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**Ανοικτός Εκπαιδευτικός Πόρος για προώθηση επιχειρηματικότητας σε μαθητές πρωτοβάθμιας και δευτεροβάθμιας εκπαίδευσης**

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# Ανοικτός Εκπαιδευτικός Πόρος για προώθηση επιχειρηματικότητας σε μαθητές πρωτοβάθμιας και δευτεροβάθμιας εκπαίδευσης

# An Open Educational Resource Promoting Entrepreneurial Attitude among students in primary and secondary education

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## Abstract
Nowadays, in view of the financial and social crisis, promotion of 'entrepreneurship' is considered an enabling factors towards improvement of the current situation. But what is behind this notion? And more importantly, is entrepreneurship encouraged in primary and secondary education and if so to what extent and with what supporting activities? This paper examines these issues and presents the approach followed for the design of an Open Educational Resource to promote entrepreneurship in youth. It includes an extensive literature review in three main directions: 1) it presents the main conceptual frameworks for entrepreneurship; 2) it performs a comparative analysis of entrepreneurial educational programs worldwide and 3) draws conclusions and recommendations for the educational methodology to be followed in the OER. The methodological approach is described in detail. Preliminary results from its pilot testing and directions for further improvements are also outlined.

**Keywords:** *Open Educational Resource, Entrepreneurship, Interactivity, User Experience*

## Περίληψη
Στην σύγχρονη εποχή, για την αντιμετώπιση της χρηματοπιστωτικής και κοινωνικής κρίσης, προτάσσεται η έννοια της «επιχειρηματικότητα» και αυξάνεται η προσδοκία ότι μέσω αυτής σημαντικές βελτιώσεις μπορούν να επιτευχθούν. Αλλά πώς αναλύεται αυτή η ιδέα; Και το πιο σημαντικό, ενθαρρύνεται και αν ναι με ποιό τρόπο η επιχειρηματικότητα στην πρωτοβάθμια και δευτεροβάθμια εκπαίδευση; Η παρούσα εργασία εξετάζει αυτά τα ζητήματα και παρουσιάζει τη σχεδίαση ενός Ανοικτού Εκπαιδευτικού Πόρου για την προώθηση της επιχειρηματικότητας σε νέους στο ηλικιακό φάσμα 11-16 ετών. Η εργασία παρουσιάζει μια εκτεταμένη βιβλιογραφική ανασκόπηση σε τρεις κύριες κατευθύνσεις: 1) παρουσιάζει τα κύρια εννοιολογικά πλαίσια για την επιχειρηματικότητα, 2) διεξάγει συγκριτική ανάλυση των επιχειρηματικών εκπαιδευτικών προγραμμάτων παγκοσμίως και 3) συνάγει συμπεράσματα και συστάσεις για την εκπαιδευτική μεθοδολογία που πρέπει να ακολουθηθεί στον Ανοικτό Εκπαιδευτικό Πόρο. Η μεθοδολογική προσέγγιση περιγράφεται λεπτομερώς. Παρουσιάζονται επίσης προκαταρκτικά αποτελέσματα από την πιλοτική δοκιμή και ιδέες για περαιτέρω βελτιώσεις.

**Λέξεις-κλειδιά:** *Επιχειρηματικότητα, Ανοικτός Εκπαιδευτικός Πόρος, Διαδραστικότητα, Εμπειρίες Χρηστών*

## 1. Introduction

The term "entrepreneurship" is widely used and often it encompasses different concepts within various contexts. From a lexicographic perspective, entrepreneurship is derived from the French word entrepreneur (pioneer) and it is defined as the ability of a person to make an additional effort in order to achieve an objective or a goal; additionally, it is also described as an individual who organizes or operates in any field of business. In Gartner (1990), the definition of entrepreneurship is associated with an individual setting up innovative organizations that have the potential to create value, where value may refer to a profit or other forms of value. Bruyat and Julien (2001) propose a constructivist artefact and their definition of entrepreneurship incorporates the entrepreneur, the new created value, the environment, the entrepreneurial process itself and the links between these constructs over time. Shane and Venkataraman (2007) argue that entrepreneurship does not necessarily imply the creation of new organizations, it can also occur in existing ones.

Based on these definitions, one may realise that the term could be used to denote two distinct levels of skills. First, we identify cognitive-related skills that include opportunity identification, assessing business ideas, business development, value creation, venture set up and strategies' growth. Secondly, non-cognitive entrepreneurial skills include personal development, creativity and ideation, self-reliance, thinking initiative, and translating ideas into actions.

During the latest years in which the economical dysfunctionalities have considerably increased in EU and other regions, entrepreneurship is primarily identified as a way to foster economic and employment growth; initiatives included in formal and/or non-formal educational programs have been promoted. However, an identified gap is that there is not any Open Educational Resource specifically and explicitly designed for the promotion of entrepreneurship in youngsters in primary school and junior high school. The main research question addressed in this paper is what are the methodological approaches needed to be advised for designing and developing an Open Educational Resource (OER) to promote entrepreneurship in youth. The remaining of this paper is organized as follows: Section 2 presents an extensive literature review, section 3 proposes a methodological approach for the design of the Open Educational Resource. Section 4 presents a prototypical version of the OER, a description of its pilot run and preliminary evaluation results. This paper concludes with identified best practices and directions for future enhancement.

## 2. Education and Entrepreneurship: A Literature Review

Entrepreneurship education and training on entrepreneurship is termed as "entrepreneurship education" in USA and "enterprise education" in UK; the variation in terminology also denotes different priorities in skills' development (Erkkilä, 2000). Entrepreneurship education focuses more on the cognitive skills that are required for setting up a venture and becoming self-employed (QAA, 2012) whereas enterprise education encompasses more broadly aspects like personal development, mind-set, skills and abilities (QAA, 2012, Mahieu, 2006).

From a formal educational perspective, all educational programmes aim to advance knowledge, skills and attitudes. Entrepreneurial training integrates and combines all

three. The following are the most commonly cited objectives of entrepreneurship education and training programmes:

- acquire, apply and use knowledge pertinent to entrepreneurship;
- develop and apply skills in the use of techniques, in the analysis of business situations, and in the synthesis of action plans;
- identify and advance entrepreneurial drive, talent and skills;
- overcome the risk-adverse bias of many analytical techniques;
- develop empathy and support for all unique aspects of entrepreneurship;
- develop attitudes towards change;
- design, devise and evaluate new start-ups and other entrepreneurial ventures.

The multiplicity and divergence in the cited objectives have influenced a variety of programmes. In attempt to overview the followed approaches, we adopt the categorization proposed by a number of scholars (Heinonen & Hytti, 2010), (O'Connor, 2013) that identify three major categories, namely, education "about", "for" and "through" entrepreneurship (see Figure 1).

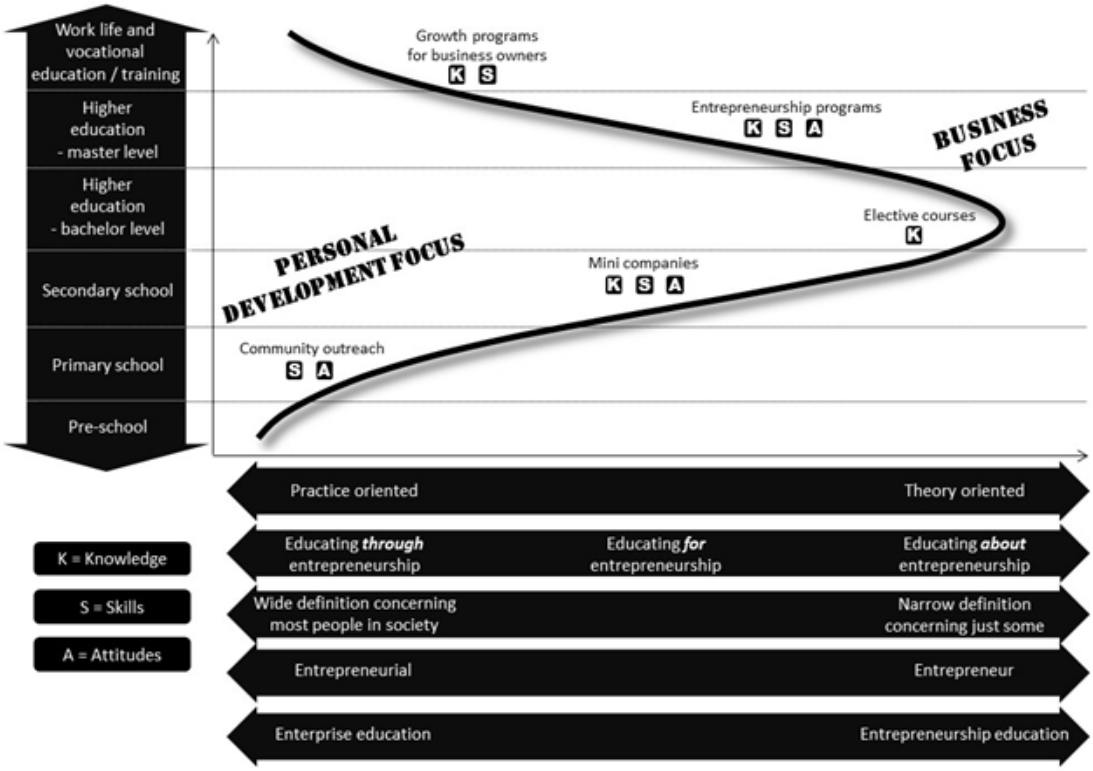


**Figure 1.** An overview of entrepreneurial educational approaches and their dynamics through different tiers of formal education and through curriculum development [from (Lackéus, 2015)]

We have carried out an analysis of existing methods that develop entrepreneurial skills in children and classified them in categories as shown in Figure 2.


**Figure 2.** Methods for developing entrepreneurial skills

The geographic distribution of the aforementioned programmes is demonstrated in Figure 3.


**Figure 3.** Geographic location of analysed methods

From our analysis it becomes clear that currently there is any Open Educational Resource to promote Entrepreneurial skills in youth and existing methodologies are heavily influenced by educational and regional contexts. In order to more deeply understand the content and the objectives of these methods, we also examined the results of our research that shows which competences are sought to be developed in the programs mentioned before.

Programmes classified as “school curriculum” are conducted for the longest period resulting in developing many of the skills. However, we can clearly observe that some skills seem to be more adapted to short-term methods. For example, workshops, web series, products or online platforms are dedicated to far fewer competencies than the others. Furthermore, it seems that products and Web Series are clearly oriented towards financial concepts and skills.

Tracking the frequency of skills according to the methods/programs, four stand out: entrepreneurial attitude, creativity skills, innovative spirit, financial education and marketing.

We also took under consideration the age of participants in examined programmes. It has been identified that skills or competences developed correlate to learners’ age. This can be observed in the Table 1, which includes all the skills that the analysed educational programs want to develop in youngsters, together with the age of the target audience.

**Table 1.** Skills to be developed vs age of the target group


It can be observed that there is a high frequency of educational programs promoting entrepreneurial skills for the ages ten and eleven years. Some skills are targeted irrespective of children's age whereas others seem to be proposed to older people. We posit the following explanations to this observation. First, some skills require fundamental knowledge to be fully developed and so, at an earlier age, children may not have fully developed it. For example, we can mention "identify business opportunity" which means that a child understands the economic world, a business' function etc. Secondly, it is often necessary to reach a certain level of maturity for developing specific competencies, like motivation, business ethics or competition.

We conclude the literature review by focusing on the role of ICT in entrepreneurial programmes. Based on examined examples, 49% of educational programs heavily involve ICTs. Technologies most commonly employed are outlined in Table 3. It must be noted that the top choices of developers are apps, videos, webisodes, online games, computer simulation games, online platforms and videogames. An underlining element of these choices is their high potential to support interactivity with learners.

Table 2. ICTs employed in analysed entrepreneurial programmes


Skills that appear to be more frequently supported by ICT tools, include creativity, entrepreneurial attitude, financial education, innovation skill and teamwork capabilities. In contrast such skills that are easily taught with ICT, others (i.e. personal skills) seem more appropriate to be developed through social interaction. Apps and online platforms supplemented by videos and gamified activities are often employed.

Taking under consideration the fact that we want to design and develop an Open Educational Resource, widely accessible regardless of its financial constraints or ICT infrastructure, the following section presents the methodological approach followed.

## 3. Research Methodology

The research question of this research is:

**RQ:** Which process should an Open Educational Resource follow to promote entrepreneurial skills among young students aged 11 to 16?

Thus, the main aim of the research is to design, development and assessment a methodology of an Open Educational Resource promoting entrepreneurial skills. To achieve this, the following three research objectives have been identified.

**RO1:** To propose an integrated process employed within the Open Educational Resource promoting entrepreneurial skills.

**RO2:** To apply this process for the OER implementation within a specific context (Case Study), and

**RO3:** To pilot test the outcome, and redesign the process.

In this section we describe extensively the work invested towards the two first

objectives. For the last one, we provide data that are currently available but it must be underlined that the redesign and final assessment are still in progress and thus inconclusive.

The first research objective ($RO_1$) has been addressed through synthesis of two methodological approaches: Challenge based Learning (ChBL) and Design Thinking (DTh).

Challenge Based Learning –ChBL- a student-centered, active learning, engaging multidisciplinary approach for teaching and learningChBL promotes users' experience and students' collaboration. Peers, teachers, and experts (entrepreneurs) to discuss challenges, develop questions, communicate possible solutions and resume action sharing experiences. ChBL promotes collaborative learning experiences between and across students and teachers. Educators aim not only to develop students' domain knowledge but also enhance communication skills, develop their confidence and critical thinking, train them to be creative etc. This model offers a flexible learning framework with students being responsible for their own learning. Furthermore, ChBL encourages students to leverage the technology they use in their everyday lives, developing this way 21st century work skills: work, collaborate and share in diverse groups; utilize the latest trends of technology tools found in the workplace; use multidisciplinary approach to come-up with solutions to real-life problems; implement the solutions with real audience.

For the purposes of this research, a ChBL approach is modified with the integration of Design Thinking –DTh- a methodology used by designers to solve complex problems, and find desirable solutions. DTh can be described as student-centered since the design is done "with" the students instead "for" the students. It is integrated at the stage where students need to identify a variety of possible solutions to meet the challenge and select a justifying solution (Briggs, 2013) Basically, DTh suggests a collaborative, solution-focused approach rather than an individual, problem-focused approach. The investigative and integrative character of the process promotes the development of students' observation, interdisciplinary group collaboration, enjoyable-fast learning, idea visualization, fast prototype development, and contribution to the society skills. Through DTh, the curriculum is reshaped around shaping students' experiences and introducing changes based on students' responses.

The proposed process begins with a big idea and proceeds to an essential question, a challenge, guiding questions, activities, resources, determining and articulating the solution through Design Thinking, taking action by implementing the solution, and evaluating and publishing the results. The process also integrates important ongoing activities such as reflection, assessment, and documentation, as shown in Figure 4.

The proposed workflow is designed in such a way, so that students can work at their own pace, be creative and responsible for their own learning by determining the direction of their research and coming up with the appropriate solution. Students interact to formulate their solutions and finally publish their work via social media. The educator undertakes multiple roles, namely, the role of the facilitator, resource provider, project manager and mentor.

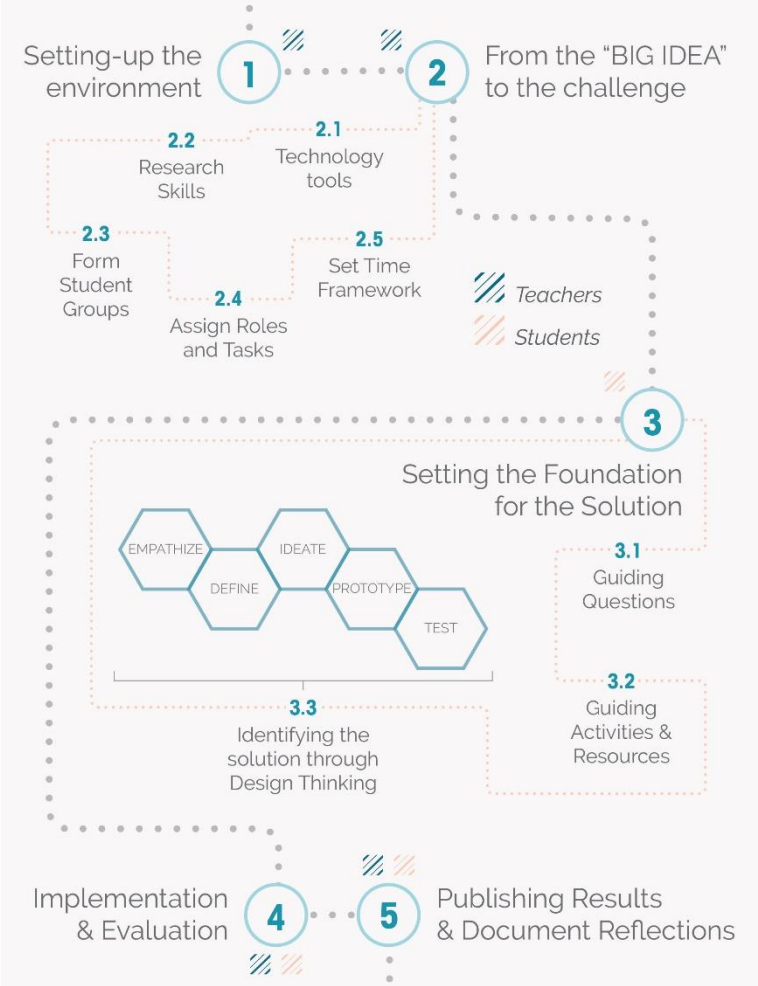


**Figure 4.** Proposed process of the OER for entrepreneurship

In order to meet the second research objective (RO2), a case study research strategy was adopted and the guidelines derived from the literature were applied to the case study. The case study strategy can be described as contextualising a phenomenon which typically relies on inductive reasoning and highlights the reader's understanding of the phenomenon being focused on in the study (White, Drew and Hay, 2009; Willis, 2007). According to Willis (2007), a case study research strategy can enable researchers to gather rich, detailed data in authentic settings. Case study research also enables the understanding of human behaviour which can be interpreted in a social context as a lived experience.

## 4. Application of Design and Development Process

The case study reported in this research has been conducted in an English-speaking, bi-communal, private High School in Cyprus. To preserve anonymity, the school will be referred to asTheXSchool. Before the pilot testing of the proposed approach, TheXSchool followed conventional methods to support a module loosely related to entrepreneurship; this module was offered to 17-year old students. Due to this precedence, our initiative was viewed favorably but at the same it created concerns if it was really appropriate to "teach" such concepts to younger pupils who might have not fully developed background knowledge to understand the cognitive process.

The School agreed to pilot test the proposed approach in order to reinforce its image, and support its students in an international entrepreneurship competition in which

they participate every year. It had also pointed out by one of the high administrators that they are always examining cost effective and efficient knowledge acquisition process that is also convenient for learners.

Before the actual pilot study two focus groups were organized: one aimed to identify students' prior knowledge related to entrepreneurship as well as their intentions towards it and the other solicited answers from lecturers on similar topics. We selected ten students from those who could participate in our pilot study and invited all lecturers who had an interest in the topic.

Eight students showed up in the focus group for students. Their age ranged between 14 to 16 years. Five students were Greek Cypriot and three were Turkish Cypriot. Students defined the concept of "entrepreneurship" in a rather restricted view. They pointed out that it is an activity that potentially offers some monetary rewards but they failed to see that it may also create some other form of value. Furthermore, they did not identify its potential for solving some type of problem. Finally, all of them stated that they can see how entrepreneurship relates to the career paths they plan to follow and as a result they thought it was not relevant to their interests. One could safely deduce that their expectations were rather low. Their diligence and school ethics were the main drivers for them to participate in the workshop,

In total, seven lecturers expressed interest to participate in the focus group for lecturers. Their specialization ranged from Greek, French and English literature (3 lecturers) to computer science (2 lecturers), to music and visual arts. It is worth noting that lecturers had a broader view on entrepreneurship. They seemed to understand the different aspects involved in an entrepreneurial activity. Each one could relate their topic of specialization to an entrepreneurial activity. They also pointed out that an activity built to promote entrepreneurial attitudes could also serve as a framework to develop competencies related to their disciplines. One of them had also initiated a successful small business, the first establishment specialized to host children birthday parties in Cyprus.

The pilot study was conducted during the weekend before their Spring break at the School premises. Two researchers were attending the workshop as observers. Initially, it was though that the timing could jeopardize students' participation for two reasons: another major project of the school was conducted at the same period and the Turkish Cypriots had to make special transfer arrangements to come to the school on days there was no school. Students' attendance was satisfactory. In total twenty three students participated: 16 Greek Cypriot and 7 Turkish Cypriot. The activities were supported by three lecturers with backgrounds in computer science and French literature. One of them was an entrepreneur. One of them was also Turkish Cypriot.

The methodological framework derived from the literature review (Figure 4) was used to guide the main activities for promoting entrepreneurship. Students were working in groups. In accordance with Challenge Based Learning, they identified problems they encountered and selected one that was the most important to them. This created a sense of ownership for the follow up activities. They were asked to follow a number of activities that explored aspects of entrepreneurship and how they contribute to synthentise a solution to their problem. The proposed methodological process challenged students to ask questions; to engage the material in front of them; to think about and discover which process works for them; leverage the technology they use in their everyday lives and through game-like activities to also enjoy the process. Furthermore, some process activities were designed so they gradually built a tangible prototype for their proposed solution. Lecturers were supposed to act as facilitators but they (occasionally) intervened as information providers and problem solvers.

Upon completion of the pilot testing two additional focus groups were held with students and teachers involved in the pilots testing. Both focus groups indicated that students' intention to use OER was very positive. In students' own words: "We thought it would be yet another boring course but it was fun." Students identified that despite the game-like nature of the workshop they developed a better understanding of entrepreneurship as well as cognitive, technological and soft skills. In the words of a student "We learnt that we can make big things out of small things". Lecturers commented on the methodological approach that was different from those frequently employed in their lectures that prioritized time efficiency and overall effectiveness under "enormous time pressure". Teachers were also very pleased with the specific outcomes of students. Computer Science teachers explicitly stated they plan to examine how the proposed methodology could be applied to their own modules. Lots of constructive feedback was gathered from students and lecturers and it is under implementation for the second round of pilot testing.

## 5. Conclusions and Directions for Future Development

For the purposes of the project a modified Challenge Based Learning approach integrates with Design Thinking has been proposed to enable students to identify and solve complex problems. The proposed approach integrates Design Thinking at the stage where students need to identify a variety of possible solutions to meet the challenge and select a justifying solution (Briggs 2013). In essence, the suggested approach supports a collaborative, solution-focused approach rather than an individual, problem-focused approach.

Upon reflection, the application of the OER for the promotion of entrepreneurship was successful. A number of factors contribute to its success. It encourages educators to target beyond context learning, and develop pedagogically effective learning environments in order to enhance the quality of education and expose their students to a better understanding of the content.

Our proposed approach follows student-centered learning models coupled with adoption of technological advancements that leads students towards engaging learning experiences. The investigative and integrative character of this process promotes the development of students', observation, interdisciplinary group collaboration, enjoyable-fast learning, idea visualization, fast prototype development, and contribution to the society skills. Factors that may not otherwise have been considered, such as the "ownership of the initiative" and the varying profiles of learners, enabled the designers to take an all-inclusive and user-centric approach towards the design and development of the OER.

The proposed framework is a hands-on experience approach that promotes students' collaboration; with peers, teachers, and experts (entrepreneurs) to discuss challenges, develop questions, communicate possible solutions and action taking as well as sharing experiences. It offers a flexible learning framework with students being responsible for their own learning. Ktoridou and Eteokleous (2012) provided evidence that for students to develop entrepreneurial skills is tightly connected to expose them to practices of successful professionals. The proposed methodology builds a collaborative learning experience for both teachers and students to work together towards learning about compelling issues, propose solutions to real problems, and taking actions. Students realize that beyond domain knowledge, communication skills, confidence and critical thinking and creativity are important aspects for future professionals.

In accordance to findings from (The New Media Consortium 2011), participated teachers

reported that identified that students improved significantly in the following skills (in ranked order): *Leadership, Creativity, Media, Literacy, Problem Solving, Collaboration, Critical Thinking, Flexibility, Communication, Adaptability, Innovation, Responsibility, Taking Initiatives;*

It is important to state that although in this paper, the creation of OER for entrepreneurial development is the primary focus, the methodology followed is applicable to other educational contexts, i.e. developing ICT competencies. The activities proposed were followed in a pilot higher education setting and addressed the different needs of students. Constructive feedback is being incorporated into an improved version of the OER.

In short, this paper presented the approach followed for an Open Educational Resource to promote entrepreneurship in youth. An extensive literature review has been conducted in three main directions: i) the main conceptual frameworks for entrepreneurship; ii) a comparative analysis of entrepreneurial educational programs worldwide and iii) conclusions and recommendations for the educational methodology to be followed in the OER. Preliminary results from its pilot testing and directions for further improvements have also been outlined.

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