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Social Entrepreneurship: How Can Social Innovation Be Tackled Through Challenge-Based Learning, and What Is the Impact on Students' Entrepreneurial Skills?

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Abstract. Challenge-Based Learning (CBL) is a constructivist pedagogical approach increasingly adopted in higher education, offering experiential learning that enhances entrepreneurial skills while immersing students in real-world job contexts. CBL redefines teaching roles, positioning educators as coaches and mentors, and delivers practical solutions for companies ("challenge providers"). This paper examines CBL as an innovative teaching method to foster social innovation and entrepreneurial skills. It uses the case study of the "Sustainability and Social Entrepreneurship" course at the University of Trento. The 48-hour course (8 ECTS) involves developing social business models based on challenges from local organizations. Diverse student teams are formed using personality tests to ensure balanced collaboration and final assessments include oral presentations and executive summaries. Data collected through the European EntreComp framework and reflective tools show significant gains in entrepreneurial skills, including opportunity identification, creativity, teamwork, problem-solving, and communication. Challenge providers benefit from innovative ideas, talent recruitment, and knowledge exchange. The study acknowledges the limitation of small class sizes and provides managerial insights for educators integrating CBL into management curricula focused on entrepreneurship and innovation.

Keywords: challenge-based learning, social innovation, social entrepreneurship, higher education institutions, entrepreneurial skills, management course

1 Introduction

Among the various E&I (Entrepreneurship and Innovation) education initiatives, Challenge-Based Learning (CBL) has gained significant momentum globally. This constructivist pedagogical approach is recognized for impacting learning, teaching, and innovation (Perna et al., 2023; Vilalta-Perdomo et al., 2022; Leijon et al., 2022). CBL engages students in solving real-world problems through collaboration, critical thinking, and problem-solving skills (Observatory Tecnológico of Educational de Monterrey, 2015). It is a student-centered, experiential learning approach that begins with complex, open-ended, sustainability-related challenges presented by companies, public institutions, associations, and communities (Norrman et al., 2022).

CBL has proven to be an effective tool for stimulating students' entrepreneurial mindset and skills (Ktoridou & Eteokleous, 2012; Hölzner & Halberstadt, 2022; Perez-Sanchez et al., 2023). Through instructive and experiential learning, students improve their entrepreneurial skills and gain experience in real-world job contexts. Additionally, CBL revolutionizes the role of educators, transforming them from traditional instructors into facilitators, coaches, and mentors in the learning process (Eldebo et al., 2022).

Moreover, CBL enables universities to significantly impact their surrounding communities by providing knowledge, expertise, and tools. It results in tangible outcomes such as products, services, and processes that community organizations can partially or fully implement (García-Zambrano & Ruiz-Roqueñi, 2024). This method aligns closely with the principles of Open Social Innovation (OSI), a recent approach that involves various stakeholders collaborating throughout the social innovation process—from problem identification to solution creation and validation (Fayard, 2023; Mair & Gegenhuber, 2021).

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Despite the growing application of CBL and OSI in HEIs (Higher Education Institutions), the interconnection between students' entrepreneurial skill development and community impact still needs to be explored. This study aims to investigate how CBL fosters OSI and to what extent it stimulates students' entrepreneurial skills.

This working-progress paper is a case study and explores the dual impact of a CBL initiative on educational outcomes and community engagement. The uniqueness and contribution of this paper to the research is that it combines the students' perspective with the community (challenge provider) perspective, emphasizing the impact of CBL on students' learning process and companies' outputs gained from participating in the initiative. Furthermore, it uses the EntreComp framework in order to evaluate the progress of the students' entrepreneurial competencies, before and after the course. Specifically, it seeks to answer the following research questions:

- RQ1: What entrepreneurial skills do students gain through a CBL and hands-on course?
- RQ2: What are the effects of participating in a challenge from the companies' perspective?

To address these questions, the study utilizes a qualitative case study approach, focusing on the 2023/2024 edition of the "Sustainability and Social Entrepreneurship" course, a 48-hour (8 ECTS - European Credits Transfer System) curricular offering within the master's program in management at the University of Trento, Italy. This course imparts knowledge, skills, and competencies specific to social impact business design. It employs a challenge-based and hands-on methodology, where students develop project ideas and social business models based on challenges presented by community organizations in the Trentino region, including rural banks, cooperatives, startups, and associations. The paper also discusses the managerial implications of designing and implementing a CBL initiative. The conclusions section outlines the current study's limitations and proposes future steps to enhance this research.

2 Theoretical background

In recent years, CBL has become increasingly prominent globally within HEIs. This approach is lauded for enhancing student learning and positively impacting social organizations. CBL emphasizes the development of problem-solving, critical thinking, and collaboration skills by engaging students in resolving real-world challenges (Observatory Tecnológico of Educational de Monterrey, 2015). Rooted in constructivist theory (Nichols & Cator, 2008; Nichols et al., 2016; Perna et al., 2023), CBL suggests that knowledge is constructed through active engagement with the environment (Piaget, 1950; Vygotsky, 1978; Dewey, 1938; 1963). This pedagogical approach highlights the importance of self-directed learning (SDL), where the learner's role is central to the educational process (Pilling-Cormick, 1997).

CBL has gained popularity in HEIs due to its multifaceted benefits. It provides students with opportunities to work in real job contexts, deliver solutions that companies can implement, revolutionize traditional teaching methods, and transform the role of educators from instructors to facilitators, mentors, and coaches—referred to as "teamchers" within the European Consortium of Innovative Universities (ECIU) (Norrman et al., 2022). Additionally, CBL has substantial societal impacts, as it typically involves multidisciplinary teams of students who collaborate with peers from various fields, integrating stakeholder perspectives into their learning experiences (Norrman et al., 2022; Kohn Rådberg et al., 2020).

The growing body of literature on CBL defines it as an experiential learning approach that begins with complex, open-ended, sustainability-related challenges. These challenges are addressed by cross-disciplinary student teams who develop innovative and creative solutions, which are then presented in open forums (Norrman et al., 2022). Challenge providers—organizations such as companies, public institutions, associations, and communities—present real-world problems and seek sustainable solutions through student engagement. This approach enhances educational outcomes and strengthens regional innovation ecosystems by integrating all components of the knowledge triangle (EIT, 2012) or the quadruple helix, which includes universities, industry, government, and civil society. The CBL

methodology is grounded in the idea that students are more motivated and engaged when solving authentic problems rather than being presented with predetermined answers, as is common in traditional teaching. CBL has also been identified as an effective method for fostering entrepreneurial competencies (Perez et al., 2020).
Despite the increasing adoption of CBL in HEIs, there remains a significant gap in the literature regarding the effects of participation in challenge-based initiatives from the perspective of the participants and the organizations involved. This study seeks to address this gap by exploring the implications of CBL on students' entrepreneurial skills and challenge providers' participation.

3 The Sustainability and Social Entrepreneurship course

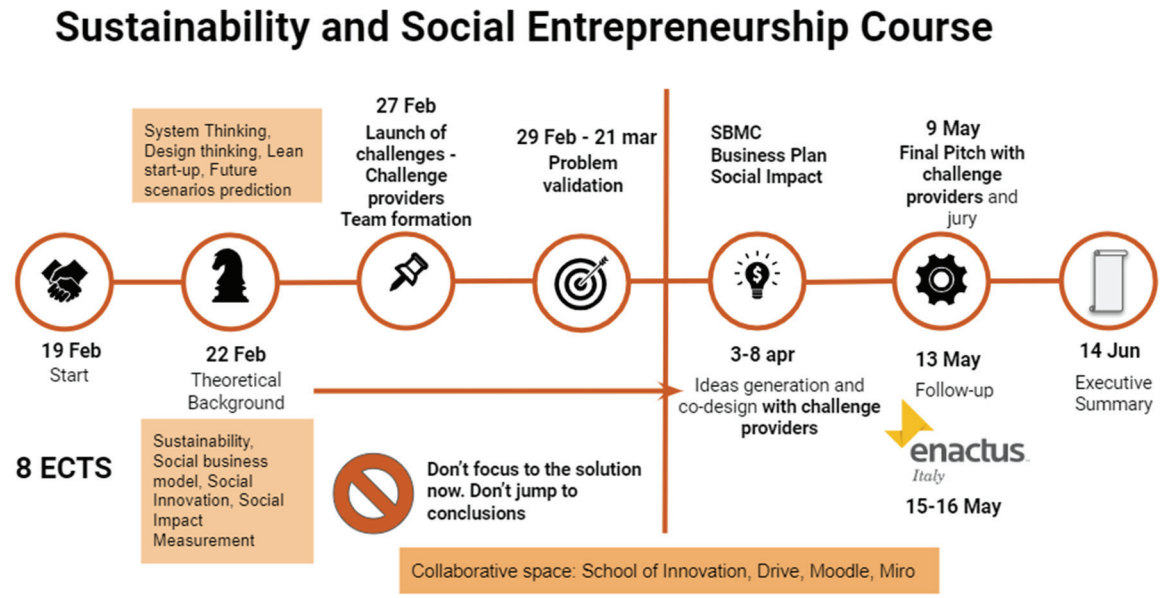
The 48-hour course, accredited with 8 ECTS, focuses on hybrid and sustainable enterprises, aiming to equip students to analyze opportunities and challenges associated with corporate, nonprofit, and hybrid organizational responsibility and sustainability. The course imparts essential knowledge, skills, and competencies related to social impact business design while addressing current challenges, trends, and future scenarios in sustainability, innovation, and social entrepreneurship. Additionally, it covers the primary business models available for creating social impact, with a particular emphasis on the strategic development of Third Sector organizations, cooperatives, nonprofit companies, and Benefit Corporations, exploring new forms of social innovation.
In its 2024 edition, the course adopts a challenge-based and hands-on approach for the first time. This format includes the development of a project idea and a social business model, which students present at the course's conclusion. These projects are based on challenges presented by various entities—called challenge providers—within the Trentino region, including organizations, cooperatives, and associations. Throughout the course, students engage deeply with these challenges, working to develop and propose innovative and sustainable solutions.
Students are expected to achieve several key learning outcomes upon completing the course. They should be able to identify and describe the primary models of social entrepreneurship and social innovation, recognize managerial approaches for transforming social entrepreneurial opportunities into viable business models, and evaluate the role of social entrepreneurship and innovation in promoting sustainability. Furthermore, students will develop the ability to act as change agents, understand the funding landscape for social entrepreneurship, and acquire skills in problem analysis, stakeholder identification, and user needs assessment. They will also learn to generate innovative, sustainable solutions, understand social impact design and evaluation, and effectively present their ideas through a pitch to an audience that includes faculty, investors, and Third Sector organizations.
The course is structured into three main phases, following the Design Thinking method (e.g., D.School - Stanford University, IDEO): i) Problem Validation, ii) Idea Generation, and iii) Solution Validation (Figure 1).

1. **Problem Validation**: In this initial phase, teams work closely with challenge providers to thoroughly understand their challenges. This involves collecting data through fieldwork, interviews, and desk research. Teams utilize various analytical tools such as the Fishbone Diagram, Iceberg Model, and Five Whys to dissect the problems. They also employ foresight tools to envision potential scenarios and trends. Market analysis is conducted using SWOT analysis, competitor analysis, and the development of buyer personas.
2. **Idea Generation**: In the second phase, teams are tasked with conceptualizing at least two or three potential solutions to the challenges. Structured brainstorming sessions are conducted to stimulate creativity and generate various disruptive ideas. These ideas are then presented to the challenge providers, who collaborate with the teams to select the most viable solution.
3. **Solution Validation**: During the final phase, teams refine and validate their chosen solution through further interviews and iterations in the field. They develop a Social Business Model Canvas and a comprehensive business plan. The course culminates in a pitch presentation,

where students showcase their solutions to an audience comprising educators, investors, and entrepreneurs.

In 2024, the course participants also competed in the Enactus competition, an international initiative in social entrepreneurship designed and led by university students. This competition provided a platform for students to apply their learning in a real-world context, further reinforcing the course's objectives.

Figure 1: The program of the course



3.1. Team formation and challenges

The class consisted of 19 students, three of whom were non-attending due to work commitments. The remaining 16 students were organized into four teams, while the three non-attending students formed an additional team. Three criteria guided team formation to ensure heterogeneity: i) gender, ii) results from the 16-Personalities test (based on the NERIS® model), and iii) students' thematic preferences. This approach aimed to create diverse teams, simulating real-world work environments where individuals often do not have the luxury of selecting their colleagues. The 16-Personalities test provided insights into the students' attitudes and personalities, categorizing them along dimensions such as Introversion (I) vs. Extraversion (E), Intuition (N) vs. Observant (S), Thinking (T) vs. Feeling (F), Judging (J) vs. Prospecting (P), and Assertive (-A) vs. Turbulent (-T). The five teams were matched with five distinct challenge providers, each presenting a specific challenge.

For the course, instructors selected five challenges from social organizations within the Trentino region, focusing on addressing local social issues across various domains, including urban requalification, social inclusion, rural depopulation, sustainable tourism, and promoting local food. The selection process spanned two months, during which the instructors conducted meetings and interviews with at least ten organizations of diverse backgrounds, structures, and missions. The five chosen organizations demonstrated the most compelling societal challenges, the highest motivation to engage with students, and the most excellent availability of time, resources, and staff to support the student teams. The challenge providers represented a variety of organizational types, including cooperatives, Working Integration Social Enterprises (WISEs), start-ups, foundations, and social organizations. The following challenges were defined before the course's commencement (see Table 1).

Table 1: The five selected challenges and the challenge providers

Challenges	*Themes*	*Challenge providers*
1.	Social tourism project to generate funds and raise awareness of social issues among travelers, creating a replicable model in other cooperative settings.	Local social foundation and local cooperative
2.	Fighting the depopulation of mountain areas, the closure of commercial activities, and the consequent abandonment of mountain areas. Teams had to work on fostering smart working places located in misused buildings. Rural bank and cooperative	Rural bank and cooperative
3.	Support an urban requalification project to transform some spaces of the Rovereto train station into a public civic hub dedicated to addressing climate change and biodiversity loss.	Network of associations, local government, public transportation entity
4.	Relaunching the subcontracting business unit through identifying innovations in the contracting production process to maintain a significant turnover.	Local WISE
5.	Support local restaurateurs in a phase of profound change, oriented towards sustainability and new technologies, starting with sustainable and ethical food delivery and developing the local communities.	A start-up based in Milan

3.2. Winning Team and Innovative Project Development

The team that won the Enactus class competition was initially assigned to work on Challenge 4, which involved improving a subcontracting business unit. However, rather than adhering strictly to the original brief, the students innovatively pivoted and developed a new project focused on social impact. They proposed establishing a workshop within a social cooperative to produce fresh pasta, employing individuals from vulnerable populations. In this workshop, trained tutors would guide these individuals, allowing them to acquire new skills and foster creativity. This initiative provided meaningful employment and allowed the cooperative to launch an innovative business unit, enhancing its market image by producing high-quality, artisanal goods.
The cooperative's clients would benefit from this initiative by incorporating sustainably produced and distinctive products into their offerings, thereby enhancing their menus in an ethically responsible manner. The pasta products would be labeled to certify the involvement of a socially engaged workforce, adding value to the product. Additionally, the workshop would offer masterclass-style events, enabling consumers to observe the production process firsthand and engage in a unique culinary experience by participating in courses and purchasing the finished products. Therefore, this project raises awareness within the local community and significantly improves the public perception of the cooperative's social mission.

3.3. Student Assessment Framework

The course employed an integrated formative assessment approach, combining individual and team evaluations. Fifty percent of the assessment was based on group work, with the final pitch being evaluated according to the following criteria: 1) Validation of the solution, 2) Innovativeness of the

solution, 3) Scalability and social impact of the solution, 4) Economic feasibility and sustainability of the proposal, and 5) Quality of the oral presentation.
The remaining 50% of the assessment focused on individual contributions to a final group report submitted after the course. This report, structured as an executive summary, detailed the group's work throughout the course, including the roles and contributions of each team member. It encompassed descriptions of the challenge, the work performed, and the methodologies used for problem validation, solution generation, prototyping, and testing. The tools applied, such as the Social Business Model Canvas and income statement, were also included. Individual contributions were assessed based on 1) Completeness of the sections authored by the individual, 2) Accuracy of the work, and 3) Originality, personal input, and creativity demonstrated in the sections they produced.
The evaluations of both the oral presentations and the executive summaries were conducted solely by the course instructors. Although the challenge providers did not participate in evaluating the presentations, the final pitches were linked to the Enactus initiative. Consequently, these presentations were delivered by representatives from the organizations that proposed the challenges and a jury consisting of experts, academics, and entrepreneurs. The jury evaluated the four teams of attending students using five criteria: 1) Entrepreneurial leadership, 2) Innovation, 3) Application of sound business principles, 4) Sustainable positive impact, and 5) Quality of the oral presentation.

4 Methodology

This study adopts an exploratory qualitative approach (Yin, 1984, 2003), which is well-suited for navigating the complexities of innovation management research and gaining a deep understanding of emerging phenomena through qualitative data (Siggelkow, 2007). In the following sections, we detail the methodology used to collect data for assessing students' acquisition of entrepreneurial skills (section 4.1) and evaluating the impact of challenge-based learning on challenge providers (section 4.2).

4.1 Data Collection for Measuring Entrepreneurial Skills

Various tools were employed to assess students' entrepreneurial skills, as summarized in Table 2. Grounded in Kolb's experiential learning model (1984) and Gibbs' reflective cycle (1988), students engaged with the following tools: (i) an individual learning agreement, (ii) team agreements, (iii) class diaries, (iv) the EntreComp Framework, (v) the 16-personalities test, and (vi) an individual final reflection report. Reflective tools and self-directed approaches were excellent ways to measure students' skills (Scroccaro & Rossi, 2022).
The individual learning agreement is a document that clarifies learning objectives and allows students to co-design aspects of their learning process. This helps them become more aware of their goals and expected outcomes. Students choose one of three learning goals from the 15 competencies outlined in the EntreComp framework (see Figure 2). The final reflection report complements the learning agreement, which follows Gibbs' reflective cycle (1988). This structured document guides students through six stages of reflection on their recent experiences: (1) Description, where students detail their experience; (2) Feelings and Thoughts, where they explore their emotions and thoughts during the course; (3) Evaluation, where they assess what worked well and what did not, maintaining objectivity; (4) Analysis, where they extract meaning from their experiences and examine underlying reasons; (5) Conclusions, where they synthesize their learnings; and (6) Action Plan, where they outline strategies for future similar situations.
Team agreements are contracts read, shared, and signed by all team members at the course's outset. These agreements support teamwork, prevent or manage conflicts, and help build a cohesive team. The document specifies tasks, responsibilities, and deadlines in detail to enhance team development and individual accountability and reduce the likelihood of conflicts, thereby increasing the chances of a successful team experience.

Class diaries are used twice during the course to gather feedback, measure team dynamics, and refine work progress. Administered through the Wooclap platform, the diaries include questions such as: (1) What went well during a specific phase? (2) What did we learn as a team? (3) What can be improved in teamwork? (4) What strategies will be implemented in the next steps?
The EntreComp framework is a standard reference that identifies 15 competencies across three key areas (Resources, Ideas and opportunities, and Into Action) that define entrepreneurial capabilities (Bacigalupo et al., 2020). Each area contains five competencies, each associated with three specific items. The Ideas area includes competencies like spotting opportunities and ethical thinking, while the Resources area covers self-awareness and mobilizing others. The Into Action area involves taking initiative and learning through experience. This framework assesses students' entrepreneurial competencies compared to other entrepreneurial intention measures (Ratiu et al., 2023; Vankov et al., 2022; Armuna et al., 2020). The EntreComp survey is administered at the beginning and end of the course as part of the broader EPIC (Entrepreneurial Potential and Innovation Competences) questionnaire, based on the HEI Innovate initiative launched by the European Commission in partnership with the OECD in 2013. The EPIC survey, taking about 45 minutes, consists of four parts: the EntreComp section, which includes 45 questions rated on a scale from 1 to 10; a section on Entrepreneurial Intentions and Attitudes with 17 questions; a section on Entrepreneurial Mindset and Enterprising Behaviours with 19 questions; and a final part with four entrepreneurial scenarios.
Additionally, students complete the 16-personalities test at the course's start to assist in team formation, ensuring a balanced mix of attitudes and personalities. This test evaluates combinations of traits such as introversion vs. extroversion and thinking vs. feeling, among others. The teams are matched with challenge providers, each offering a unique challenge.
All students completed these tools.

Table 2: Methodology: tools set up for measuring the acquisition of student's skills and challenge providers' outputs

Tools	***Goal***	***When***	***Recipient***
Learning Agreement	*Set up the learning goals*	*At the beginning of the course*	*Individual (student)*
16-personalities Test	*Identify the personality; Form teams*	*At the beginning of the course*	*Individual (student)*
Class diaries	*Measure the process*	*During the course*	*Class*
EntreComp	*Measure entrepreneurial and innovation skills*	*At the beginning and the end of the course*	*Individual (student)*
Reflection Report	*Measure reflective skills*	*At the end of the course*	*Individual (student)*

Figure 2. The EntreComp flower (Bacigalupo, 2020)

4.2 Data Collection for Measuring Entrepreneurial Skills

Alongside the data collection for assessing students' skills, data was also gathered from online surveys and semi-structured interviews to evaluate the impact of the challenges from the providers' perspective (See Table 3). Both types of data were collected at the course's conclusion. The online survey comprised eight questions, with seven using a Likert scale (1 to 5, where 1 is 'Very low' and 5 is 'Very high') to assess satisfaction with the course, the quality of outputs, and interactions with students. An interview guide was used for semi-structured interviews, with key topics derived from existing literature (Caputo et al., 2016; Ahn et al., 2015; Ebersberger et al., 2012; Nguyen et al., 2021). As of July 2024, four of the five challenge providers had been contacted, completed the online survey, and participated in interviews. The online survey received seven responses, as two respondents represented two challenge providers. The semi-structured interviews, conducted via Zoom, involved separate sessions for each provider. Two individuals represented three providers (Challenges 2, 3, and 4), while Challenge 1 had three representatives. Data collection for Challenge 5 is still pending, as the provider has yet to respond to the survey or participate in the interview.
A single instructor conducted all interviews, with notes manually recorded and later coded into four categories: tangible outputs, intangible outputs, short-term benefits, and long-term benefits.
The data analysis followed the principles of thematic analysis, identifying critical themes essential for understanding the phenomenon under study (Fereday & Muir-Cochrane, 2006). This technique reduces data by segmenting, categorizing, and summarizing relevant concepts within the dataset (Ayres, 2008).

Table 3: Methodology: tools set up for measuring the challenge providers' outputs

Tool	**Goal**	**Questions**
Questionnaire	Measure the satisfaction	On a scale of 1 to 5, how satisfied are you with the tangible and intangible results that your organization has gained from being in contact with students/esses (tools, advice, prototypes, documentation, new ideas, new ways of learning and working,

		networking, talent scouting, getting to know new partners, customers and suppliers, etc.)? If you had to rate the relevance of these outcomes to your organization on a scale of 1 to 5, what grade would you give? From 1 to 5, how much do you rate the quality of the Lab's faculty and mentors (specific knowledge, proactivity, organizational skills, etc....)? From 1 to 5, how well did the Lab meet your expectations and those of your organization? From 1 to 5, how much would you recommend this experience to other organizations? In this space, you can leave a comment and/or let us know what we might consider improving the Lab
Semi-structured interview	Identify tangible and intangible outputs	What kind of results did you gather from the challenge? What kind of tangible outputs did you gain? What kind of intangible outputs have you gained? Can we have a follow-up in the next six months? Are you willing to participate in another challenge edition? Have you any further comments or curiosity?

5 Findings

5.1 Preliminary findings on students' entrepreneurial skills

Preliminary results of the EntreComp framework and reflective tools indicate that students have positively assessed the course, deeming it a valuable educational experience and endorsing it to their peers. Key findings include: (i) students reported enhanced entrepreneurial competencies; (ii) the course served as a primary avenue for engagement with organizations and application of knowledge to real-world problems; (iii) the module's structure effectively supported problem comprehension, validation, idea generation, and solution validation; and (iv) the intensive nature of the course facilitated the development of various soft skills.
Figures 3 through 8 illustrate positive improvements in three of the 45 items assessed through the EntreComp framework, as included in the EPIC questionnaire. Preliminary data suggest that the course has effectively enhanced students' entrepreneurial competencies and soft skills. Continued data collection and analysis will provide further insights into the long-term impact of the course.

Figure 3: Identification of opportunities from the EntreComp questionnaire submitted at the beginning of the course

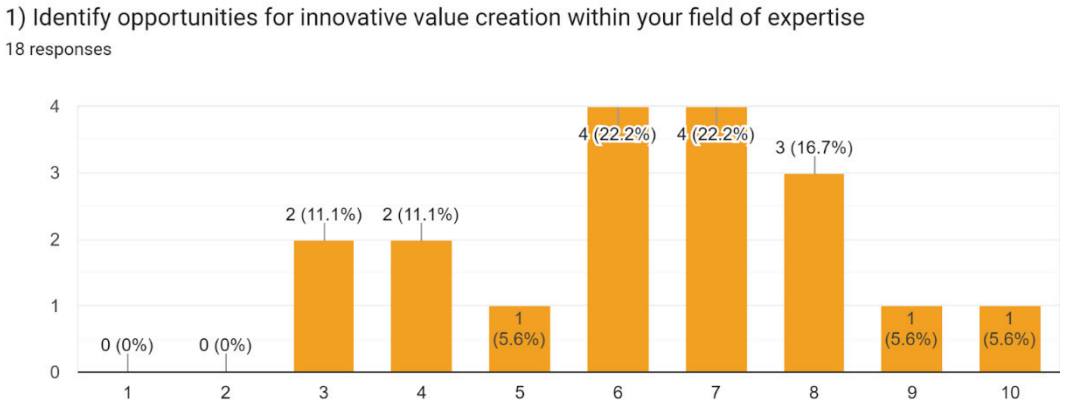


Figure 4: Identification of opportunities from the EntreComp questionnaire submitted at the end of the course

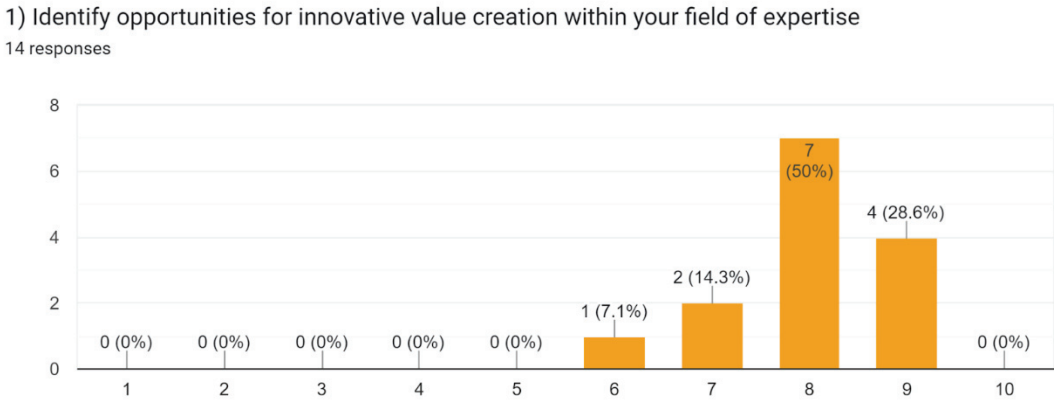


Figure 5: Assessment of social impact from the EntreComp questionnaire submitted at the beginning of the course

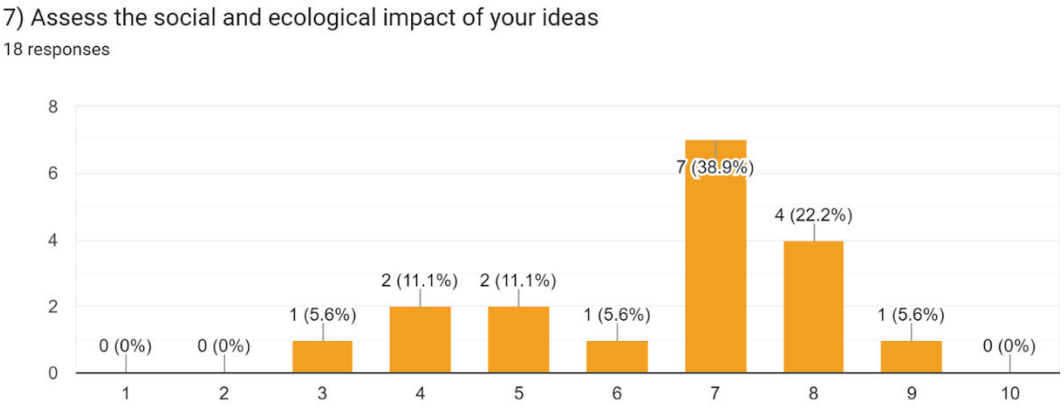


Figure 6: Assessment of social impact from the EntreComp questionnaire submitted at the end of the course

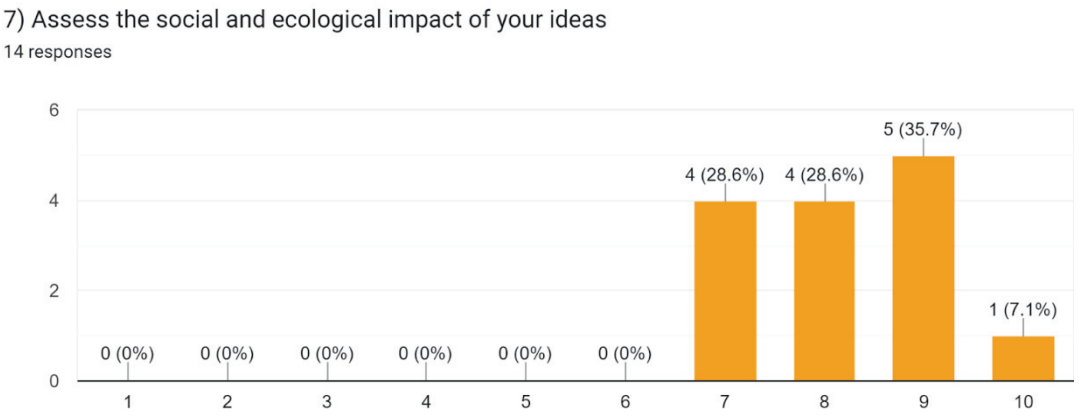


Figure 7: Estimation of a budget from the EntreComp questionnaire submitted at the beginning of the course

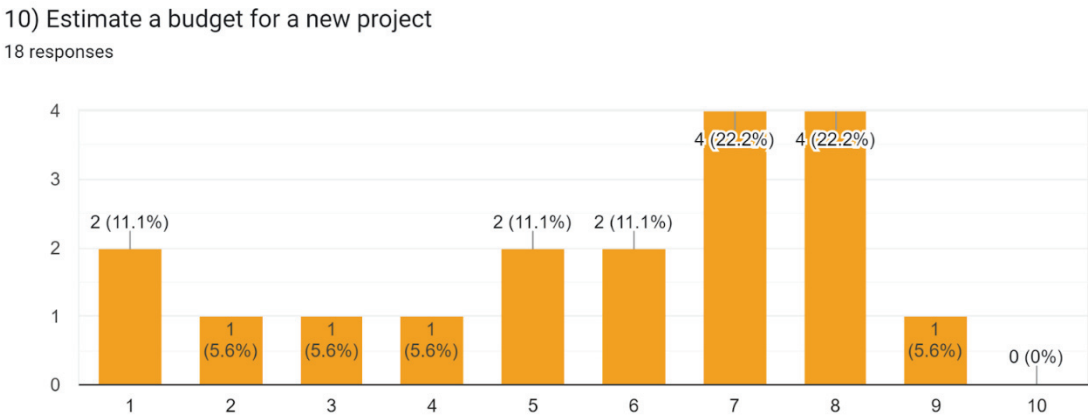
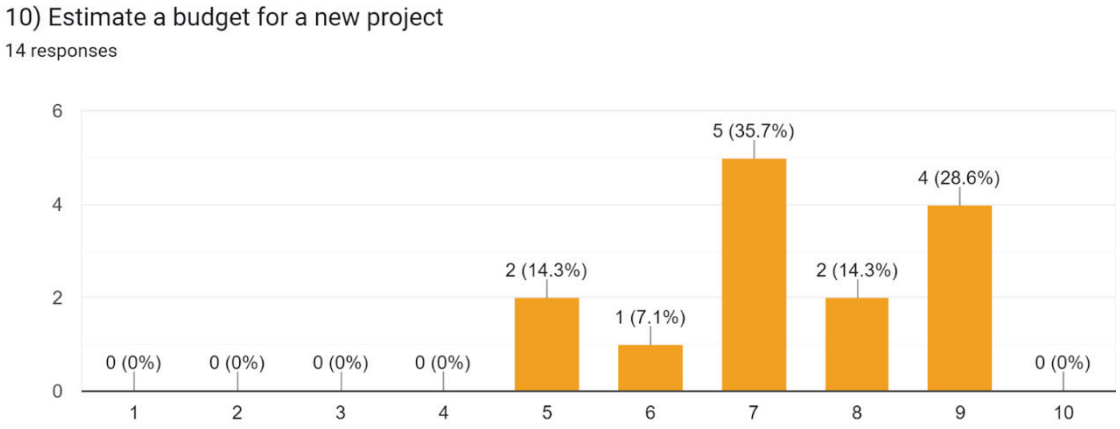


Figure 8: Estimation of a budget from the EntreComp questionnaire submitted at the end of the course



Notably, students observed improvements in entrepreneurial skills such as opportunity identification, creativity, team mobilization, problem-solving, and communication.

Students have positively evaluated the course, noting several benefits. i) Participants perceived increased entrepreneurial competencies, including opportunity identification, creativity, team mobilization, problem-solving, and communication. ii) The course facilitated initial interactions with organizations, allowing students to apply their knowledge to real-world challenges. iii) The course structure effectively supported problem understanding, validation, idea generation, and solution validation. iv) The intensive nature of the course stimulated the acquisition of soft skills crucial for entrepreneurial success.

Student feedback highlights the positive impact of the course. For instance, one student commented, “The course experience for me was positive. The deviation in content and teaching mode from other courses increased my motivation and self-efficacy throughout the semester” (Student 8 Reflection Report, translated from Italian). Another student, who described themselves as introverted, noted, “I increased my self-confidence, felt listened to by my teammates, and was proud of our problem-solving achievements” (Student 10 Reflection Report, translated from Italian). A student appreciated the challenge-based learning approach: "The Lab experience was positive, inspiring, and innovative.

Applying knowledge immediately after brief lectures proved more useful than traditional lectures. The course also uncovered a creative aspect within me and simulated a professional work environment" (Student 12 Reflection Report, translated from Italian).

5.2 Preliminary findings on challenge providers' perspective

From the perspective of challenge providers, this course presents a valuable opportunity to generate new ideas and solutions, recruit young talent, and acquire knowledge and competencies. Providers particularly appreciated the influx of fresh and innovative ideas and disruptive solutions they had yet to consider. They found the interaction with students to be highly optimistic, noting their proactive approach, which facilitated broader engagement with stakeholders such as companies, potential customers, providers, and experts. The professionalism and organization demonstrated by the students were also highlighted, with providers valuing the tools and methodologies used throughout the course, especially those focused on creativity and assumption validation. The final presentations and executive summaries were deemed valuable for the organizations. One provider underscored the importance of the connections made through the course with the university, individuals, and stakeholders, which are expected to foster new collaborations and future projects.
Six of seven challenge providers' representatives reported a high alignment between their expectations and overall satisfaction with the course (see Figure 9). All the interviewed providers were willing to recommend the course to other organizations (see Figure 10). The primary outcomes of the data collection, categorized into tangible and intangible outputs and short-term and long-term benefits, are detailed in Table 4.

Figure 9: Challenge providers' expectations from the online survey (from 1 to 5 where 1 is Low and 5 is High)

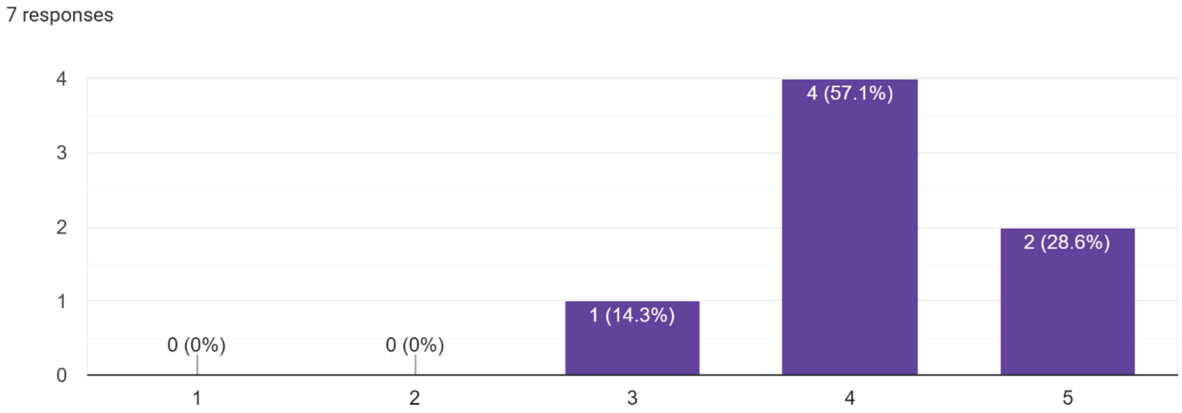
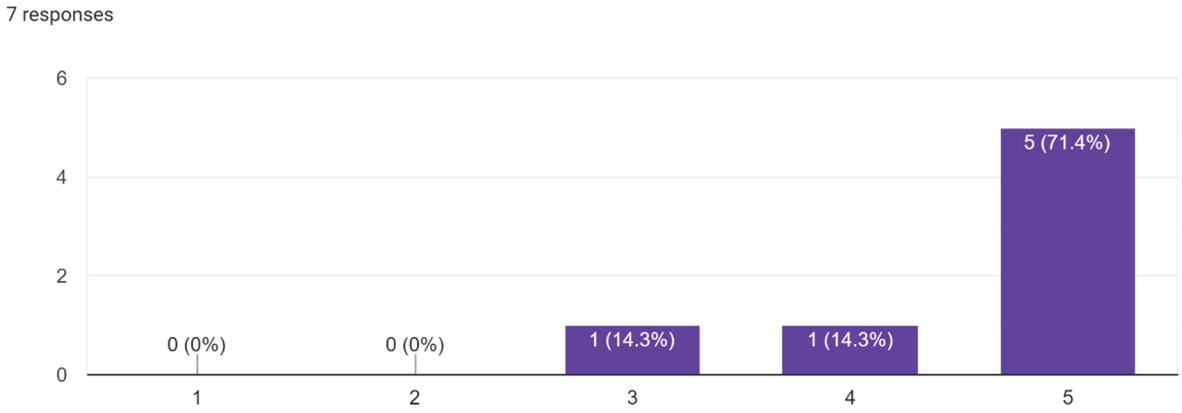


Figure 10: Challenge providers' recommendations from the online survey (from 1 to 5 where 1 is Low and 5 is High)



In terms of long-term benefits, all challenge providers expressed confidence that the solutions developed by the teams would either be fully or partially implemented in the future. One provider noted that participating in the challenge sparked new ideas for addressing other organizational issues.
Table 5 outlines the main disadvantages of participating in the course from the challenge providers' perspective. They identified the time-intensive nature of the initiative as a primary concern, indicating that they sometimes needed to prepare to dedicate the significant amount of time required to work with students. Additionally, when more than one organization was involved in a single challenge, it sometimes led to confusion for providers and students, as differing viewpoints on the same challenge could complicate students' understanding of the issue. This "over-representation" occasionally resulted in miscommunication and misalignment with students. In two cases, weak communication between students and providers affected the interviews conducted with the challenge providers' partners and potential customers. However, these issues were generally resolved through collaboration between the challenge providers and students, without teacher intervention. Providers also acknowledged that these challenges gave them new perspectives and valuable contacts with potential customers and partners.

Table 4: Short and long-term, tangible and intangible results of the challenge providers

	Short-term Benefits	**Long-term Benefits**
Tangible outputs	• Fresh ideas • New perspectives • Assumptions' validation • Executive summary	• Solution implementation (even partially)
Intangible outputs	• Time to reflect • Topic exploration • Networking with potential customers and partners • New contacts	• New collaborations • Talent recruiting • University as changemaker • Inspiration for new solutions

Table 5: The disadvantages of the challenge providers

Areas	**Disadvantages**
Management	Time-consuming Too many representatives per challenge
Interaction with students	Not ready to interact with students Weak alignment with students Miscommunication with students

6 Recommendations

The paper extensively details designing and managing a challenge-based course to have a coherent and efficient entrepreneurship education initiative. Through this course, the Author collected five main recommendations that can be useful to improve the design and management of similar challenge-based learning educational initiatives. The first recommendation is to pay more attention to selecting the challenge providers: challenge providers might need more time to be ready for this new way of interacting with students. The CBL is a new way of teaching and learning that is far from the traditional one, and companies need to be used to working interactively with students. Moreover, if the organization has a clear governance structure, students might be well followed. Another crucial point is the time: if the challenge provider needs to dedicate more time to students, the latter gains motivation.
The second recommendation is to consider designing and building the challenge with challenge providers before starting the course. The challenge should concern clear goals and projects that are established over time. Otherwise, students feel they need more boundaries.
The third recommendation is to provide all the theoretical background at the beginning of the Course, showing and explaining the Social Business Model Canvas, the business plan, and the social impact assessment during the first phase of the semester. The fourth recommendation is related to structuring the Course differently, saving more time for solution validation and construction. Finally, the fifth recommendation is connected to dedicating more time to soft skills exercises, primarily focusing on creativity, getting out of the comfort zone, and stress management.

7 Conclusion and limitations of the research

This working paper examines the impact of a Challenge-Based Learning (CBL) initiative on educational outcomes and company engagement. It addresses the following research questions: RQ1: What entrepreneurial skills do students develop through a CBL and hands-on course? RQ2: What are the effects of participating in a challenge from the companies' perspective? The study employs a qualitative case study approach to explore these questions, focusing on the 2023/2024 edition of the "Sustainability and Social Entrepreneurship" course. This 48-hour (8 ECTS) course is part of the master's program in management at the University of Trento, Italy. Through a challenge-based, hands-on methodology, it provides students with knowledge, skills, and competencies related to social impact business design. Students work on project ideas and social business models derived from challenges posed by community organizations in the Trentino region, such as rural banks, cooperatives, startups, and associations. The paper also discusses the managerial implications of designing and implementing a CBL initiative and concludes by highlighting the study's limitations and suggesting future research directions.
This working progress paper has some limits. Results are incomplete and partial since data analysis still needs to be completed. The students' sample is limited in number since the class is composed of 19 students. The following steps concern the completion of data collection and analysis through the questionnaires to students and challenge providers and semi-structured interviews with challenge providers. A longitudinal study is not currently possible since this is the first edition of the

course. Nevertheless, the research can be enriched through a comparative study of this course and similar courses in other universities. The results, albeit somewhat limited, can be applied in a larger context.

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