

# Emerging technologies for the proposal and design of a MOOC on social entrepreneurship

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**Abstract**— Emerging technologies such as virtual reality and mixed reality are an educational resource that attracts students' attention and increases their interest in the content presented. The application of this technology to a MOOC course makes the proposal to motivate students really interesting. This paper presents the proposal and design of a MOOC course on social entrepreneurship that integrates virtual reality and open educational resources. Furthermore, the methodology used in the course is based on the Learning Environment Modeling Language (LEML). This makes it really attractive to the public, while improving the traditional content of a training course. Finally, the main findings and implications of the training course on competence in social entrepreneurship and its relation to the development of Sustainable Development Objectives are discussed.

**Keywords**— educational innovation, virtual reality, open educational resources, competencies, social enterprise.

## I. INTRODUCTION

The development of competencies for social entrepreneurship can occur in real contexts, in which students experience experiential learning through their participation in projects of linkage with organizations that seek to solve a problem of social interest. In this respect, university innovation actions are increasingly oriented to stop being limited fundamentally to the transmission of knowledge, to become institutions oriented to academic entrepreneurship (research, transfer of knowledge and technology). In addition, new teaching methods require teachers to work in groups, not only with other teachers, but with other sectors outside the institution [1]. It has been found that all disciplines, including social, arts and humanities, engage in entrepreneurial activities, whether formal (patents and licenses), informal commercial (consulting and contract research) or informal non-commercial (public lectures) [2]. In this scenario, the open innovation paradigm points to the relevant role of interaction and co-creation processes between the university and the company to generate innovative solutions of business performance [3] and knowledge transfer [4]. This model, oriented towards innovative development, offers a context of experiential learning for the students and teachers who

participate in it. Experiential learning occurs when learning activities occur in contexts of active participation, experiences of real situations, in which students discover, test solutions and interact with others. Thus, positive experiential learning establishes some conditions under which the learning experience occurs: reflection, critical analysis and synthesis, initiative, active participation, involving the intellectual, creative, emotional, social, and physical side, experiencing success, failure, uncertainty, and taking risks together, promoting spontaneous learning opportunities, as well as problem-solving by the teacher and the development of relationships throughout the experience [5].

## II. MASSIVE OPEN ONLINE COURSES (MOOC)

E-learning promotes democratic thinking because it increases access to education for more people since it was no longer necessary to move to a specific place to receive the training, but from any place with a digital device it was possible to access the content and carry out the training action. This fact was intensified with the appearance of the MOOC (Massive Open Online Courses) which are defined as [6]: “free courses offered by different institutions, with massive character, because they are offered to thousands of people online from any part of the world and open”. These elements have an impact on the popularity enjoyed by these types of training actions, since they offer quality content, prepared and managed in most cases by universities, which can be accessed by anyone at any time and place. Thus, the largest production of virtual courses is managed by universities and business schools [7].

In the characterization of the e-learning methodology, García-Peñalvo [8] highlights three basic components: technology, contents and services. In this sense, the technology refers to the virtual platform in which the training action is hosted; the contents are linked to the subject of training and; the services with those elements of interaction and feedback that are produced between teacher and student and among the students themselves. In this same line, in relation to the virtual platform, two types can be distinguished: LMS (Learning Management Systems), where

the training action and interaction with the content is mainly developed, usually are the so called Virtual Learning Environment (VLE) and; LCMS (Learning Content Management Systems), which act as digital content repositories.

Bearing these considerations in mind, it is not surprising that these virtual environments are booming in Spanish universities due to the ease of access to content, which can be accessed almost intuitively by browsing a simple interface within the virtual campus. The particularities of its idiosyncrasy mean that a series of benefits are associated with VLE for students, including: 1. free access; 2. ubiquity; 3. combination of resources; 4. collaborative and cooperative learning; 5. feedback between student teachers and peers; 6. increased motivation and participation; and 7. significant learning [9]. So it becomes more than evident the advantage of implementing this resource in virtual and semi-presential teaching. However, with respect to MOOCs, the main problem is the high dropout rate of participants, where most of them do not finish the training they started [10, 11].

### III. SOCIAL ENTREPRENEURSHIP

Social entrepreneurship is an emerging field of study that is gaining in strength. Martínez-Rivera and Rodríguez-Díaz [12] identify four differentiating aspects of entrepreneurship: (1) creative disruption (innovative products or services). (2) Value creation (resources from low to high productivity). (3) Opportunity identification (exploiting the opportunities that changes bring). And (4) ingenuity (taking advantage of opportunities and facing challenges due to lack of resources. For their part, Alegre, Kislenko, and Berbegal-Mirabent [13] state that it focuses on the combination of social and financial objectives, community ideals and innovation towards the exploitation of opportunities to generate value.

In this context, it is necessary to identify those university initiatives that promote education on entrepreneurship with social impact. Despite considering cognitive and non-cognitive competencies for entrepreneurship, it is necessary to specifically identify those key competencies for entrepreneurial development with a commitment to social transformation. In this regard, Sáenz-Bilbao & López-Vélez [14], made a classification of competencies for social enterprise in four blocks:

- Skills related to the task or work to be done: innovation and creativity, vision and project (recognition of entrepreneurial opportunities), goal setting, decision making, planning and management, problem solving, time management.
- Social skills: leadership, effective relationship skills, teamwork, communication, motivation, organization, delegation and people management.
- Philosophical and ethical competence: ethical code and sense, awareness of the other, critical thinking, involvement in social reality.
- Skills with respect to the development of personal abilities: initiative and proactivity, autonomy, adaptability, tenacity and perseverance, self-confidence and positive mental attitude, locus of internal control and responsibility, mastery of stress and tolerance of uncertainty, ability to take risks.

### IV. VIRTUAL REALITY

Virtual reality (VR) refers to the technology that through a VR viewer allows the user to teleport to other virtualized contexts [15].

The characteristics of VR technology in education are mainly related to [16]:

- It facilitates constructivist learning.
- It provides alternative forms of learning.
- It enables collaboration between students beyond physical space.

To which we could add both increased motivation and interest in students [17, 18], and the development of digital competence [19]. In this line, the introduction of VR in the educational context involves communication and collaboration among peers and between teacher and students. This is why there is an interest in applying virtual reality technology to a MOOC course, with the aim of introducing innovative content that captures attention and motivates the user to continue throughout the training process.

#### A. Inclusion of virtual reality in online training

Virtual reality applied to MOOC courses can close the gap generated in the success and dropout rate of an online course. The potential lies in introducing the user to a virtualized world, where he himself is the protagonist of his learning.

The design that was adopted in this course was spatially themed. A training context was designed around a space base, where the user entered as an astronaut. The explanatory videos on the content were displayed on the walls of the space base and at the end of the corridor (Fig. 1), in another adjacent room was the auditorium, where interaction with the speakers would take place.



Fig. 1. Example of video on space base wall.

The dynamic was established in a simple way. The user had to choose the equipment to which he belonged based on his own interests according to the Sustainable Development Goals (Fig. 2). The choice was paramount in determining the groups and focus of the final projects.



Fig. 2. Colorful astronaut suits, each color representing a team.

Thus, once the equipment is selected, the user accesses the VLE constituted in a spatial base, where he can interact with the other users in first person. Thus, VR was combined in a MOOC course with an adaptation and distribution of the content through the use of emerging technologies.

#### V. LEARNING ENVIRONMENT MODELING LANGUAGE (LEML)

The LEML approach was another of MOOC's innovations. A methodology was adopted through the LEML which consisted mainly of [20]:

- Information: provide the information to the student, in a one-way way. Provide instructions. Generate the work dynamic.
- Dialogue: collaboration and interaction in the group, with the teacher or classmates Discussions and debates generated in forums.
- Feedback: teacher's comments on students' assignments. Advice and tutoring. Self-evaluations. Peer evaluation.
- Practice: carrying out activities that allow knowledge to be put into practice. Tasks. Quiz. Exercises.
- Evidence: representation of the evidence of learning. Tests. Final tests. Projects.

It is on the basis of this approach that the working dynamics of the MOOC were developed. Including each of these five aspects as key pieces in the didactic planning of the training, since the teaching processes for entrepreneurship take place in active learning environments through collaborative, action-oriented activities, experiential learning, problem solving, project based, creativity and peer evaluation [21]. The same authors indicate that education for entrepreneurship comprises a process that provides students with the ability to recognize business opportunities and perspectives, self-esteem, knowledge and skills to act on these. That is, creating spaces for creative and independent thinking, taking risks and assuming responsibility.

#### VI. FINAL CONSIDERATIONS

Educational innovation through the use of emerging technologies is increasingly common in today's educational context, which has developed in the knowledge society. The problem of the MOOCs is mainly the high dropout rate. Therefore, generating innovative strategies that attract the

user and keep him/her motivated during the course of the training is key to decrease the dropout rate.

The approach and design of this MOOC with a LEML and VR approach sets a precedent in online training courses. The results established from its implementation will be fundamental to know if this type of methodological innovation really has an effect on the completion rate. However, the simple design and approach already represents an innovative challenge that combines several learning perspectives and is situated in the current methodological scenario. In which, student-centred teaching and the use of technological tools that facilitate learning should prevail. At the same time, actions in university innovation are increasingly oriented to move away from being fundamentally limited to the transmission of knowledge, to become institutions oriented towards academic entrepreneurship (research, knowledge and technology transfer).

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