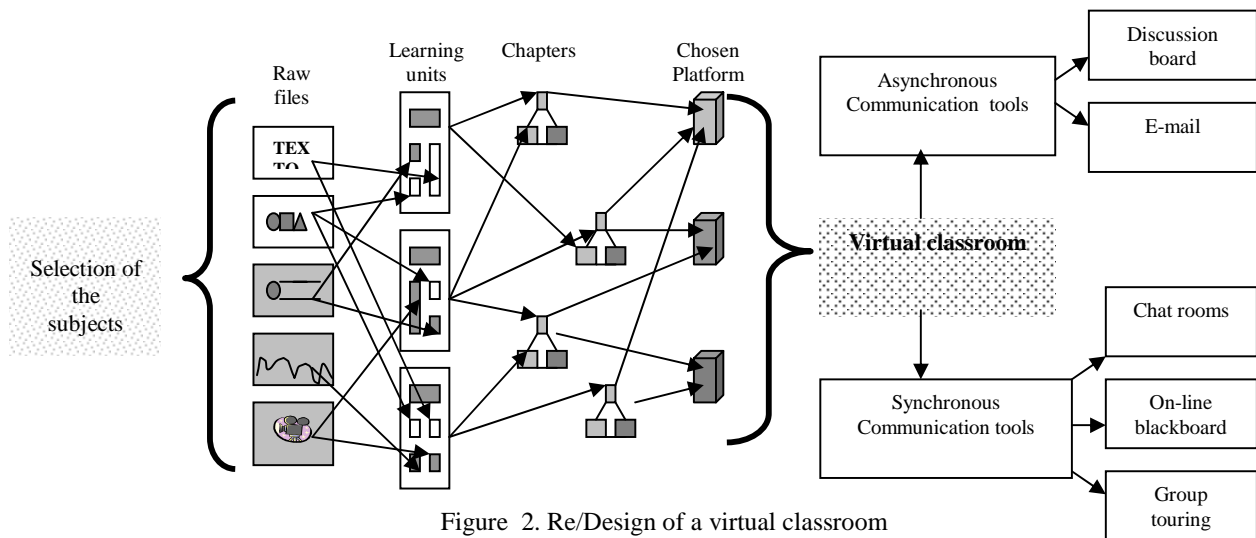


Figure 2. Re/Design of a virtual classroom

We will analyse each part of the scheme in order to propose the recommended technological tools to design our proposal. The raw documents are those currently available in a traditional subject. Image, Text, Graphic, Voice and Sound can be organised to compose our learning units. When a virtual lesson is designed, there is a need for it to be pleasant, easily understandable, enjoyable and interactive for the user. In previous sections, we made reference to the necessity of technological tools useful to achieve the teaching goal. For their quick learning and easiness of use, we recommend the application ViwletBuilder, which allows to design interactive courses to facilitate their teaching in an autonomous way. The learning units compose our lesson or subject. In this module, there is a need to design quality evaluation measures that allows us to verify the Degree of learning obtained both for the teacher and for the student. There are also several tools to do so. We recommend the HotPotatoes application for the range of exercises, selfevaluations, practice works, closed answer questions, relation questions (including images), and its transportability towards other technological applications.

Now, the lessons are ready to be studied at distance, having in mind that this process is cyclic until conforming all the lessons that compose a subject. Then, we need any virtual learning environments that allow us to integrate all the subjects and consequently our Virtual Degree. We propose the use of the WebCT application, the most used by the Universities that offer Distance Education Systems. It provides an educational environment of distributed, synchronous and asynchronous learning that allows the interaction among the teacher(s) of the course and the students, organised in a individual or group fashion, regardless where they are located and when they intervene. Its general structure identifies its interaction in two work environments: Methodology of Studies and Virtual Classroom, that respectively offer to the student an explanation of the method of study and the working spaces of the subject. The process will involve organising the lessons within this VLEs in order to shape the course. Once this has been done, we will obtain the so called virtual classroom. This way, the process to follow to create our Virtual Degree has been described in a theoretical way. Next, we will show a graphical representation for a better understanding of the development process.

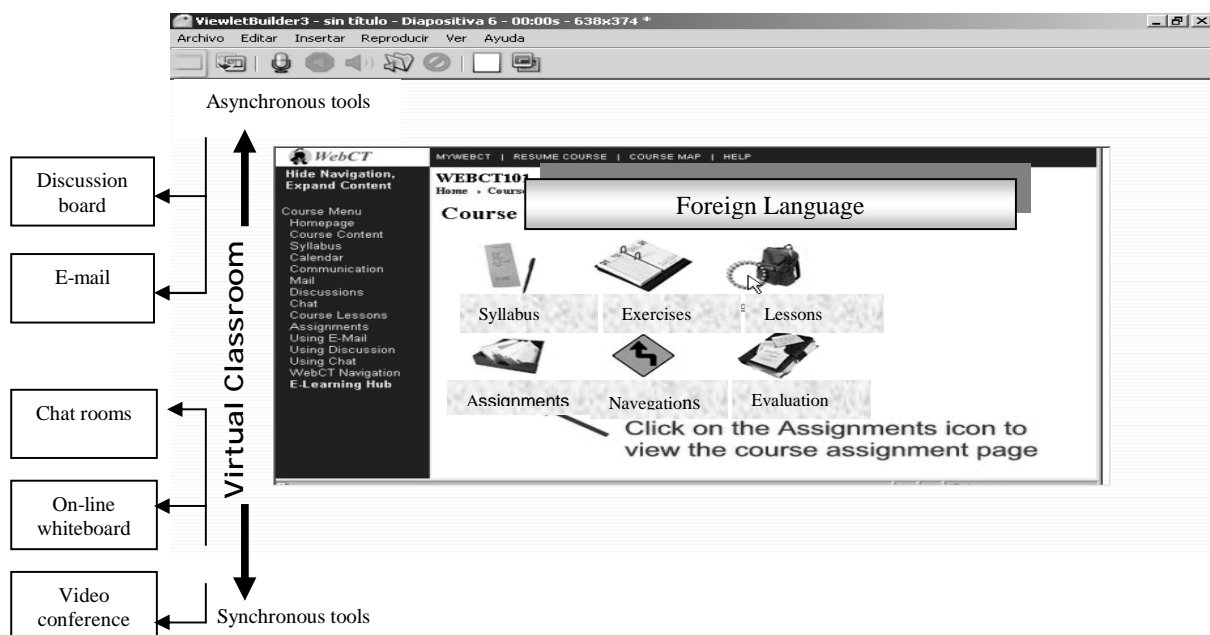
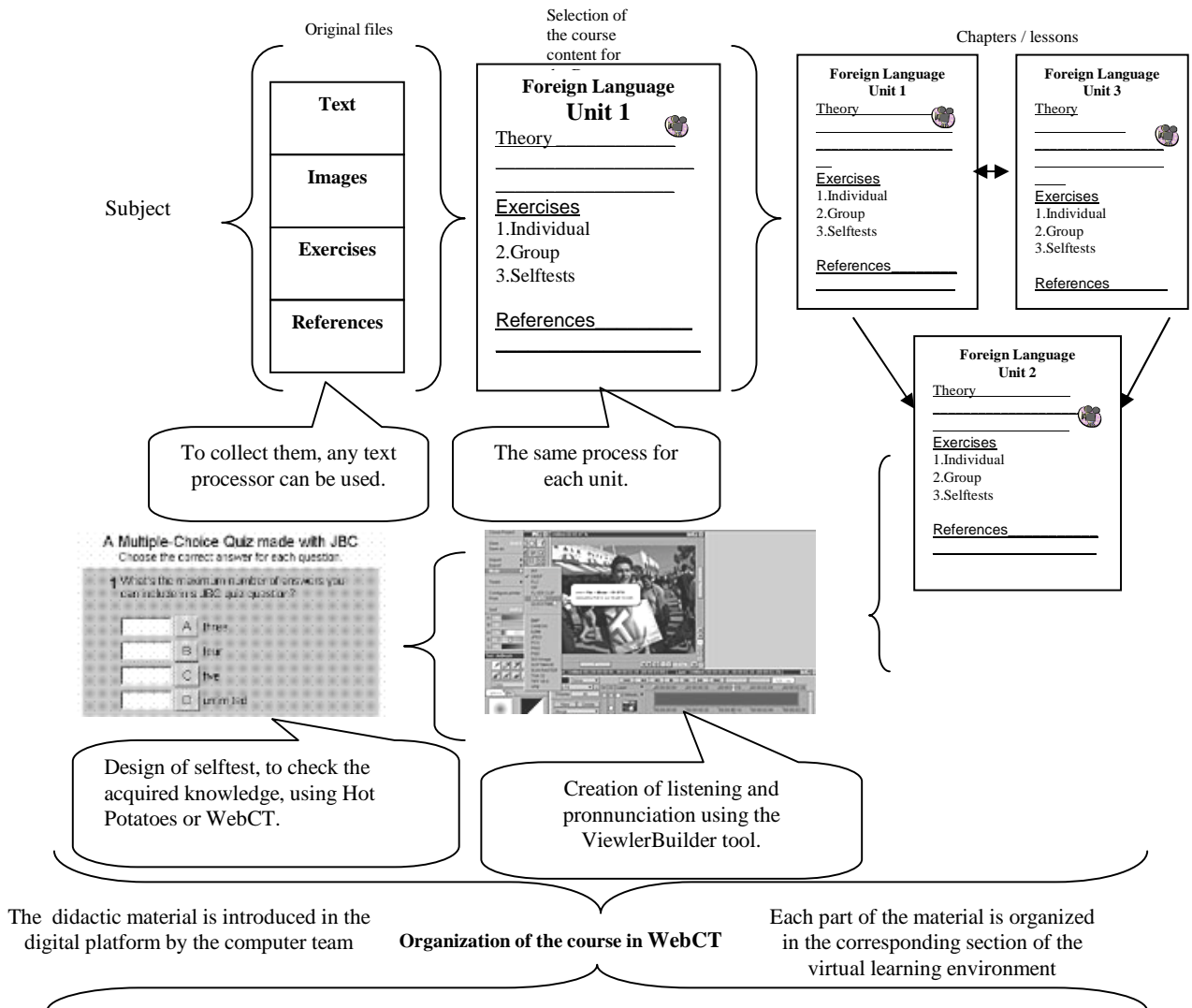


Figure 3.. Creation process of virtual materials with the proposed applications

Once the technological design process is finished, Gale (2000) suggests that, to obtain a positive answer the satisfaction of the virtual course from the student, it is necessary that the agents involved in the course design test it themselves, with the aim to detect possible teaching – learning errors that make difficult to complete the previously outlined objectives of the course.

4 Conclusions

This paper has introduced a study for offering new learning / teaching modalities in the Technological University of San Juan. We have analysed the possibility of creating Virtual Degrees in the UTSJR. The proposal supports two operation modes: the redesign of a presential Degree to the virtual modality, and the creation of a new Degree to the virtual mode.

In the future, we want to study the material, personal and economic requeriments necessary to carry out our proposal.

References

1. Gale, C.(2000). On-line learning: a student perspective. *Syllabus*, 13, 52-53.
2. Moore, M.G., & Kearsley, G. (1996). *Distance Education: As systems view*. Wadsworth Publishing, cap. 4.
3. Moreno, F., Bailly, M. (2002). *Diseño instructivo de la formación on-line* (in Spanish), Ariel, S.A.: Barcelona.
4. Peters, O. (1998) Learning and Teaching in Distance Education. *Analyses and interpretations from an international perspective*. Londres: Kogan Page.
5. Seal, K. C.; Przasnyski, Z. H.(2001). Using the World Wide Web for Teaching Improvement, *Computer & Education*, 36(1),.33-40.
6. Turoff, M., & Hiltz, S. R. (1995). Designing and evaluating a virtual classroom. *Journal of Information Technology for Teacher Education*, 4(2), 197-215.