



Curriculum

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Attachment B: Questions for focus group of teachers / experts	Laura Fink, Mitja Jeraj, Mojca Dušica Zajc
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Attachment E: Example of good practice	Laura Fink, Mitja Jeraj, Mojca Dušica Zajc
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1 Introduction

This curriculum framework, which incorporates innovative approaches based on active learning methodologies, aims to develop entrepreneurship skills in secondary vocational and technical education in Bosnia and Herzegovina (hereinafter BiH). In particular, this curriculum focuses on technical and vocational schools, which are commonly part of mixed schools in BiH.

According to the D2.1 “Report on the current state of play on entrepreneurial skills in VET schools,” prepared within the GTECH project, the available curricula lack a consistent approach to developing entrepreneurship skills. No unified curriculum framework for entrepreneurship skills in VET is currently available on the web pages of any of the ministries or education institutes directly administering secondary education in BiH. Furthermore, curricula are frequently unavailable on school websites. Although the “Report on the current state of play on entrepreneurial skills in VET schools” states that since 2012, when the strategy for entrepreneurial learning in BiH was first elaborated, some actions, including occasional teacher trainings, have been taken, the development of entrepreneurial skills continues to rely heavily on the goodwill of individual schools and individual outstanding teachers. Entrepreneurship abilities are developed through a variety of activities. According to the BiH Agency for pre-primary, primary, and secondary education (APOS0, 2015A; 2015B), activities for developing entrepreneurship competencies include curriculum activities within the course, project-based learning, extracurricular activities with external stakeholders, and other activities within the school.

Given that this curriculum addresses secondary vocational and technical education, let us briefly highlight some of its key features. The primary goal of vocational and technical education is to prepare students for a high-quality, competent career soon after graduation. These are also the expectations of employers who hire novices after they graduate from secondary vocational schools. Companies may typically only provide minimal tutoring and mentorship, if any at all, because they require employees who are fully qualified to execute their duties autonomously to the greatest extent feasible.

The studies are highly technical or hands-on-oriented, and many students need entrepreneurial skills to be able to capitalize on their technical know-how in the market. It is essential that students, during their vocational studies, gain as much practical experience as possible in relation to situations that they will actually encounter in practice when performing their profession. Therefore, we must adapt the development of entrepreneurial competencies to the unique profile of the vocational school. Although the principles of entrepreneurship remain the same, students will be more interested in developing their entrepreneurial skills if these are presented to them in their own context. In developing this curriculum, we take this into account to the highest degree possible by addressing specific challenges associated with a specific type of secondary vocational education.

There is also a lack of awareness of the fact that the entrepreneurial mindset is not reserved only for those who own their own companies or work in family businesses, but that anyone can think



entrepreneurially, regardless of where they are employed and what they do. Entrepreneurial skills can be applied in many situations (transversal) and can contribute to the creation of new value and the transformation of society (transformative; OECD, 2019).

In this curriculum, we first assert that the development of entrepreneurial competencies within vocational and technical secondary education should be addressed holistically. We base our further discussion on VET students' needs, interests, and career paths.

A subsequent section of the curriculum focuses on the analysis of primary and secondary data research about entrepreneurship skills and innovation for challenge-based learning in secondary schools and curricula. We address the methodological approaches we used to analyze primary data, such as interviews and focus group. Within the analysis of secondary data, we conducted desk research and analysis of secondary survey data. Desk research, which is based on secondary data examination, covers three major topics: a.) The topic of entrepreneurial education emphasizes the necessity of fostering a culture of innovation and problem-solving within the learning process. b.) The topic of environmental sustainability and green technology education addresses the importance of green technology education in secondary vocational schools. and c.) The topic of fostering competencies through challenge-based learning and other active learning methods emphasizes active teaching methods and other innovative pedagogical approaches that enable teachers to more effectively support the development of competencies.

At the intersection of these three topics, along with applying primary and secondary data analysis, we created a modularly structured educational program and identified examples of challenges and activities that might be used in the educational process. Chosen examples of challenges and activity-based learning, designed so that teachers can use them in the classroom, are an important component of this curriculum. They are provided in the final section of the document. Examples of entrepreneurship in the areas of environmental sustainability and green technology include basic and complex activities, concrete projects, problems, and challenges that can be utilized in vocational secondary schools.

The focus of the curriculum is on the educational content and the syllabus of the educational program. Based on the identified desired competencies and learning objectives, we structured the learning content into six modules (introduction, operations, finance, green market, innovation, and market entry), each of which addresses important issues for green technology entrepreneurs. The introduction module covers topics such as idea generation as well as market opportunity, and requirement identification. The operations module covers managerial and team topics, as well as challenge-based learning and other active learning methods. The green market module covers sustainability, development, and market analysis. The innovation module provides information on innovation definitions, types, levels, and practical examples of green tech innovation. This is supplemented by practical tips on stimulating innovation as we consider that innovation is an essential skill for every green technology entrepreneur. Finally, the market entry module focuses on developing of an appropriate business model and pitching business ideas to potential investors. In all modules,



we discuss opportunities to apply these skills in the context of environmental sustainability and green technology.

This document includes the final version of the modular educational program, including the additional upgrades and changes made after the D4.1. Preliminary curriculum was developed. We updated and enhanced the initial version of the curriculum based on the evaluation process and additional brainstorming sessions with the experts who created the relevant content, videos, and other resources for the educational program.

The next important section of the curriculum includes examples of activities and good practices that teachers can use in practice. In particular, the appropriate teaching methods are extremely important for efficient curriculum implementation and can contribute to better learning results. As a result, the chapter includes examples of activities that teachers can use in the classroom, as well as extracurricular activities and projects that have worked well. During the preparation of the final version of this curriculum, we updated the set of good practices several times.

Finally, the last section of the curriculum elaborates on the evaluation process, which consisted of workshops and focus groups with the teachers of three secondary vocational schools that participated in the evaluation process. In addition, the evaluation process included a survey among students, through which we inquired about students' experiences and opinions, particularly about their preferred teaching methods and approaches. Based on the evaluation findings, we have prepared the final edition of this curriculum, including the modular educational program and set of good practices.



2 Addressing the development of competencies holistically

We find it necessary to draw attention to a number of different opportunities that should not be overlooked if we are to address the development of entrepreneurial competencies holistically. This is vital, notwithstanding the aim of this curriculum to focus on and delve deeper into the prospects provided by active teaching methods, in particular challenge-based learning, in the development of entrepreneurial skills. Before focusing further on the opportunities related to active learning methods, let's consider the potential for improvement of entrepreneurial competencies from a broader systemic perspective.

Firstly, **there is significant potential for enhancing the dissemination of existing good practices across more schools.** Although some individual schools and individual teachers have paid a lot of attention to the development of entrepreneurial competencies, the development of entrepreneurial competencies in VET secondary schools in BiH is too partial and depends too much on the readiness and diligence of individual teachers. Taking the opportunity to recognize and spread existing good practices would contribute towards a more balanced development of entrepreneurial skills across the entire cohort of students.

Secondly, **building a community of practice on entrepreneurial skills development for teachers would be beneficial** since it would enable teachers to share and discuss issues they are facing, build their own entrepreneurial skills, and share existing good practices with other teachers. Communities of practice on entrepreneurial skills development for teachers can have a very motivating effect. This way, teachers could showcase an example and inspire other teachers to include the development of entrepreneurial skills in their courses. We should seize every chance to share and showcase effective methods.

Thirdly, **another way to promote the development of entrepreneurial skills is to organize entrepreneurial competitions for students**, where the best entrepreneurial students' ideas would be rewarded, financially supported, and included in the mentorship programs at one of the business incubators.

Fourthly, **there is a lot of room for improvement in developing cross-curricular competence, such as entrepreneurial competence, across various courses.** Developing entrepreneurial skills in different courses allows teachers to employ different approaches that are best suited for the specific content being taught. Yet another area for improvement lies in that currently the development of entrepreneurial skills in practice often covers only the technical part of establishing and managing an SME rather than the entire spectrum of entrepreneurial competence, as presented by either the Entrepreneurship Competence Framework (Bacigalupo et al., 2016) that includes 3 competence areas and 15 competencies or considering specific learning outcomes and indicators of entrepreneurial competence as recognized by APOSO (2015A; 2015B).



Fifthly, a **more unified approach to the development of entrepreneurial skills and to the assessment of entrepreneurial skills is needed**. Therefore, even within the framework of the curriculum, more attention should be paid to the assessment of acquired skills in a way that would encourage students to further develop their entrepreneurial skills.

Sixthly, **more could be done by providing greater support to proactive teachers** and by establishing an efficient promotion and reward system that would reward the effort of teachers.

On top of that, teacher training, not just in entrepreneurial skills but also in applying teaching approaches and methodologies that encourage the knowledge gained to be retained for a longer period of time and, above all, to arouse motivation and interest in additional research in students, is absolutely essential.

Our ideas and suggestions are consistent with and build on those offered in the document "Increasing the Quality and Relevance of VET in Bosnia and Herzegovina, based on Riga Conclusions 2021-2030," issued by the Ministry of Civil Affairs (2020).



3 Tailoring the curriculum for secondary technical and vocational professions in BiH

In BiH, secondary schools are categorized into gymnasiums, art schools, religious schools, technical and related schools, vocational schools, religious schools, and special secondary schools (Institute for Statistics of BiH, 2023). Many of these are part of mixed schools that dominate in BiH. There are only 27 independent schools and 109 mixed schools among 136 technical schools, and only 2 independent schools and 102 mixed schools among 104 vocational schools. The number of enrolled students and the number of students who finished school are only available by type of school and broad educational areas.

Number of enrolled students by type of school	Regular students enrolled	Females	Share of females
Gymnasiums	15425	9962	65%
Technical and related schools	37855	19576	52%
Vocational schools	13829	3889	28%
Art schools	924	631	68%
Religious schools	2126	1194	56%
Special secondary schools	166	57	34%
Total	70325	35309	50%

Table: Number of enrolled students by type of school (Source: Institute for Statistics of BiH, 2023)



The number of enrolled students by broad educational areas that provide a very wide and general overview is only available for all secondary schools.

	All students	Females	Share of females
Social sciences, journalism, and information	4704	3164	67,26%
Information and communication technologies	504	164	32,54%
Engineering, manufacturing, and construction	22434	4238	18,89%
Agriculture, forestry, fisheries, and veterinary medicine	1586	758	47,79%
Business, administration, and law	2230	1782	79,91%
Natural science	16	-	0,00%
Arts and humanities	2014	1221	60,63%
Service activities	8999	5068	56,32%
Health and social protection	10252	7693	75,04%
General program and qualifications	17476	11126	63,66%
Unspecified	110	95	86,36%
Total	70325	35309	50,21%

Table: Number of enrolled students by type of school (Source: Institute for Statistics of BiH, 2023)

Since the number of graduates by specific secondary-level profession is not available and indicators such as the classification of certain groups of occupations in technical and vocational secondary schools are largely missing, we decided, based on the current job market trends in Europe, to pay special attention to the following secondary vocational occupations: a.) Technical professions: technicians, plumbers, electricians, automotive repairers, welders, cosmetologists, and militants; b.) Design professions: graphic designers, fashion designers; c.) Tourism professions: culinary artisans, cooks, and waiters; d.) Health professions: dental hygienists, respiratory therapists.

We have customized and tailored this curriculum to the challenges and pedagogical approaches we describe in the continuation of the curriculum, to the largest degree possible to these four groups of secondary technical and vocational school professions. Throughout the curriculum, we considered that the studies are highly technical and hands-on-oriented and that many students need entrepreneurial skills to be able to capitalize on their technical know-how in the market.

Entrepreneurship skills are currently taught as a mandatory or elective course, with variable implementation from the first to the fourth grade of secondary school. Students in their final two years of secondary school are already considering what they want to do after graduation. Therefore, it is possible that some of them are interested in starting their own business.

In the event that someone wants to open his own car repair shop, for example, he should first check the market in which he wants to offer his services, whether it is already oversaturated or if the offer is insufficient. Students need to be taught not only how to start a company but also to think carefully about what the possibilities are for their investment in their own company to be repaid.



4 Methodological Approaches

Our curriculum development process involved the investigation of both primary and secondary data.

4.1 Analysis of primary data

The analysis of primary data comprised an examination of findings from in depth interviews with experts and a focus group. We performed three interviews with vocational secondary school instructors from Slovenia, including the following:

- a teacher of marketing, entrepreneurial, business, and economic courses at secondary economic school and at a college, holding a degree as a Master of Business Administration and a pedagogic and andragogic education (hereinafter Interviewee 1).
- a teacher of entrepreneurial and business courses at the educational centre for postal services, economics, and telecommunications in Ljubljana, holding a degree of Doctor of Economic Sciences (hereinafter Interviewee 2).
- a teacher of entrepreneurship and technical instruction with 15 years of experience in secondary education and also an entrepreneur with his business for more than 10 years (hereinafter Interviewee 3).

The questionnaire (attachment A) included questions related to the integration of entrepreneurship skills into the vocational secondary school curriculum, the role of challenge-based learning, and other active learning methods in preparing students for real-world entrepreneurial experiences. We gathered examples of successful projects, challenges, and activities fostering entrepreneurship skills, in particular in the field of green technology and environmental issues. We explored the utilization of external sources, high-quality video content, documentaries, and papers within instructional activities. We also explored the need for support, incentives, and resources for teachers to teach entrepreneurship effectively and how to integrate entrepreneurial skills into non-entrepreneurship courses and extracurricular activities.

We conducted a focus group consisting of representatives of vocational school teachers and directors:

- teacher of the economic courses in the High School for Traffic and Communications in BiH (FG1),
- teacher of the economic courses in the high school in BiH (FG2),
- teacher of the economic courses in the high school in BiH (FG3),
- teacher of accounting and marketing at Economics High School in BiH (FG4),
- chemistry teacher at an electrical engineering school in Croatia, also responsible for timetables, and Erasmus+ coordinator with previous experience in the private sector (FG5),
- teacher of English at an Economics High School in BiH (FG6),



- director of an Economics High School in BiH (FG7).

The focus group covered six main topics. First, we discussed the impact of integrating entrepreneurship skills and innovation into secondary school curricula, particularly through challenge-based learning and other active learning methods. Second, we discussed challenges in the implementation and possibilities to include entrepreneurial content in non-entrepreneurial courses and extracurricular activities. Third, we addressed the strengths, limitations, and areas for improvement of the existing entrepreneurship curriculum. Fourth, we explored the utilization of external sources and MOOCs in the delivery of entrepreneurship education. Fifth, we also discussed the importance of support, incentives, and resources for teachers and students, such as mentorship programs, collaborative networks, and the availability of successful entrepreneurs in their regions. Finally, we explored examples of challenges and activities related to green technology and environmental issues. The questionnaire for the focus group is available as an attachment (B) to the curriculum.

The main findings of the primary data analysis, including the main findings from interviews and focus group are presented in the chapter “Findings from the Study of Primary Data” and in the chapter “Active Learning in Action,” where we present examples of good practices, many of which we gathered during the analysis of primary data. Additionally, we applied the observations and insights from primary data analysis across this curriculum to determine the structure and preparation of other sections.

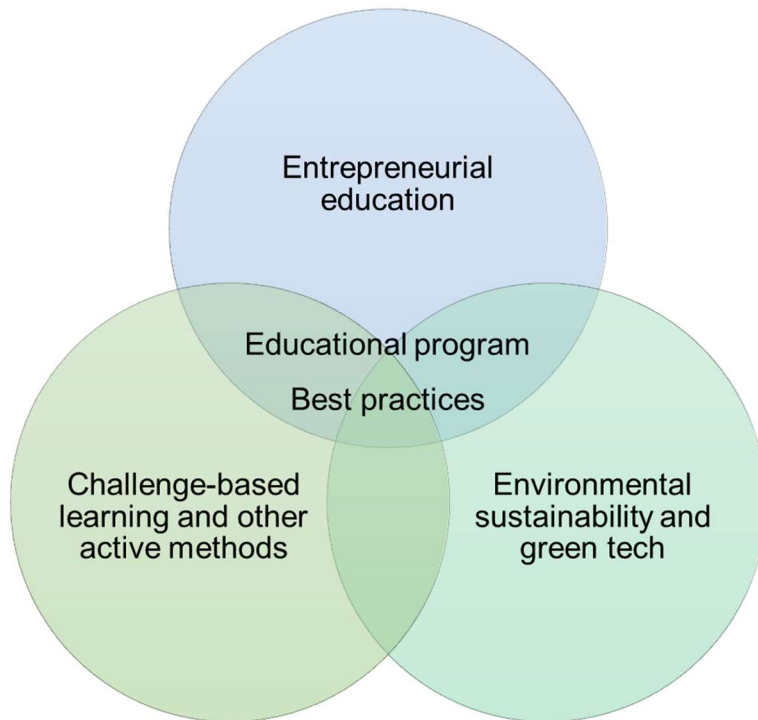


4.2 Analysis of secondary data

During the secondary data analysis, we conducted desk research and analyzed available survey data.

Desk research

Desk research entailed gathering information from previous findings in existing papers, studies, and reports. We conducted desk research on three major topics: a.) entrepreneurial education; b.) environmental sustainability and green technology education; and c.) challenge-based learning and other active learning approaches from the methodological point of view. We initially defined objectives, identified sources, analyzed all information, and organized and documented our research for reference.



Picture: Three areas of desk research

We not only recognized previous main research findings in each of these fields, but also, at the junction of these three topics, we followed the goal of identifying examples of previously mentioned good practices that we present within this curriculum. We focus on presenting examples of challenge-based learning and other active learning methods related to developing entrepreneurial skills in the context of environmental sustainability and green tech. In addition to identifying good practices, we used the results of our primary and secondary data analysis to create a modularly structured educational program.

The main findings of the desk research are presented in the following chapters in the continuation of this curriculum: Entrepreneurial education; environmental sustainability and green technology education; Fostering an entrepreneurial mindset through challenge-based learning and other active learning methods; and demonstrating active learning in action by providing examples of good practices that we identified.

Additionally, the desk research was also the basis for other parts of the curriculum, such as addressing the development of competencies holistically and tailoring the curriculum for secondary technical and vocational professions in BiH.

Analysis of available secondary survey data

In addition to the analysis of primary data, we explored the survey data to investigate the inclination of secondary vocational students toward entrepreneurship and to develop entrepreneurship skills and innovation abilities.

The available survey was performed by another GTECH partner, International Burch University (IBU), within the scope of WP 2: Gap analysis and action plan development, task 2.2.: Development of entrepreneurial mindset and skill instrument. Within this task, an extensive questionnaire has been devised measuring different elements of entrepreneurial mindset. The survey sample size is 1191 students from different vocational schools in BiH.



5 Entrepreneurial education

Entrepreneurship matters (Jeraj, 2014). At the beginning of the whole process, entrepreneurial education stands as a dynamic realm, empowering individuals with the tools to spot opportunities, navigate risks, and generate value in diverse landscapes.

Entrepreneurship education is the building of knowledge and skills either “about” or “for the purpose of” entrepreneurship generally, as part of recognized education programs at primary, secondary, or tertiary-level educational institutions (Guemes et al., 2010). Back in 2004, the European Commission suggested to all EU members including entrepreneurship education in the national curriculum from primary school to university (Remeikiene, Startiene, and Dumciuviene, 2013).

Rooted in both theoretical frameworks and practical applications, entrepreneurial education fosters a culture of innovation and problem-solving. For example, Vesper (1982) argues that consulting with experts increases the chances of success for entrepreneurs. Lussier (1995) showed, through empirical research, that entrepreneurs who had received mentoring from experts were more successful than those who had no entrepreneurial education. On the other hand, Timmons (1994) put strong emphasis on entrepreneurship skills, and entrepreneurship education should teach these skills, such as the ability to create a high performing culture, the ability to connect and network, and the ability to lead and work in teams. According to Cho and Lee (2018), to succeed, entrepreneurs should have the necessary skills to deal with entrepreneurial problems.

Entrepreneurial education encompasses a range of learning experiences aimed at developing entrepreneurial competencies among individuals. These competencies include creativity, opportunity recognition, resourcefulness, resilience, and adaptability (Fayolle & Gailly, 2015). Further, Jeraj, Antončič, and Marič (2020) claimed entrepreneurial curiosity is an important factor in predicting entrepreneurial intentions in the context of entrepreneurial education. Other research from Kuttim et al. (2014) confirmed, based on the empirical study of 17 country students, that participants in entrepreneurship education showed higher entrepreneurial intentions. Further, McGrath (1999) said that through entrepreneurship education, students can study the factors that lead to failure in entrepreneurship and avoid the same mistakes.

Based on that, it is rational to predict that the basics of entrepreneurial education encompass several key elements, such as entrepreneurial mindset, risk-taking and resilience, business skills, idea and opportunity recognition, curiosity, creativity and innovativeness, entrepreneurial intentions, ethics and social responsibility, and others.

Recent cases from practice and literature indicate a shift from traditional methods of entrepreneurial education towards more case study oriented and outcome-oriented factors such as motivation, attitude, and behavior. This reflects a broader understanding of entrepreneurship, not just as business creation but as an entrepreneurial mindset and a set of competencies that can be applied across various contexts.



6 Environmental sustainability and green technology education

Environmental sustainability and green technology education (Fošner, 2023) are becoming increasingly important as the world faces the challenges of climate change and resource depletion (Business and Sustainable Development Commission, 2017; Epstein and Rejc Buhovac, 2014; Rejc Buhovac et al., 2018). To address these challenges, it is essential to educate the next generation of workers about the importance of sustainability and how they can contribute to a greener future. With an emphasis on environmental stewardship, students are not only prepared for future professions in green technologies but also develop a lifelong dedication to it.

The Need for green technology Education in Secondary Vocational Schools

Vocational secondary education plays a pivotal role in preparing students for specific trades and careers, making it an ideal platform for integrating green technology education. By focusing on practical skills and job readiness, vocational education can directly align with the needs of the green technology sector, which is rapidly expanding and evolving. Industries such as renewable energy, sustainable agriculture, green construction, and environmental management need skilled professionals who are not only technically proficient but also versed in sustainability practices.

Developing a curriculum that incorporates environmental sustainability and green technologies requires a multidisciplinary approach. Courses like biology, chemistry, physics, and mathematics are fundamental, but they should be taught in ways that highlight their relevance to solving environmental challenges. Additionally, courses specifically designed around green technologies, such as solar energy installation, wind turbine maintenance, sustainable agriculture practices, and green building standards, should be developed and continually updated to reflect the latest advancements in the field.

Collaboration with industry is crucial for the success of green technology education in vocational schools. Partnerships with local and international companies can provide students with hands-on training opportunities, internships, and exposure to real-world projects. These collaborations also help ensure that the curriculum remains relevant to the current job market and technological trends.

Incorporating case studies and project-based learning into the green technology curriculum can significantly enhance students' understanding and engagement. Working on real-life projects, such as designing a sustainable irrigation system or conducting an energy audit for a local business, allows students to apply their knowledge in practical settings. These experiences not only reinforce learning but also develop critical thinking, problem-solving, and teamwork skills, which are invaluable in any career path.

One of the main challenges in integrating environmental sustainability and green technology education into vocational secondary education is the need for qualified teachers. Educators must not only have expertise in their subject areas but also a deep understanding of sustainability principles and green technologies. Professional development programs and partnerships with universities and research



institutions can help address this need by providing teachers with the necessary training and resources. Another challenge is the initial cost of updating facilities and equipment to support a green technology curriculum.

There are many benefits to green technology education, both for students and for the environment. For students, green technology education can provide them with the skills and knowledge they need to succeed in high-demand jobs. It can also help them to develop a sense of environmental responsibility and to become more engaged in their communities. For the environment, green technology education can help to reduce pollution, conserve resources, and mitigate climate change. It can also help to create a more sustainable economy and improve the quality of life for everyone.

Environmental sustainability and green technology education (Fošner, 2023) are essential for a sustainable future (Fink and Peterlin, 2017). By developing a relevant curriculum and collaborating with industry, vocational schools can play a crucial role in advancing sustainability and green technologies. As the world continues to confront environmental challenges, the importance of educating young people in these areas cannot be overstated.



7 Fostering competencies through challenge-based learning and other active learning methods

Active learning methods encourage engagement (Smith et al., 2005; Wiggins et al., 2017) by requiring students to fulfill specific learning activities and to reflect on their own activities. Active learning methods can include activity-based (Anwer, 2019), case-based (Kolodner et al., 2013), project-based (Membrillo-Hernández et al., 2019), problem-based (Kolodner et al., 1996), and challenge-based learning (Baloian et al., 2006), as well as all other actions that encourage students to actively participate in the learning process (Fink and Cestnik, 2023A, Fink et al., 2023B). Related areas include game-based learning, discovery-based learning, and inquiry-based learning (Pedaste et al., 2015). Diverse active learning methods can complement the usage of others, as is the case with flipped learning, which can be used in combination with other methods encouraging active participation.

Active learning methods (Drew and Mackie, 2011) support students to turn from a passive observer and listener not only into an active observer and active listener but also into someone who significantly co-shapes the learning process by sharing their own opinions, ideas, reflections, questions, examples, problems, or by developing unique solutions, products, or services. The application and usage of active learning methods necessitates consideration of a context, a student group, and their socioeconomic status (Gorski, 2013).

Active learning methods might allow students to co-create and co-design the specific dynamics of the course by providing their own insights, thinking, investigation, and creative work. In some cases, active learning methods allow students to reshape the assignments they need to solve so that the assignments become tailored to their specific and unique situations and experiences. With that, students gain a sense of control over their own learning path, which may encourage them to take on more initiatives about their own future career development.

Active learning methods encourage students to discover and explore their own specific interests, rather than just following a predetermined path and outside directions. They allow students to experiment, to take risks, to develop trust in themselves, and to display their own creativity rather than refraining from trying out something new.

Active learning methods, such as activity-, case-, project-, problem-, and challenge-based learning, share many common characteristics. To comprehensively address the characteristics of challenge-based learning, it is necessary to know how it relates to other active learning methods. Challenge-based learning is based on the principles of problem-based learning (Johnson and Adams, 2011). Besides, challenge-based learning usually necessitates the application of project-based learning and its principles (Baloian et al., 2006), which also typically relies on exploration of a real-life problem (Alqubati, 2024) but focuses on the process of carrying out a project and finding a solution (Membrillo-Hernández et al., 2019). On top of that, challenge-based learning often includes the application of experimentation approaches (Baloian et al., 2006), including the trial-and-error approach.



Challenge-based learning tackles real-world problems, which can range from personal, community, to global challenges. This distinguishes it somewhat from problem-based learning, which predominately includes fictionally designed problems and focuses more on the process of solving problems than the final solution (Membrillo-Hernández et al., 2019), as does project-based learning, for example. Hence, the focus of problem-based learning is on developing reasoning skills and applying knowledge (Membrillo-Hernández et al., 2019).

Within challenge-based learning, students explore real problems that do not have a predetermined solution in collaboration with internal and external experts of the communities (Membrillo-Hernández et al., 2019). Since solutions to challenges are not predetermined, by developing solutions, students generate new knowledge.

The active learning methods listed above differ not just in terms of complexity and duration, anticipated final product, assessment, and collaboration requirements, but also in terms of students' independence and the teacher's role.

Activity-based learning includes “short, focused tasks or activities” (Alqubati, 2024) designed to target specific learning objectives and reinforce specific concepts or skills (Alqubati, 2024):

- Complexity and process: Focus on recall, comprehension, and application.
- Independence and the teacher's role: guidance of the teacher is anticipated (Alqubati, 2024).
- Collaboration: It might be a task to be solved independently or in small groups. If it includes collaboration, it is usually at a lower level compared to project-based learning.
- Duration: Within a few hours or within class.
- Product and Assessment: Feedback on completed activities, tests, and quizzes, reflecting mastery of specific learning objectives such as reinforcing key concepts or skills (Alqubati, 2024).

Case-based learning and case-based reasoning engage students to base their thinking and reasoning on previous experiences (Kolodner et al. 2013). One can apply the lessons learned in a new situation and tackle new problems.

Project-based learning engages students to carry out a project and perform specific tasks that require solutions (Membrillo-Hernández et al., 2019).

- Complexity and process: It can include the generation of a product or service, its implementation, and the presentation of a solution (Membrillo-Hernández et al., 2019). It can also include in-depth research, analysis, and synthesis of information to solve complex problems or address a real-world issue. “Students apply “higher-order thinking skills, such as problem-solving, critical thinking, analysis, and evaluation,” from “multiple disciplines to solve authentic problems.” (Alqubati, 2024)
- Independence and teacher's role: Students work independently, in the sense that they “take ownership of their learning, manage their time, and make decisions.” (Alqubati, 2024) A teacher takes on the role of a facilitator or project manager (Membrillo-Hernández et al., 2019).



- Collaboration: “Students collaborate and work in teams to research, plan, and present their findings.” (Alqubati, 2024)
- Duration: several days, weeks, or even months.
- Product and Assessment: The final product, implementation of the solution, or presentation reflects “ability to solve problems, application of skills, critical thinking, and presentation skills” (Alqubati, 2024).

Problem-based learning resides in solving a relevant, problematic situation that is often fictionally designed. The focus is more on the learning process and the process of problem solving than on the final solution.

- Complexity and process: The students test and develop their reasoning skills and apply their knowledge. They “analyze, design, develop, and execute.” (Membrillo-Hernández et al., 2019).
- Independence and teacher’s role: A teacher is a “facilitator, guide, tutor, or professional adviser” (Membrillo-Hernández et al., 2019).
- Collaboration: can be independent, but it often requires group work.
- Product and Assessment: The ability to apply the knowledge, reasoning, and problem-solving skills. The focus is on the development of problem-solving skills and reasoning.

Challenge-based learning tackles real-world problems (Membrillo-Hernández et al., 2019):

- Complexity and process: Students “analyze, design, develop, and execute the best solution” for real problems that do not have a pre-determined solution (Membrillo-Hernández et al., 2019).
- Independence and teacher’s role: A teacher is a coach, co-researcher, and designer.
- Collaboration: This typically requires collaboration with teachers as well as with internal and external experts in the communities.
- Product and Assessment: The focus is on the learning process. Students often generate new knowledge.

To comprehensively address the challenges at hand, the team can follow the following phases and steps in addressing the challenge (The Challenge Institute, 2018):

- Phase 1: Engage (big ideas, essential questioning and essential question, challenges)
- Phase 2: Investigate (guiding questions, guiding activities and resources, synthesis)
- Phase 3: Act (solution concepts, solution development, implementation and evaluation)

8 Findings from analysis of primary data and secondary survey data

The findings from the analysis of primary data, including interviews and a focus group, as well as the analysis of secondary survey data, are mostly consistent but emphasize somewhat different aspects and perspectives. We further present these aspects according to the method applied.

8.1 Findings from interviews

We identified the following insights from the interviews:

- It is motivating when teachers use challenges that entrepreneurs actually face.

“I use challenges that the entrepreneurs actually face, such as creating a marketing mix.” (Interviewee 1)

“When I invite companies to the class, I encourage companies to present a challenge that students can solve. This is beneficial for all, for students who learn, and for companies that gather new ideas. That’s exactly what we will do in one of our next sessions. The company will present their challenge in marketing, and students will be looking for new ways to be even more creative. We will see what our students can create. In our concrete case, the students challenge is to expand sales of a certain product and market it to a specific target population. Students will concretely plan who and what will be done. In the end, they get rewards that are practical and symbolic. This motivates them afterwards.” (Interviewee 1)

- It is crucial to connect theory with practice. Without practical demonstrations, the vocational schools cannot be as effective. It is motivating when teachers use practical demonstrations, storytelling, and design assignments as concretely as possible. Since it is important to actively involve students in the learning process at every point, we suggest that students get a practical assignment that they have to fulfill either before, during, or after the demonstration of practical skills. Examples of practical assignments that teachers can use in this case, such as students’ reflections or questions, are described in the section on good practices.

“Using concrete, practically oriented examples and challenges is crucial. I might explain theory by providing practical examples, and I might check whether students understood theory by asking them to solve a practical assignment. It is necessary to connect theory with practice. It is crucial to show how the theory, which is abstract and imaginary, showcases itself in practice. I believe that vocational schools cannot be as effective without linking theory with practice.” (Interviewee 1)

“I tell them interesting stories to motivate them and to show them what is possible and what is not. I use interesting examples of people from everyday life who have succeeded or failed in life and how much effort they put in.” (interviewee 3)

- Teachers should establish the link between theory and practice and encourage and integrate collaboration with business experts and entrepreneurs.

“It is essential to establish the link between theory and practice. For example, after a lecture on business documentation, I invited the company to present the documents it encounters.” (Interviewee 1)





“Just to give you an idea, the teacher of practical lessons in the automotive mechanic program must have at least three years of experience in the automotive mechanic profession, meaning someone from an industry background who has years of work experience and realistically presents the picture to the students. Students have access to a track, workshops, and top-notch equipment that they can use, better than at many employers. This is how it's done, by inviting someone from the practice.” (Interviewee 3)

- The teachers highlighted the importance of involving guests from practice in the pedagogical process and in pedagogical lessons. It is extremely important for all students that teachers establish a bridge between theory and practice by supporting theoretical and abstract concepts with practical examples and hands-on experiences.

“We keep inviting different guests from practice to tell their story.” (Interviewee 1)

- Teachers can use different learning materials, such as textbooks, workbooks, worksheets, audio, video, reading materials, magazine articles, and professional articles. It is important that the teacher examine the quality and source of the learning material before suggesting it to students. Teachers could include different learning materials, such as reading, audio, or video content. They should assess the quality of the source and formulate an assignment that aligns with the provided learning material.

“Students prefer dynamics. Hence, it is important to use different kinds of learning materials. Besides, I find that reading literacy is too low and should improve, so the inclusion of reading materials, for example, professional articles and books, is absolutely necessary. Quality audio and video learning materials as supplements can also contribute to students' literacy. (Interviewee 1)

“I find it absolutely very important to update the learning material and to ensure the quality of external learning material. I use up-to-date learning materials of good quality. For example, I previously used documentaries from the archives of RTV Slovenia and the BBC. Based on these quality documentaries, I designed an assignment for students. They must, for example, write a reflection on what they have learned and provide their personal opinion about the topic and the documentary. In that way, they really deepen their knowledge about certain content.” (Interviewee 1)

- Rewarding students is motivating and drives their actions. Rewards can be practical and symbolic. Rewards can include travel.

“Within an international project, I could select students who could travel to Norway. I prepared a number of assignments for the students. The choice of students was straightforward. The students who were more active, who gathered more points, and who fulfilled more assignments were rewarded by the possibility of traveling to Norway.” (Interviewee 1)

- There are many ways to promote environmental sustainability and green technology innovation. It all starts with the introduction of environmentally friendly practices at the school. Schools can partner together to increase each other's efforts toward environmental sustainability.

“I led an international project through which we implemented many environmentally friendly practices in partnership with other schools and companies. We implemented various campaigns within the project, including the collection of second-hand clothes and other reusable materials. Campaigns resulted in new ideas. We encouraged waste separation and humanitarian actions such as the collection of corks and the design of an environmental corner, where we publish a





new thought weekly to encourage students to be more active and driven in general and environmentally aware and friendly. We organized discussions and guest visits on environmental topics.” (Interviewee 1)

“In general, we follow the circular economy, try to get all the products and all the material I use at lower prices than waste material, and also throw back any waste we produce into this cycle, so there's practically no waste left. (Interviewer: So, students work with recycled material to make new products?) Yes, students work with recycled material to make new products, and at the same time, they also bring materials from home that they want to put into our system, and then we sell these discarded products to the municipality, and with that money, students can go on their senior trip and pay for the senior prom.” (Interviewee3)

- Messaging and communication are critical components of raising awareness about environmental issues. Students and instructors can prepare thoughts and ideas to place on the notice board to raise environmental awareness. Students can craft a compelling social media post detailing the actions they've taken.

Every week, I strive to publish a new thought in our school's environmental corner, aiming to raise awareness among all of us about our environmental consciousness. A thought that knocks on us all.” (Interviewee 1)

- Teachers or students can organize workshops using recycled or reusable materials.

“We organized workshops using recycled or reusable materials.” (Interviewee 1)

- Teachers should not prejudge somebody's abilities. If teachers believe in students and include them in all stages of the process, students might surprise everyone. In heterogeneous groups, teachers should encourage collaboration between students, encourage students to help each other, and assign a student to mentor another student, if needed. Teachers should treat everyone the same.

“It is really important that, one way or another, we all treat everyone in the same way. We must not prejudge somebody's abilities and say in advance that they can't. We do not know that. They might surprise not only us teachers but themselves as well. It can be worth it to believe in their development and include them in all stages of the process.” (Interviewee 1)

- The teachers we interviewed do not experience many problems with overlapping content. They work together, both formally and informally, to ensure that the lesson plans do not overlap too much. However, according to their experiences, the presentation of similar content in different contexts can be beneficial. Therefore, teaching skills across different courses and contexts provides students with the opportunity to consolidate their knowledge.

“We teachers work together, both formally and informally, to ensure that the lesson plans do not overlap too much. However, at times, it seems to me that it is beneficial for students to cover some learning material multiple times in different contexts and courses in order to consolidate their skills and knowledge. For example, business communication and preparation of business documentation are addressed from different perspectives in the business communication course, English course, and Slovene course, and still, we observe too many times that at graduation, students still lack certain skills and knowledge that they should master.” (Interviewee 1)

- Teachers should enjoy the support and affection of the school management when organizing visits to the companies and inviting guests from practice, as well as with other curricula and extracurricular activities.





“Students enjoy collaborative activities. They like to go out of school and visit a company, and they enjoy that we visit many places. Students like dynamic content.” (Interviewee 1)

- An internship is an important part of the curriculum. However, some students benefit more from internships than others. Therefore, it would be worthwhile to reconsider introducing control mechanisms to check what students really learned. This could include that students need to prepare a report about their internship and a presentation of what they learned. Internships could be assessed on a pass-or-no pass basis.

“It should be considered that students should devote more time to practice. Instead of two weeks, maybe a few months.” (Interviewee 1)

- We should emphasize topics related to digital development, environmental sustainability, and the development of communication and entrepreneurial skills in both the in-school curriculum and extracurricular activities. In general, we should invest more effort in strengthening relationships with companies and developing joint projects with the business sector.

“Students need to develop themselves as professionals and entrepreneurs. Students should develop their digital skills. They should also develop collaborative skills, communication skills, and entrepreneurial skills and devote time to personality building. Special attention should be devoted to their career plans, and they should receive directions about career guidance. They should improve their communication skills and be able to effectively present themselves and communicate about their mission and their future position on the market.” (Interviewee 1)

“Environmental sustainability is addressed across different courses at our school. The teachers integrate this content into their own courses, but in my opinion, this is not enough. This topic deserves to be addressed comprehensively. These topics should be addressed within an independent course and within extracurricular activities.” (Interviewee 1)

- We need to motivate and reward teachers for their efforts. We can achieve this by implementing a fair and resilient promotion system. Another way to motivate teachers is to enable the most prosperous teachers to attend exchanges or excursions. Similarly, allowing the most active students to participate in exchanges and excursions can reward them. Teachers that we interviewed feel that they have a lot of opportunities for professional development and training. Professional development and training are part of their job anyway. On the other hand, teachers agreed that introducing control mechanisms or supervising the implementation of the recommended curriculum was not desirable. In their opinion, the consequences and effects of introducing supervision would be negative.

“Teachers are more motivated to attend additional trainings when they gather points that eventually lead to promotion. Promotion can be very rewarding for every teacher. However, it is very important that the training content be refined, up-to-date, and of good quality, with good, interesting guests, effective, and short. The messages conveyed should be brief and concise. The video content should not be too long, maximum 30 minutes long. From time to time, it makes sense to organize training for the entire school’s team of teachers, for example, on entrepreneurship topics.” (Interviewee 1)

“If a school wants to implement such activities, it is very important to be aware of how important it is to motivate teachers. Teachers may find it rewarding to be allowed to travel, earn other advantages, or even be given an additional contract for additional work if such work is required.” (Interviewee 1)





- The teachers pointed out how important it is for secondary vocational school students to try out the very concrete assignments they have to solve. Teachers need to make sure that vocational school students are able to prepare an exemplary business letter on one A4 page. Business communication, including the preparation of written business documents, is essential for entrepreneurs.

"I teach the course of business correspondence, where we prepare letters, offers, and inquiries. Interestingly, some young people have a problem drawing up an ordinary letter. The digital generation, overloaded with phones, encounters difficulties in practical tasks such as writing text, designing a letter, preparing an envelope, and sending a letter. /.../ As part of the course on communication in the business environment, we deal with non-verbal communication, first impressions, and so on. I put emphasis on life's practical experience and knowledge and require them to be able to explain the fundamental concepts." (interviewee 2)

- Students first need to be able to solve simple assignments and then gradually progress from less demanding assignments to more demanding ones. Introducing challenges such as developing an idea from start to finish and realizing it in practical demonstration by students is, according to our interviewees, more appropriate for students in the final year of secondary vocational school than for freshmen.

"In the first year, I cannot expect too much from students. During the fourth year, I have the ability to tackle several more complex topics, some of which are not part of the secondary school curriculum. Sometimes I am worried to notice that students in the final year of secondary school are not yet proficient in lower-year study material. I wonder if knowledge is diminishing from year to year and from generation to generation. Otherwise, I prefer to tell students more rather than less. /.../ In the fourth year, students prepare business plans, where they develop a business idea from start to finish. I hope that they get at least an approximate sense of what it means to develop a business idea, discuss a business problem in the business plan, and develop a solution that could then be realized in the future. In that, they sometimes lack prior knowledge. Perhaps we expect too much. We cannot expect a student to develop a business idea, prepare a business plan in the first year, but in the fourth year we can already expect this." (interviewee 2)

- To tailor the learning process to the students of secondary vocational schools, we suggest considering involving live demonstrations of practical skills by practitioners who are already working in the profession in addition to story-telling and explaining about practical experiences.

"Teachers should include concrete topics as much as possible, explain through their own practical experience, and use modern methods of teaching. We have to deal with the digital generation. In different ways, students should be encouraged or directed to think critically. This is actually missing. /.../ Linking theory and practice is essential." (interviewee 2)

- Teachers possessing their own previous practical or entrepreneurial experiences can draw on examples from their own practices. Since this can be particularly valuable, the school principals should consider hiring teachers with previous experience. The teachers also recognized the need to share positive and negative experiences and examples from the practice. Sharing examples of good experiences from practice is very motivating for young students, while sharing negative experiences might stimulate thinking about what obstacles entrepreneurs face and what skills they need to overcome them.

"This year I teach seven economic courses. I have many years of teaching experience, I am a doctor of economic sciences. Above all, my added value lies in the fact that I have actually been an active entrepreneur for 25 years. So, I





started 30 years ago as a sole proprietorship, and I am still the CEO and co-owner of the company today. Up to two years ago, we dealt with cable TV, the Internet, all telecommunications services, and the sale of the copyright of Slovenian cable operators. I have been active in the commercial, sales, and marketing business for 25 years, and therefore I can actually share my practical experience with students in every lesson. In fact, the lesson does not pass without me including positive as well as negative practical experiences and examples. I think that, based on examples, students can remember the content much easier than the theory itself.” (interviewee 2)

- It is essential that teachers include novelties and present students with recent developments and innovations in different fields, such as digital transformation, for example. Teachers should update content on a regular basis.

“The curriculum should be updated regularly. We might even be able to replace some content and add content that is in line with trends, for example, topics related to digitalization or sustainable development.” (interviewee 2)

- Assessment can include the assessment of students’ different abilities; for example, assessment can consist of a demonstration of practical skills, an oral exam, and a written exam.

“Within an international project, I prepared a number of assignments for students. For example, students had to prepare an effective post about our project, which we could potentially share on Instagram. Then, the students also had to prepare something concrete, for example, containers for waste separation at the school. The students had a range of different activities, from writing to preparing concrete products. Those students who became more involved were those who were more active. At the end of this point, I added up the points, and the student who scored the most points won a prize—in our case, a trip abroad. Yes, this is an example of good practice.” (Interviewee 1)

- Teachers should deal with questions on how to arouse students’ interest and motivation. It is known that any distraction from the learning content seriously compromises learning abilities. Maintaining the attention of students is vital for achieving outstanding results. The teachers that we interviewed find it beneficial for the learning process to have students’ hand over their mobile phones at the entrance to the school.

“Sometimes I get the feeling that students are not interested in anything, so sometimes I'm disappointed. Students who would have been interested in something more in-depth or broad than the mandatory topics should be searched with a “flashlight.” I always tell them to use my knowledge for as long as they have the opportunity. I teach a lot of courses at various vocational schools, and the interest of students in vocational schools is a key problem. Perhaps it is different at grammar schools. Perhaps it is a social problem. Phones are poison for students. Students should leave their phones out of the classroom. Every teacher should strictly require students to leave their phones in special places at the school entrance. If all teachers consistently demanded this from students, it could be better. Not every distraction from the subject matter is good for students.” (interviewee 2)



8.2 Findings from the focus group

The focus group yielded the following insights:

- Focus group participants emphasized on several occasions that it is crucial that students of vocational secondary schools learn from concrete practical examples, demonstrations, and successful companies. Students love to solve real-world problems and collaborate on real projects. They enjoy realizing their ideas through concrete, practical assignments.

“The students like it best when they work on an idea; they love to work to create something. Currently, we are working on environmental awareness projects, and we are seeing some great work from students there.” (FG participant 1)

“We, as a school, prepare a fair of work, economy, and trade - we invite our local companies. Last time, we had 34 stands, where our students promoted their ideas and learned from entrepreneurs.” (FG participant 7)

“Students that are more interested in entrepreneurship try to apply to various competitions, such as the World Skills.” (FG participant 5)

- Focus group participants reported that participating in Erasmus and other initiatives provides valuable experiences. They value the experiences they gain from partner projects.

“When our students go abroad within the Erasmus mobility framework, when they see actual companies abroad, then they see the potential of entrepreneurship, and they bring their own experiences home.” (FG participant 5)

- The effort of students and teachers is mostly based on a voluntary basis. Neither the teachers nor the students receive noteworthy rewards for the time and effort invested. A more robust incentive system should motivate students and teachers for their efforts.

“It often happens that students have to do mandatory internships during their vacations. Then they come to us, asking, Why do we have to work while others have their vacations? Will we get paid for this work?” (FG participant 7)

“Sometimes, it is a bit hard to find participants for our entrepreneurship related activities, since they are not part of their regular curriculum.” (FG participant 5)

- Systemic changes are needed to support more flexible adaptations to the curricula. Teachers and schools encounter numerous organizational challenges when implementing changes. It is difficult to introduce any change to the system. The expectations of stakeholders regarding the necessity of changes should be inquired into.

“We are facing a systemic challenge. We do not have adequate support to change the curriculum in the sense of more innovative teaching or to include entrepreneurship in it. We are constantly facing administrative difficulties. In short, we are not ready to implement changes in a short space of time.” (FG participant 7)

“We have the support of our director (to include more extracurricular activities of entrepreneurship), but we still need to respect the legal framework, and everything needs to be approved by the Ministry.” (FG participant 1)

- Introducing extracurricular activities presents significant problems. The educational activities frequently keep students completely occupied. Some students are already partially working. They lack the time and resources to participate in extracurricular activities. It is difficult to engage students in extracurricular activities.

“If we are not teaching entrepreneurship during the regular curriculum but instead outside of the usual hours of work, for example, at the weekend, we are constantly faced with difficulties getting both the students and the teachers to join these activities. /.../ There is always this question: if I work longer hours, who will pay me for this?” (FG participant 5)

- Entrepreneurship is generally not a separate course in the curriculum. This represents a major challenge. The teacher may, however, include entrepreneurial topics such as the preparation of business plans in different courses. Systemic adjustments should be introduced.

“I think every technical program should have an entrepreneurship course included.” (FG participant 3)

- It would be essential to strengthen cooperation and networking between fellow teachers. This would allow everyone not only to recognize their own challenges but also to learn about the challenges other teachers are facing. By cooperating and creating communities of practice, educators can exchange good practices and collaborate with others in designing their content to provide students with comprehensive learning materials. The lack of cooperation among fellow teachers results in a lack of synergistic effects.

“People only see the course they teach, and this is it. Sometimes, the students that are taught entrepreneurship must be absent from other classes, and other teachers could have more understanding of this.” (FG participant 1)

- We need to link more with practice and local businesses. Cooperation with practice should take place in a way that rewards students for their efforts. We should also reward businesses that mentor students for their efforts. Educating and mentoring students requires resources from businesses, and without rewarding businesses, it is challenging to find companies that would like to cooperate.

“I find this another obstacle to entrepreneurship: none of the significant local entrepreneurs did not find time to come to our fair – they said we have no interest in this. Only smaller businesses wanted to attend.” (FG participant 7)

- When introducing changes, teachers and schools are faced with a number of organizational obstacles. It is difficult to introduce any change to the system. What stakeholders expect should also be asked in relation to why changes are needed.

“I don't think we're generally ready for some changes in a shorter period of time. But, there are some of us who are trying. We have encountered numerous obstacles and challenges in various fields, and presently, there are numerous questions related to dual degree programs.” (FG participant 7)



- Students often want to start their own businesses, but they don't actually start one. Students have many ideas but do not know what to do with them. They need guidance. For example, electrical engineering, mechatronics, and computer science students should already be thinking about the problems that they can encounter when they start their own business. Students need more support to properly assess their chances of acting independently in their own business rather than just working within a particular organization.

“The students should be more encouraged to act in future as independent entrepreneurs and not rely solely on other companies for employment.” (FG participant 5)

“The implementation of entrepreneurial ideas requires financial resources. Given the limited financial resources available at the school, we, along with the students, can only support and realize certain number of ideas.” (FG participant 2)

- Students are interested in what they need to do concretely. Usually, they want to do only what is mandatory. Then they ask themselves whether they can earn something, whether this is required, and whether they benefit. Otherwise, they are not interested.

“I prefer teaching methods that include concrete examples or teaching through practical activities.” (FG participant 2)

“Students are primarily interested in the ultimate goal, what they need to do to complete the course.” (FG participant 5)

“When teachers just do what they're told without encouraging students in any way. And when professors lack creativity in their instruction. And if students believe that they will not utilize or need the knowledge, or that they will not earn anything from it one day, they may lose interest.” (FG participant 5)

- Entrepreneurial competencies are and need to be developed in courses other than entrepreneurship. For example, students also develop entrepreneurial skills within the courses Project Management and Construction Project Management.

“Entrepreneurial competencies should be developed in other courses, not just in the entrepreneurship course. Some topics could definitely be integrated into other courses as well.” (FG participant 6)

- It is important to consider the diverse interests of each student.

“It depends on who the teacher is and what kind of students they are. Do they have an interest in being independent entrepreneurs someday? It is important that the topics covered in class are tailored to them.” (FG participant 5)

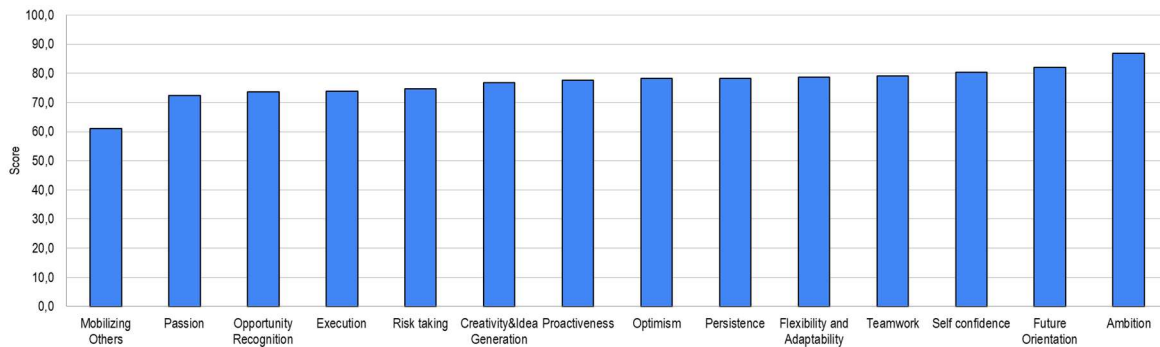


8.3 Findings from the survey among students

Within the WP2, International Burch University has distributed an extensive survey of entrepreneurial traits amongst the VET students in the region. The survey is used to measure the entrepreneurial mindset and skills of students. It therefore represents the “starting point” of entrepreneurial trait development for the curriculum. The survey (attachment C) measured the following traits:

- Risk-taking: willingness to take calculated risks in pursuit of opportunities.
- Proactiveness: initiative and a forward-thinking approach to seizing opportunities rather than merely reacting to them.
- Passion: deep enthusiasm and dedication to one's endeavors.
- Ambition: strong desire and drive to achieve goals and succeed.
- Future Orientation: Focusing on future possibilities and trends rather than being solely present-focused.
- Creativity and Idea Generation: The ability to generate novel ideas and think innovatively.
- Execution: the ability to turn ideas into action and achieve results.
- Self-confidence: belief in one's abilities and decisions.
- Optimism: a positive outlook and belief in the potential for success.
- Persistence: determination and resilience in the face of challenges and setbacks.
- Teamwork: ability to work effectively with others and leverage collective strengths.
- Opportunity Recognition: Capacity to identify and capitalize on opportunities in the environment.
- Flexibility and Adaptability: willingness and ability to adjust plans and strategies in response to changing circumstances.
- Mobilizing Others: Capability to inspire and motivate others to contribute to the pursuit of goals.





Graph: Entrepreneurial Mindset Trait Score

Based on the findings of the self-assessment of entrepreneurial mindset traits, the students in the survey (n = 1191) **scored highest on ambition, future orientation, and self-confidence**. The students assessed ambition at 4,35, future orientation at 4,10, and self-confidence at 4,02 on a Likert scale from 1 to 5.

The **lowest scores, on the other hand, were attributed to mobilizing others (3,05), passion (3,62), opportunity recognition (3,68), and execution (3,70)**. Interestingly, no major differences between the genders have been identified. The widest gap is in the risk-taking trait, where males score 3,86 compared to 3,61 for females.

Leaving aside the “teachability dilemma” of entrepreneurial education, some of the self-acknowledged “lower-scoring” traits can represent the knowledge gap that the curriculum will try to bridge. This refers especially to opportunity recognition, execution, and mobilizing others, which are more teachable characteristics.

It is interesting to note that the average scores for any mindset trait are consistently higher for the population that has already attended any entrepreneurship education program compared with those who have not had any entrepreneurship education. This would seem to indicate that entrepreneurial training is beneficial. However, the difference in scores is so small that it is practically negligible.



9 Educational program

The educational program developed within the GTECH project is based on an analysis of needs, learning objectives, and key competencies.

9.1 Learning objectives and key competencies

Based on the identified desired competencies and learning objectives, we structured the learning content of the educational program into six modules: introduction, operations, finance, green market, innovation, and market entry. Each of these modules addresses important issues for green technology entrepreneurs. The **introduction** module covers idea generation and market opportunity and requirement identification. The **operations** module covers managerial and team topics, as well as challenge-based learning and other active learning methods. The **green market** module covers sustainability, development, and market analysis. The **innovation** module provides suggestions on how to increase creativity and innovativeness, which are essential skills for every green technology entrepreneur. Finally, the **market entry** module covers the development of an appropriate business model and pitching business ideas.

Before delving deeper into the educational program, key learning objectives and key target competencies are outlined below. They represented the for the modular educational program. In the conclusion of this chapter, considerations in tailoring the program for the vocational school setting are suggested. Effective teaching methods, in particular providing efficient feedback and assessment, are also discussed.

Learning objectives:

- **Promoting sustainability:** to educate students and other participants about green technologies and sustainable development.
- **Fostering innovativeness:** to encourage students and other participants to develop innovative green solutions to environmental challenges by utilizing green technologies and entrepreneurial approaches.
- **Promotion of entrepreneurship and entrepreneurial mindset:** to equip students and other participants with the knowledge and skills necessary to identify opportunities in the green economy, launch sustainable ventures, and navigate the green business landscape.
- **Encourage critical thinking:** to stimulate critical thinking and problem-solving skills through the analysis of real-world case studies from BiH, debates on environmental issues, and hands-on projects.

Envisaged Competencies of students:

- **Entrepreneurial mindset:** development and improvement of entrepreneurial mindset





characterized by creativity, innovation, risk-taking, and resilience, essential for identifying and capitalizing on opportunities in the green economy.

- **Green technical competencies:** acquisition of knowledge in green technologies, renewable energy systems, sustainable materials, and other environmental principles.
- **Sustainability context:** comprehension of the principles of sustainability, such as the ecological framework, social equity, and green-economic co-existence.
- **Critical thinking:** analysis and evaluation of environmental issues based on challenge-based learning, green technological solutions, and business strategies from multiple perspectives, including scientific and BiH business perspectives, considering their implications for green technologies and societal well-being.
- **Collaboration and communication:** work in interdisciplinary teams to achieve common goals based on challenge-based issues, ideas communication, and collaboration with diverse partners.
- **Problem-solving skills:** identification of environmental challenges, formulation of creative solutions, and implementation of green business models.



9.2 Modular structure of educational program

We identified important topics that participants must master in order to achieve the desired competencies and learning objectives. The educational program is designed modularly. The learning content is arranged into six modules, each of which covers important issues for green technology entrepreneurs.

INTRODUCTION	IDEA OPPORTUNITY
OPERATIONS	MANAGEMENT & TEAM CHALLENGE-BASED LEARNING
FINANCE	FINANCE PLAN COST ESTIMATION
GREEN MARKET	SUSTAINABILITY AND DEVELOPMENT MARKET ANALYSIS
INNOVATION	CREATIVITY INNOVATIVENESS
MARKET ENTRY	BUSINESS MODEL PITCH



We detailed the content of the aforementioned topics in order to provide videos, handouts, and other learning materials, learning resources, and corresponding assignments for a total of 20 hours of learning.

INTRODUCTION	<p>IDEA</p> <ul style="list-style-type: none"> • How to get an idea for green tech challenge-based learning case? • Techniques of idea generation for every phase of the challenge given by the company. • Environmental sustainability and green tech ideas. • Circular economy and ideas.
	<p>OPPORTUNITY</p> <ul style="list-style-type: none"> • Definitions of green tech opportunities. • From green tech ideas to opportunity. • Evaluation of the green tech ideas. • Green Tech opportunities and needs. • Green tech in energy production and transportation. • Understanding niche markets for challenge-based learning cases.
OPERATIONS	<p>MANAGEMENT</p> <ul style="list-style-type: none"> • Management and leadership. • Planning. • Decision-making. • Project management.
	<p>TEAM</p> <ul style="list-style-type: none"> • Teamwork. • Emotional intelligence. • Communication. • Motivation.
	<p>CHALLENGE-BASED LEARNING</p> <ul style="list-style-type: none"> • Active learning methods. • Challenge-based learning.
FINANCE	<p>FINANCE PLAN</p> <ul style="list-style-type: none"> • The relevance of establishing a financial plan. • How to establish an efficient financial plan? • How to prepare a budget for the start-up period? • Investment versus operational costs.
	<p>COST ESTIMATION</p> <ul style="list-style-type: none"> • Why is cost estimation important? • What kind of costs need to be estimated? • Potential costs during the start-up process. • Bootstrapping: How to reduce cost?





GREEN MARKET	<p>SUSTAINABILITY AND DEVELOPMENT</p> <ul style="list-style-type: none"> • Ideas in the context of environmental sustainability and green tech practice. • Integration. • Green agenda. • Green transition.
	<p>MARKET ANALYSIS</p> <ul style="list-style-type: none"> • Trend analysis. • Industry analysis. • Customer analysis. • Competitor analysis.
INNOVATION	<p>CREATIVITY</p> <ul style="list-style-type: none"> • Origin. • Usage. • Techniques. • Examples of good practice.
	<p>INNOVATIVENESS</p> <ul style="list-style-type: none"> • Individual level. • Company level. • Why and how about innovativeness? • Trends.
MARKET ENTRY	<p>BUSINESS MODEL</p> <ul style="list-style-type: none"> • Building blocks of the green tech canvas. • Manufacturing and green tech activities. • Pivot of the green tech canvas. • How to build a sustainable business model?
	<p>PITCH</p> <ul style="list-style-type: none"> • What is a pitch? • Structure and Techniques of a pitch. • Examples of a pitch.



A comprehensive platform developed within GTECH project enables students to develop a holistic understanding of green technologies, sustainable practices, and entrepreneurial skills. In the Green Tech Entrepreneurship Challenge Hub for challenge-based learning, students complete and defend green projects based on the real-life case studies of successful organizations in BiH.

The GTECH project encourages students to integrate and apply the knowledge and skills acquired in their course work in order to:

- Evaluate the green practices in a specific organization (challenge-based learning),
- Undertake a green research project in support of an organizational goal (case studies),
- Investigate current innovations in the green tech sector (literature research),
- Understand and prepare green entrepreneurship business models (green business modelling),
- Promote the green agenda and pitch their own projects (active implementation of the GTECH project),

In the collaborative framework of the GTECH project, students form teams to work on their specific initiatives. The online platform provides them logical and understandable guidelines to follow. In addition to that, the online platform includes videos of lectures and presentations of good practice cases. The educational program GTECH is divided into different modules.

Students' final project presentations include pitching their project outcomes to a distinguished audience consisting of their fellow peers, GTECH advisors, reviewers, and representatives from the companies associated with the selected case study.

Overall, the final project presentation represents the culmination of students' collaborative efforts, academic insights, and practical applications. It fosters a dynamic exchange of green ideas, promotes interdisciplinary learning with challenge-based cases, and underscores the significance of entrepreneurship in driving sustainable innovation.



9.3 Tailoring the program for vocational courses

When customizing and applying the curriculum in the vocational secondary setting, specific vocations should be considered.

We recommend that teachers tailor the information to specific vocational skills. For instance, the development of sustainable products in gardening will address distinct aspects not covered in the context of auto shop maintenance.

It motivates and piques students' attention when key entrepreneurship and green technology principles, as well as cooperation and problem-solving abilities, are introduced and developed inside a vocational field to which they can connect. Teachers who identify links between basic concepts and vocational areas may pique students' attention and offer practical projects.

Students in secondary vocational schools, if they have not previously done so, should eventually assume responsibility for steering their own learning path and accepting accountability for their learning. Teachers should use incremental scaffolding approaches to urge students to take responsibility for their own learning.

When tailoring the modules to the particular context, teachers can determine the learning and teaching methods, general purpose, specific learning objectives, detailed description of the content, information on mentoring, providing feedback, conducting assessments, and learning materials. Attachment (D) contains a template of a syllabus that teachers can use.

9.4 Teaching methods

Teachers can apply:

- Online learning modules in an online platform environment: online learning modules on topics such as “how to get an idea for a green tech challenge-based learning case,” “understanding niche markets for a challenge-based learning case,” “ideas in the context of environmental sustainability and green tech practice,” and others.
- Workshops on green technologies: students learn about the development from green tech ideas to opportunity, about the evaluation of green tech ideas, about green tech opportunities and needs, etc.
- Challenge-based learning: The curriculum's structure revolves around challenge-based learning, in which students work in teams to tackle real-world challenges related to green technology and entrepreneurship.
- Case study analysis: innovative workshops include analysis of real-life case studies of successful green businesses or sustainable projects. Students use group discussions and





presentations to extract lessons learned, identify key success factors, and apply relevant ideas and green business models to their own solutions.

- Guest lectures by experts: guests from the green technology sector, sustainable businesses, entrepreneurship, or environmental organizations deliver lectures and share their experiences. Thus, they offer practical advice and provide insights into industry trends and challenges.
- Entrepreneurship workshops: workshops focused on entrepreneurial skills such as green business model canvas development, market research in green tech, financial planning, and pitching. Students participate in challenge-based learning exercises provided by companies.
- Reflection and feedback: Experts, mentors, teachers, and others provide feedback to the participants, allowing them to assess their progress, reflect on their learning experiences, and provide feedback to their peers.

9.5 Proving feedback and assessment

Feedback and assessment are essential to the learning process. We recommend informing the students why a particular activity, content, or assignment is important. It is also essential to describe the assessment criteria in advance.

Provide examples that students can use as guidance. Focus your feedback more on what students should do compared to what they should not do. Feedback should enable students to improve and further develop their skills.





10 Active learning in action: examples of good practices

We designed examples of good practices for classroom use, incorporating both basic and complex activities, concrete projects, problems, and challenges intended for vocational secondary schools. The good practice examples, which are derived from primary and secondary data analysis, focus on environmental sustainability and green technology entrepreneurship. Even if not explicitly stated, teachers can use and adapt the good practice examples offered in the context of environmental sustainability and green technology entrepreneurship.

For each good practice example presented, we could delve deeper and determine the general purpose, specific learning objectives, detailed description, suggested steps that students should take to complete the work, suggestions on mentoring, providing feedback, conducting assessments, and learning materials, as well as the type of activity, duration of sessions, and time required for students to complete the task. Attachment (E) contains an example of a detailed plan for one of the activities: "Reflect on and communicate essential themes, impressions, and opinions from practical demonstrations, presentations, or visits to companies or organizations."

We further present the activities that teachers can undertake to foster entrepreneurial skills. The suggested activities can be applied in the context of environmental sustainability and green technology entrepreneurship. These activities can be performed either as curricular or extracurricular.

- Developing communication and reflective skills is essential for entrepreneurs. The activities, assignments, problems, projects, and challenges that students need to address include:
 - *Reflect on and communicate essential themes, impressions, and opinions from practical demonstrations, presentations, or visits to companies or organizations.*
 - *Prepare meaningful questions for practical demonstrations, presentations, or visits to companies or organizations.*
 - *Practice business presentations, including presenting oneself, presenting oneself as an entrepreneur, and presenting a company and its position on the market.*
 - *Showcasing verbal and nonverbal business communication.*
 - *Present yourself, including who you are, what your mission is, where you see yourself, and in what direction you want to develop.*
 - *Prepare a career plan.*

- Preparation and management of business documentation and business communication are skills that vocational secondary school students should master. These skills are an important part of every business, and when a student intends to establish a start-up after schooling, for example:





- *Prepare different types of written business documents. For example, prepare an exemplary business letter on one A4 page and send it by email. For example, prepare business documents that are required when setting up a company.*
- Demonstration of concrete practical skills represents an opportunity for students to showcase their abilities. During the demonstration of concrete practical skills, teachers can face the students with hypothetical problems that may occur in real practice. Students are required to address those situations and solve the challenges. For example:
 - *Demonstrate concrete technical hands-on skills and solve challenges that might occur. Teachers prepare hypothetical problems that may occur in real practice and ask students to solve the challenges.*
 - *Depending on the profession, the challenges could include sustainable packaging solutions, eco-friendly cleaning services, upcycled furniture in carpentry, an organic farm-to-table program, and developing a sustainable product or service for the local community.*
- Organizing an entrepreneurial start-up weekend to develop entrepreneurial ideas, or ideas about marketing or selling certain products and services. An entrepreneurial start-up weekend can be organized in partnership with partner schools. Rewards can be practical and symbolic.
 - *Students (as participants) from partner schools meet to create, develop, and demonstrate business ideas.*
 - *Students (as co-organizers) can cooperate in organizing entrepreneurial start-up weekends to develop their organization skills.*
- Pitch
 - *Organizing a pitch competition.*
 - *Workshops to practice pitching.*
- Create, develop, and refine their business ideas through collaboration and feedback. With this challenge, students boost their entrepreneurship skills.
 - *Develop a business idea and demonstrate it.*
 - *It can be organized as a business plan competition either in class, within school, or in partnership with other schools. Rewards can be practical and symbolic.*
 - *Prepare a business plan.*
- Fair where students promote their ideas or present their products and services.
- Challenges for students that entrepreneurs actually face in practice in the area of marketing and sales skills:





- *Prepare messages for direct marketing.*
 - *Prepare concrete marketing campaigns.*
 - *Expand sales of a certain product commercially and market it to a specific target population. Students will concretely plan who and what.*
 - *Create a marketing mix.*
 - *Brand building.*
 - *Website redesign.*
- Entrepreneurship clubs for students. Organize a workshop on entrepreneurship.
 - Organize competitions.
 - Mentorship program with local entrepreneurs.
 - Collaborating with local organizations on real-world projects.
 - Community service projects.
 - Incubator for Student-Led Startups.
 - Designing and launching a student-run business.
 - Virtual Enterprise Simulation.
 - Participate in external entrepreneurship events. Register for external competitions.
 - Participation in Erasmus projects supports entrepreneurship and sustainable development.
 - Recognizing the need to connect teachers, we propose establishing a community of practices where good practices can be shared and encouraging teamwork among educators.
 - Liaising with governmental and non-governmental organizations.

To support sustainable development, energy efficiency, and green technology education, we further suggest the following activities:

- Organizing workshops using recycled or reusable materials. Create innovative products from recycled plastic.
- Prepare something concrete, like separate boxes or containers, and raise awareness about waste separation.
- Visit organizations such as the Forestry Institute and take tours of the Zero-Waste Hotel.
- Organizing “Day of Earth” on the 22nd of April and “Nature Day” at the school. Different activities, such as sports, creative workshops, and other activities, can be organized.
- Organizing round tables, discussions, workshops, exchange of experience, and guest visits on “zero waste” and “circular economy,” “earth,” and “how to recycle.” Can be organized either as curricular or extracurricular activities.
- If each student throws in one bottle every day, four students can go on an excursion.
- Anti-plastic planet project.
- Ecological actions.
- Humanitarian actions: for example, the collection of corks, Second-hand clothes and furniture.
- Organization of the collection campaigns and cleaning campaigns.





- Communication is a critical part of raising awareness about environmental issues. Students and teachers can prepare thoughts and ideas to place on the notice board to raise environmental awareness and take care of regular postings on the environmental corner at the school or on social media.
- Addressing a local environmental issue.
- Challenge to enhance accessibility and inclusivity in a public space.
- Projects:
 - Example: planning and implementation of appropriate waste disposal to mitigate the outage in the production company
 - Example: developing concrete products and solutions for recycling based on my own ideas.
 - Example: An ecological project that includes the development of AI-based solutions for increasing environmental protection in the business world
- Students attend the course on renewable energy sources, where they learn how to assemble something and how to program a particular solution. In their final works and seminar papers, they can address the use of solar energy in water heating or electricity generation. Practical tests can be carried out at a school that has solar panels or with partner companies.



11 Curriculum evaluation and enhancements

To enhance the practical implementation of the curriculum (in particular the modular educational program and examples of good practices), frequent evaluations and modifications are essential. The purpose of the evaluation is to provide a thorough explanation of the process and results of the initial curriculum evaluation, with the goal of improving the preliminary curriculum and the quality of its practical implementation. In planning the evaluation, we considered different types and methods of educational program evaluations and beforehand determined five areas as the key focus areas of our evaluation. We identified the following key areas that required special attention during the fine-tuning and creation of the most recent updated version of the curriculum:

- Tailoring the modularly designed educational program (Chapter 9) to the specific secondary vocational school and linking entrepreneurial concepts with existing courses.
- Applying good practices of challenge-based and active-based learning methods (Chapter 10).
- Extracurricular activities.
- Assessing student learning.
- Continuous enhancements and improvements

Particularly, the focus groups' discussions focused on these five key areas, whereas the student survey focused on students' opinions regarding learning content, the development of their entrepreneurial skills, and their experiences with different teaching methods and approaches. Further, we describe the process of the curriculum evaluation and its results in greater detail.

Enhancement and adaptation are essential parts of the practical implementation of the curriculum. In order to thoroughly address implementation and potential enhancements, GEA College, Faculty of Entrepreneurship, Slovenia, coordinated curriculum evaluation in partnership with three secondary vocational schools, one from each partner country of GTECH project. :

The evaluation of the curriculum was performed early after its initial development and aimed at enhancing the preliminary curriculum as well as improving the existing teaching practices of the participating schools. Therefore, the formative evaluation (EvalCommunity, 2024A; 2024B; Al-Azzeh and Yahya, 2011), typically aimed at improving preliminary training programs early on, coexisted with the summative evaluation, which primarily focused on the implementation of already established existing programs in each school. Although the evaluation's primary focus was on the proposed preliminary curriculum, the feasibility of its practical implementation cannot be assessed without considering the existing educational programs. The evaluation focused on the education process rather than potential impact, outcomes, and outputs (Harris, 2016; CDC, 2024). The evaluation of the curriculum was based on feedback from school representatives, teachers, and students.

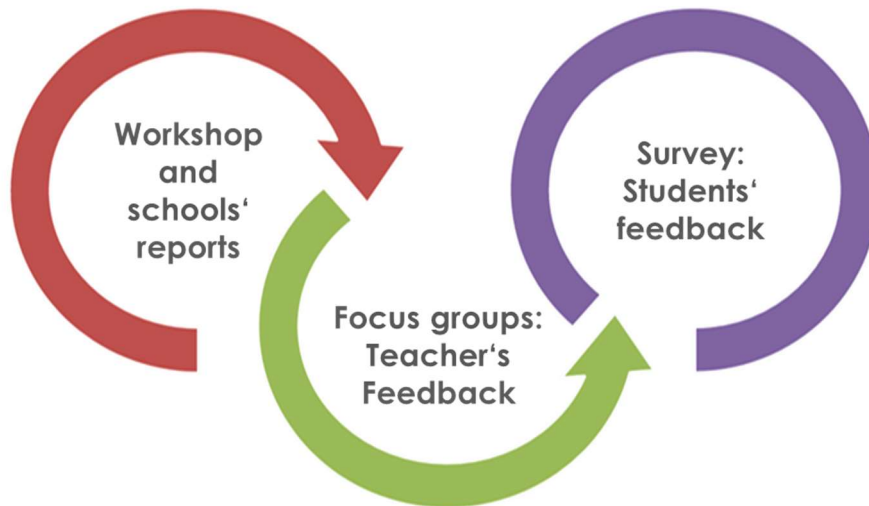
The primary goal of the evaluation process was to improve the implementation of the educational program so that it enabled more effective entrepreneurial skills to develop, as well as to encourage





the improvements of existing educational programs in such a way that they more extensively cover and support the development of entrepreneurial skills.

The curriculum evaluation process included three phases:



Picture: Curriculum evaluation process

Beforehand, we considered different types and methods of educational program evaluations and pre-determined five key areas (educational program, active learning in action: examples of good practices, extracurricular activities, students' assessment, enhancements and improvements) that we particularly focused on during the evaluation.

The evaluation process began with a joint introductory workshop among the participating schools' representatives.

We conducted three focus groups with teachers and a survey among students from the participating schools. Each participating school also prepared a report. The measurement instrument for teachers and the survey questions for students were developed specifically for this evaluation. However, it has to be acknowledged that we did not use objective measures such as grades or other quantitative or qualitative assessments of learning outcomes or acquired competencies. Furthermore, we intentionally included a number of open questions in the students' survey in order to obtain as much qualitative information as possible.

The evaluation process started with a joint introductory workshop among the representatives of the participating schools. After the workshop, representatives of each participating school prepared and submitted a report about their existing and potential teaching practices related to entrepreneurship and sustainability. The reports, in which they addressed the five key areas of curriculum evaluation (educational program, active-based and challenge-based learning, extracurricular activities, students' assessments, and continuous enhancements and improvements), proceeded from the research



instrument (attachment F and H) that was developed for this particular evaluation and represented the basics for the discussions within the focus groups.

During the second part of the curriculum evaluation, we organized three focus groups (one per participating school) to discuss the evaluation and potential enhancements to the curriculum.

Finally, we conducted a survey among the students from the three participating schools (attachment G and I) to inquire about the students' experiences and opinions, particularly on their preferred teaching methods and approaches. We also inquired about the knowledge and skills they believe they will require in their first job or when starting their own business.

11.1 Key evaluation findings

The project partners received and reviewed a detailed report on the evaluation findings, which included the findings from focus groups (attachment H) and the findings from the students' survey (attachment I). In the remainder of this chapter, we highlight the summary of key findings from the evaluation.

The evaluation revealed several key findings that are crucial for the ongoing refinement and successful implementation of the GTECH curriculum:

Customization and integration: tailoring the modular educational curriculum to fit the specific contexts of different vocational schools is essential. This includes linking entrepreneurial concepts with the existing curriculum to ensure coherence and relevance.

Active and challenge-based learning: the use of active learning methods, such as challenge-based learning, has been well-received by both teachers and students. These methods not only make learning more engaging but also help students develop critical thinking and problem-solving skills.

Extracurricular activities: extracurricular activities play a vital role in reinforcing entrepreneurial skills and providing practical experience. Schools should continue to support and expand these activities to offer students additional opportunities to apply their knowledge in real-world settings.

Student assessment: effectively assessing student learning remains a challenge. The evaluation highlighted the need for a more robust and comprehensive assessment framework that can accurately measure the development of entrepreneurial skills and competencies.

Continuous improvement: continuous enhancement of the curriculum is necessary to keep it relevant and effective. This involves regular feedback from all stakeholders: students, teachers, and industry partners, and ongoing adjustments based on this feedback.



11.2 Measures to be undertaken

Based on the evaluation findings, several recommendations have been proposed to enhance the practical implementation of the GTECH curriculum. Specific measures to be undertaken include:

Enhanced customization: the measure here is to develop flexible curriculum modules that can be easily adapted to different school contexts and integrated with existing courses. At the level of implementation, the aim is to establish a task force of curriculum designers and educators to create adaptable modules. This should include pilot tests in various schools and the gathering of feedback for further refinement.

Strengthening active learning: the measure at this point is to encourage the use of active and challenge-based learning methods across all modules. Teachers should be provided with additional training and resources to effectively implement these methods in their classrooms. At the level of implementation, the aim is to organize professional development workshops for teachers.

Expanding extracurricular opportunities: the measure here is to increase the availability and variety of extracurricular activities related to entrepreneurship and green technologies. At the level of implementation, partnerships with local businesses and industry experts should offer students internships, mentorship programs, project-based learning opportunities, facilitate school-wide competitions, and organize hackathons focused on green tech solutions.

Improving assessment methods: the measure at this point is the development of a comprehensive assessment framework that includes both qualitative and quantitative measures of student learning. At the level of implementation, different tools such as portfolios, peer reviews, and project-based evaluations should be conducted.

Ongoing curriculum development: the measure here is to establish a formal process for the continuous improvement of the curriculum, and the implementation is to set up a curriculum review committee comprising educators, industry experts, and student representatives.

The GTECH project has laid a strong foundation for integrating entrepreneurial education, sustainability, and challenge-based learning into vocational education. The initial evaluation of the curriculum has provided critical insights that will guide its ongoing development and implementation. By addressing the identified challenges and building on the successes of the initial phase, the GTECH curriculum can significantly enhance the entrepreneurial competencies of vocational students and better prepare them for the demands of the green economy.

Based on the evaluation results and additional brainstorming with the experts who created the relevant content, videos, and other resources for the modular educational program, we revised and developed this final edition of this curriculum, including the additions to the educational program and examples of good practices.



12 Conclusion

The curriculum for the GTECH Project represents a significant step towards addressing the current gaps in entrepreneurship education. The curriculum, designed with a focus on environmental sustainability and green technology, leverages challenge-based learning and active learning methodologies to foster entrepreneurship skills among students in technical and vocational schools in BiH.

By incorporating various activities, such as curriculum-based learning, challenge-based learning, extracurricular engagements with external stakeholders, and other school-based initiatives, the curriculum aims to provide a holistic approach to entrepreneurship education. Moreover, by targeting technical and vocational schools, which are often part of mixed schools in BiH, the curriculum seeks to reach a broad spectrum of students and equip them with the necessary skills to thrive in a rapidly evolving green technology-driven economy.

In crafting the curriculum for entrepreneurial skills development in vocational secondary education in BiH, we have structured the educational program around key thematic areas: introduction, operations, finance, green market, innovation, and market entry. Each thematic area is designed to address specific aspects crucial for fostering entrepreneurial competencies among students, particularly in the context of environmental sustainability and green technology based on challenge-based learning.

To ensure the curriculum's relevance and effectiveness, we gathered primary data. We conducted in-depth interviews with entrepreneurs and educational experts. These interviews provided valuable insights into the current landscape of entrepreneurship education and helped identify areas for improvement and innovation. Additionally, a focus group discussion was organized to gather diverse perspectives and validate the findings from the interviews. This collaborative effort allowed us to gain a comprehensive understanding of the challenges and opportunities associated with entrepreneurship education in vocational secondary schools in BiH and in Croatia.

We have tailored the curriculum to meet the needs and aspirations of students, educators, and the broader community by integrating feedback and insights from these consultations. It is our belief that this curriculum will not only equip students with essential entrepreneurial skills but also empower them to thrive in the dynamic and rapidly evolving green technology sector, contributing to sustainable economic development in BiH and beyond.

Moving forward, it is imperative for stakeholders to collaborate closely in implementing and refining the curriculum. Continuous evaluation and adaptation based on feedback and evolving industry needs will be crucial in ensuring its effectiveness and relevance in preparing students for successful entrepreneurial ventures in BiH and beyond.



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14 ATTACHMENTS

14.1 Attachment A: Questions for interviews with teachers / experts

1. How do you currently integrate entrepreneurship skills into your teaching methods for secondary school students?
2. In your opinion, what role do innovation and challenge-based learning play in preparing students for real-world entrepreneurial experiences?
3. Can you share examples of a successful project or activity that you have implemented to foster entrepreneurship skills among secondary school students? Can you share examples of applying active learning methods, such as activity-based learning, case-based learning, project-based learning, problem-based learning, and challenge-based learning, to foster entrepreneurship skills?
4. We are particularly interested in environmental sustainability and green technology. What activities do you carry out in light of sustainable development, energy efficiency, and green technologies? Can you present examples, activities, and student homework that were based on green technology and environmental issues?
5. How do you assess and measure effectiveness of challenge-based learning in developing students' entrepreneurial mindset and skills? What improvements do you suggest for assessing and measuring these skills? Have you had any meaningful feedback from students later in their career or from their employers?
6. What challenges have you encountered in incorporating entrepreneurship education into the secondary school curriculum, and how have you addressed them?
7. In your view, what key components should be included in the curriculum for secondary schools to effectively nurture entrepreneurship skills?
8. Have you utilized any MOOCs (Massive Open Online Courses) for teaching entrepreneurship, and if so, what has been your experience with them in terms of student engagement and learning outcomes?
9. How do you adapt your teaching methods to cater to students with varying levels of interest or aptitude in entrepreneurship and innovation?
10. What kind of support and resources do you believe teachers need to enhance their ability to teach entrepreneurship effectively in secondary schools?
11. Can you share insights on how collaboration with industry experts and entrepreneurs can be integrated into the secondary school curriculum to provide real-world perspectives and experiences for students?
12. How have you incorporated entrepreneurial skills into non-entrepreneurship courses and extracurricular activities? Can you provide us with some examples?
13. What incentives should teachers and students receive for developing entrepreneurial skills? What further could be done to spread the good practices that have so far been applied in a



small number of schools? Would you consider implementing control mechanisms or overseeing the execution of recommended curriculum to be advantageous in terms of promoting good practices in a greater number of schools?



14.2 Attachment B: Questions for focus group of teachers / experts

1. Perceived impact of active teaching methods, in particular challenge-based learning to foster entrepreneurial skills:

How do you perceive the impact of integrating entrepreneurship skills and innovation into challenge-based learning within the secondary school curriculum?

- a. Can you provide specific examples of how you have observed entrepreneurship skills positively influencing students in challenge-based learning environments?
- b. Are there any challenges or drawbacks you have noticed when implementing entrepreneurship and innovation in secondary school curricula?
- c. Can you share examples of applying active learning methods, such as activity-based learning, case-based learning, project-based learning, problem-based learning, and challenge-based learning, to foster entrepreneurship skills?

2. Challenges in incorporation:

Can you share specific challenges you have encountered or observed when attempting to incorporate entrepreneurship education into your teaching methods for secondary school students?

- a. Have you faced any resistance or pushback from either students or colleagues when introducing entrepreneurship elements into your teaching methods?
- b. Are there specific areas or courses within the entrepreneurship curriculum that you find more challenging to integrate?
- c. How have you incorporated entrepreneurial skills into non-entrepreneurship courses and extracurricular activities? Can you provide us with some examples?

3. Curriculum enhancement and strengths and limitations of existing curriculum:

In your opinion, what are the key strengths and limitations of the existing entrepreneurship curriculum, and how might it be improved to better meet the needs of both educators and students?

- a. What aspects of the current entrepreneurship curriculum do you believe resonate most with students, and why?
- b. Can you identify any gaps, areas for improvement, or possible enhancements to the current curriculum?



4. Role of MOOCs:

How do you envision the role of MOOCs (Massive Open Online Courses) in supporting or enhancing the delivery of entrepreneurship education in secondary schools, and what specific aspects would you like to see addressed in MOOC content production?

- a. Are there specific topics or skills you believe could be effectively covered through MOOCs to supplement existing entrepreneurship education?
- b. What features or characteristics would make MOOC content most engaging and beneficial for both teachers and students?

5. Support and resources:

What support, resources, or professional development opportunities would you find most valuable in order to effectively implement and enhance entrepreneurship education in your secondary school curriculum, especially in the context of challenge-based learning?

- a. Are there any specific professional development needs you have identified to enhance your ability to teach entrepreneurship effectively?
- b. What types of resources or support systems (e.g., mentorship programs, collaborative networks, access to successful entrepreneurs in your region) do you think would contribute most to successful curriculum development and implementation?
- c. What incentives should teachers and students receive for developing entrepreneurial skills? What further could be done to spread the good practices that have so far been applied in a small number of schools? Would you consider implementing control mechanisms or overseeing the execution of recommended curriculum to be advantageous in terms of promoting good practices in a greater number of schools?

6. Environmental sustainability and green technology:

We are particularly interested in environmental sustainability and green technology. What activities do you carry out in light of sustainable development, energy efficiency, and green technologies? Can you present examples, activities, and student homework that were based on green technology and environmental issues?





14.3 Attachment C: Survey questionnaire among students

Elementi poduzetničkog mentalnog sklopa

Ovaj dio upitnika služi za mjerenje vašeg poduzetničkog mentalnog sklopa. Radi jednostavnosti, rečenice su napisane u jednom rodu, ali odnose se na oba. Nema pogrešnih odgovora, odgovor koji vam je prvi pao na um je vjerovatno najbolji.

Odaberite u kojoj mjeri vas opisuju rečenice ispod, na skali od 1 (apsolutno se NE slažem) do 5 (apsolutno se slažem).

	1	2	3	4	5
Voljan sam izložiti se određenom riziku da bih postigao pravi uspjeh					
Ulazim u aktivnosti koje se nalaze izvan moje zone komfora					
Prihvatam neuspjeh jer bi me to iskustvo moglo naučiti nečemu					
Volim izazove					
Moji prijatelji bi me opisali kao nekoga ko "završava stvari"					
Kada imam izbor, više volim krenuti u akciju nego čekati					
Drugi bi me opisali kao nekoga ko brzo prelazi sa riječi na djelo					
Sposoban sam samostalno riješavati probleme					
Izvršavam svoje obaveze bez potrebe da me neko napominje					
Moj interes u ono što volim raditi je konstantan					
Raditi duge sate na nekom projektu mi je uzbudljivo					
Gajim strast prema poslovima na kojima sam angažovan					
Ne smeta mi raditi duge sate na projektima koji su mi zanimljivi					
Trudim se biti najbolji u svemu što radim					
Važno mi je da postignem na visokom nivou					
Vuče me želja da postignem visoke ciljeve					
Želim postići puno u životu					
Uspješan sam u ostvarivanju svojih ambicija					
Mislim da sve što radim sada ima uticaj na moj kasniji život kao odrasle osobe					





Već sada planiram svoju budućnost					
Ja imam kontrolu nad svojim uspjesima i neuspjesima					
Puno se trudim sada, kako bih bio uspješan u budućnosti					
Nije mi teško generisati kreativne ideje					
Ponekad, nove ideje samo ispadaju iz mene					
Sposoban sam pronaći nova i drugačija rješenja					
Sposoban sam pronaći nove načine za rad					
Uživam u razmišljanju o novim idejama					
Otvorenog sam uma prema novim idejama					
Dobar sam u provođenju neke strateške zamisli u konkretan akcioni plan					
Obično mi nije teško dobru ideju realizovati u stvarnost					
Dobar sam u prebacivanju stvari sa planiranju u operacionalizaciju					
Moji prijatelji smatraju da mogu uzeti ideju i ostvariti je					
Ako započnem nešto novo, uvjeren sam da ću biti uspješan					
Nemam neke veće sumnje u svoje sposobnosti					
Ja sam samouvjeren osoba					
Uvjeren sam da ću uspjeti u životu					
Kada se potrudim, uglavnom postignem cilj					
Obavljam svoje obaveze uspješno					
Generalno, zadovoljan sam samim sobom					
Osjećam da ja mogu diktirati kakav će biti moj život					
Drugi me opisuju kao pozitivnu osobu					
Čak i kada stvari ne idu dobro, ja gledam na svijetlu stranu					
Moji prijatelji me opisuju kao optimističnu osobu					
Obično mogu vidjeti svijetlu stranu većine izazova					
Uporan sam kada idem prema ostvarenju nekog cilja					
Kada se suočim sa problemom, nastavljam raditi dok ne nađem rješenje					





Nije me lahko obeshrabriti					
Sposoban sam nositi se sa neočekivanim promjenama i iznenađenjima					
Sposoban sam raditi pod stresom i pritiskom					
Sposoban sam naći način da riješim veliki problem					
Mogu iznaći više načina da riješim jedan problem					
Trudim se riješiti probleme na koje nailazim					
Kada okolnosti postanu teške, nastavim raditi dok ih ne prebrodim					
Kada imam problem, nastavim raditi dok ga ne riješim					
Ljudi me opisuju kao osobu sa kojom je lahko raditi					
Sposoban sam sudjelovati u timskom radu					
Nije mi teško uspostaviti komunikaciju sa ljudima koje ne poznajem					
Lahko se prilagodim novom društvu					
Obično sam prvi koji predloži rješenje za neki problem					
Vidim prilike tamo gdje drugi vide probleme					
Prepoznajem prilike tamo gdje ih drugi ne vide					
U stanju sam prepoznati dobru priliku prije nego što je prekasno					
Kada mi se ukaže prilika za koju smatram da je dobra, ja je iskoristim					
Mogu se nositi sa nekoliko odgovornosti u isto vrijeme					
Volim imati plan B, ukoliko stvari ne krenu po planu					
U slučaju potrebe, mogu brzo i efektno promijeniti svoj plan					
Brzo se prilagodim novonastalim situacijama					
Kada sam sa društvom, uglavnom sam ja taj koji određuje šta ćemo zajedno raditi					
Osjećam se opušteno sa ljudima koje ne poznajem					
Volim govoriti ljudima kako da rade neki posao					
Volim odlučivati o tome šta drugi treba da rade					





Demografski podaci

Ovaj dio nam pomaže da saznamo više o vama, kako bismo mogli da istražimo veze između faktora iz vašeg okruženja i vaših rezultata Entrepreneurial Mindset Survey. Napominjemo da su odgovori anonimni. Označite po jedan odgovor u pitanjima ispod:

Grad iz kojeg dolazim je: _____	Moj spol je: M Ž
Prosjek mojih ocjena u dosadašnjem srednjoškolskom obrazovanju je Odličan Vrlodobar Dobar Dovoljan Ponavljao/la sam razred	Razred koji pohađam je Prvi Drugi Treći Četvrti

Označite sve stavke koje su tačne vezano za Vaš vannastavni angažman (možete odabrati više njih):

- Član/ica sam u više sekcija u sklopu škole
- Takmičim se iz barem jednog predmeta na opštinskom ili većem nivou
- Aktivan sam član/ica nekog udruženja ili nevladine organizacije
- Često volontiram
- Profesionalno se bavim sportom
- Povremeno pomažem sa poslovima u porodičnoj ili nekoj drugoj firmi
- Nisam angažovan u vannastavnim aktivnostima

Na koji način ste do sada učili o poduzetništvu (možete odabrati više njih):

- U školi imam obavezan predmet koji se tiče poduzetništva
- U školi imam izborni predmet koji se tiče poduzetništva
- Učestvovao sam u edukacijama iz poduzetništva u sklopu vannastavnih aktivnosti u školi
- Učestvovao sam u edukacijama iz poduzetništva izvan škole
- Nisam imao priliku edukovati se iz poduzetništva

Označite sve stavke koje su tačne vezano za Vaše roditelje:

Oboje mojih roditelja su zaposleni	Da	Ne
Barem jedno od mojih roditelja posjeduje vlastiti biznis	Da	Ne
Barem jedno od mojih roditelja je zaposleno u državnoj instituciji	Da	Ne
Barem jedno od mojih roditelja je zaposleno u privatnoj firmi	Da	Ne
Barem jedno od mojih roditelja je završilo fakultet	Da	Ne





Odaberite u kojoj mjeri vas opisuju rečenice ispod, na skali od 1 (apsolutno se NE slažem) do 5 (apsolutno se slažem)

	1	2	3	4	5
Planiram studirati na javnom univerzitetu u BiH					
Planiram studirati na privatnom univerzitetu u BiH					
Planiram studirati izvan BiH					
Ne planiram studirati					

Odaberite u kojoj mjeri vas opisuju rečenice ispod, na skali od 1 (apsolutno se NE slažem) do 5 (apsolutno se slažem)

	1	2	3	4	5
Moja ambicija je raditi u državnoj instituciji					
Moja ambicija je raditi u privatnoj kompaniji					
Moja ambicija je osnovati vlastiti biznis					
Moja ambicija je graditi svoju karijeru preseljenjem u inostranstvo					





14.4 Attachment D: Template teachers can use to create a syllabus for a module, course, or workshop for students

Title of the module

- **Level:** Choose from the educational levels offered by your school. You can also select a level from beginner, improver, intermediate, above-intermediate, or advanced, or state that it includes all levels from beginner, improver, intermediate, above-intermediate, to advanced, if this is the case.
- **The time required to finish the assignments within this module:** Specify the time required for participants to finish the module, including the duration of the video and supplementary educational assignments:
 - Lectures
 - Exercises/tutorials
 - Seminar
 - Individual work:
 - reading
 - videos
 - practical exercises
 - Individual and group research, project work, and project assignment.
 - Quizzes
 - Other supplementary educational assignments
- **Prerequisites:** Define the conditions to be eligible to attend the module.
 - E.g. There are no restrictions on attending this module.
 - E.g. The module (name of the module) should have already been completed.

Learning and teaching methods

Examples:

- Lectures with active students' involvement (explanation, discussion, questions and answers, case studies).
- Video materials with learning content.
- Individual and group research, project work, and project assignments.
- Individual and group consultations (discussion, additional explanation, handling specific questions).
- Remote collaboration by using modern ICT tools.
- Supplementary educational assignments and work in the online classroom: reading, practical exercises, quizzes

The general purpose of the module



The activity aims at developing the skills/competencies of ... (one sentence)

General and specific competencies (optional)

Example:

The students develop general competencies:

- Developing the ability to apply knowledge in practice: preparation of a project assignment.
- Developing decision-making skills: when choosing and defining a problem.
- Developing self-initiative, creativity, and precision.
- Developing presentation skills.
- Developing writing skills.

The students develop course-specific competencies:

- Developing understanding and knowledge of the techniques of.....

Learning Outcomes of the Module

Indicate around 3-5 specific learning outcomes.

Students will be able to:

-

Content

Topic 1

- Part 1 of topic 1
- Part 2 of topic 1
- Part 3 of topic 1

Topic 2

- Part 1 of topic 2
- Part 2 of topic 2
- Part 3 of topic 2

Assessment

For example:



- project assignment (30%),
- presentation (20%),
- oral exam (20%),
- written exam (30%).

Learning materials and sources

Provide information on desirable and necessary learning materials and sources for students to complete the work and on learning materials and sources that teachers can use.



14.5 Attachment E: Example of good practice

Example: Reflect on and communicate essential themes, impressions, and opinions from practical demonstrations, presentations, or visits to companies or organizations.

- **Type of activity:** written or spoken communication of key points, impressions, and opinions.
- **Group or independent:** can be organized as an independent or group assignment.
- **Anticipated class size and composition:** No restrictions on the number of students.
- **Level:** Can include all levels from beginner, improver, intermediate, above-intermediate, to advanced.
- **The time required for students to finish the assignments:** from 15 to 45 minutes, depending on the specific instructions.

The general purpose of the assignment

- The activity aims at developing communication skills and the ability to summarize key points and takeaways.

Specific learning objectives for the assignment

- Developing writing skills, oral skills, presentation skills, and other communication skills.
- Developing the ability to technically prepare a document, audio, or video recording (optional).
- Developing writing skills, oral skills, presentation skills, and other communication skills.
- Developing the ability to establish a red thread.
- Developing the ability to reflect on certain content.
-

Description of the assignment

Students prepare a reflection of the practical demonstration, a presentation of practical experience by quests from practice, or a visit to a company or organization.

The reflection can include a comprehensible summary and description of key points, impressions, and opinions, either in written, audio, or video format.

Suggested steps that students should take to complete the work

- Students search the internet for information about the guest or the company (optional).
- Students carefully listen, observe the demonstration, and make their own notes.
- Students prepare and submit a reflection.
- Students improve their reflections based on feedback.



Mentoring, proving feedback, and conducting assessments

Suggested steps that a teacher can follow:

- Teachers inform students about the specific instructions in advance.
- Teachers provide information about the assessment of an assignment and how this assignment contributes to the final grade.
- Teachers prepare questions or highlight important topics for students to focus on.
- Teachers provide examples of excellent summaries, examples of describing key points, impressions, and opinions either in written, audio, or video format (optional).
- Teachers provide feedback and suggestions for improvements, either to individual students or to the group of students in class.
- Teachers grade students' work (optional).
- Open an in-class discussion on how the class could improve their work.

Suggestions for a teacher about how to provide feedback, guide, and mentor students:

- Inform the students why this assignment is important.
- Inform the students that the assignment is mandatory.
- Provide examples of excellent summaries and examples of describing key points, impressions, and opinions either in written, audio, or video format.
- Focus your feedback more on what students should do compared to what they should not do.

Assessment:

- Grading of submitted assignments is optional, but teachers need to provide information about assessment in advance.
- Teachers can include questions about the topic in the final exam.

Learning materials

A desirable set of learning materials:

- Information on the internet about the guest or the company.
- Teachers can prepare questions or highlight important topics for students to focus on.
- Teachers can present examples of good summaries, as well as descriptions of key points, impressions, and opinions, in written, audio, or video format.
- Students' prepare their own notes or reference points during the practical demonstration.





14.6 Attachment F: Curriculum evaluation: teachers' feedback based on focus group questions

The main areas of curriculum evaluation:

- **Educational program**
 - *How did you, or how can you, tailor each individual module of the curriculum to the specific secondary vocational school needs and resources?*
 - *Please provide examples of existing courses that already include entrepreneurial and sustainability content, as well as examples of courses that currently lack entrepreneurial and sustainability content but could incorporate them in the future.*
 - *Which content from the educational program could you implement in your courses and in the other courses at your school?*
- **Active learning in action: examples of good practices**
 - *How did you do it, or how can you tailor good curriculum practices to your specific secondary vocational school needs and resources? Please provide examples and a plan of activities that you could implement in your courses, other courses, or at your school.*
 - *Provide additional examples of good practices for developing entrepreneurial skills and sustainability to improve the existing list of good practices.*
 - *Active-based learning: Provide examples of learning activities that introduce active-based learning. Does your school organize or plan to organize workshops on active learning methodologies and other activities for teachers' professional development? Have you created a practice community in which teachers can exchange good practices?*
- **Extracurricular activities**
 - *Which extracurricular activities work particularly well and are attractive to students?*
 - *Do you plan to organize additional extracurricular activities?*
 - *How can we encourage more students to participate in extracurricular activities?*
- **Students assessment**
 - *How do you construct and alter student learning assessments to be effective?*
 - *Provide examples of how you modified the student's assessment to be effective.*
 - *Provide examples of how you improved a student's learning outcomes.*
 - *Provide examples of how you applied scaffolding.*
- **Enhancements and improvements**
 - *Which teaching methods do you use, and how do you improve them?*
 - *How do you update the content of the courses you teach?*
 - *Describe a process you follow to improve your course's delivery (teaching methods and content).*
 - *What are your suggestions for the curriculum enhancements at your school?*





14.7 Attachment G: Curriculum evaluation: students' feedback based on survey questions

Dear student!

The "Green Tech Entrepreneurship Challenge Hub" project aims to improve entrepreneurial skills and knowledge, as well as promote entrepreneurship and innovation in the field of green technologies. We want to make entrepreneurship a vital part of learning in vocational schools. We are particularly committed to the development of entrepreneurial skills in vocational schools.

We are interested in your experiences and opinions, particularly on your preferred teaching methods and approaches. We are also interested in the knowledge and skills you believe you will require in your first job or when starting your own business. Your answers to the questions will help us update the learning content and enhance the teaching methods.

>>>> PAGE BREAK >>>>

1. What will be your profession when you graduate from the school you are currently attending?
2. What is your plan after you finish school, which you are currently visiting? If you plan to get employment, describe what will likely be your job.

>>>> PAGE BREAK >>>>

3. Do you think it is possible that you will establish your own company one day?

Yes/Maybe/No

>>>> PAGE BREAK >>>>

- a) (only displayed if the response is yes or maybe): Please describe what products or services your own company could offer.
- b) Do you think you need more skills and other support to establish your own company? Please describe.

>>>> PAGE BREAK >>>>

4. What skills do you think you will need when you start with your regular job or open your own company?

>>>> PAGE BREAK >>>>





5. Describe the idea you realized in practice or wish to realize in the future.

>>>> PAGE BREAK >>>>

6. What kind of support do you or your school peers need to realize your ideas? What more could be done? What knowledge and skills would you like to develop during your schooling in order to be able to realize your ideas and be successful in your profession?

>>>> PAGE BREAK >>>>

7. What do you find engaging and beneficial in the learning process? Please list examples of in-class activities in which you would like to participate.

>>>> PAGE BREAK >>>>

8. Please describe a learning activity that you found particularly useful, in which you had to collaborate with your peers, and explain why you chose this particular activity.

9. Please describe a learning activity that you found particularly useful, in which you had to individually solve the problem, and explain why you chose this particular one activity.

>>>> PAGE BREAK >>>>

The next section of the questionnaire is about **challenge-based learning and active learning**. It contains three questions.

>>>> PAGE BREAK >>>>

10. Which challenges or problems would you like to focus on more during your schooling?

>>>> PAGE BREAK >>>>

11. What is your experience with discussions, games, problem solving, challenge-based learning, case-based learning, quizzes, teamwork, pair work, workshops, and other activities of active-based learning in which you actively participated? Which of these activities do you like the most, and why?

>>>> PAGE BREAK >>>>

12. Describe concrete learning methods and activities that you miss and would like to participate in or include in the learning process.

>>>> PAGE BREAK >>>>

You only have a couple more questions to answer.





>>>> PAGE BREAK >>>>

13. What methods or activities do you find most effective for developing the skills and competencies related to:

- generating and evaluating business ideas, recognizing business opportunities and needs, and fostering creativity and innovation.
- management (planning, decision-making, project management, teamwork, and communication).
- niche markets and market analysis,
- developing a business model, elaborating a financial plan, and cost estimation.
- practical applications of sustainability and green technology in business.

>>>> PAGE BREAK >>>>

14. Describe specific topics and hands on activities through which you could develop:

- idea generation, idea evaluation, and recognizing business opportunities and needs. Are there specific creative projects or challenges you would like to undertake?
- management skills, teamwork, communication, and motivation skills. Which specific topics or management challenges would you like to focus on more?
- Market analysis skills. Which real-world market analysis projects, or case studies related to understanding niche markets and market analysis would you like to focus on and engage with?
- Competence in developing and presenting business models, practicing financial planning, and estimating costs.
- Sustainability skills. Which specific sustainability ideas, projects, or initiatives would you like to participate in or work on?

>>>> PAGE BREAK >>>>

Is there anything else you'd like to share about developing entrepreneurship skills in the fields of green technology and sustainability?

>>>> PAGE BREAK >>>>

Which high school are you visiting?

What year of high school are you in?

What gender are you?

>>>> PAGE BREAK >>>>

Thank you. You've answered all of the questions in the questionnaire.



14.8 Attachment H: Findings from the focus groups

We further present the analysis of the focus groups with the participating secondary vocational schools according to the five key areas of evaluation: educational program, active-based and challenge-based learning, extracurricular activities, students' assessments, and continuous enhancements and improvements.

Tailoring the modularly designed educational program to the specific secondary vocational school and linking entrepreneurial concepts with existing courses.

Although the modular educational program is still in the early phases of its implementation, it is relevant to address its possible implementation in a specific secondary vocational school and its potential integration into the existing courses and educational programs. Therefore, we conducted a formative evaluation of the proposed modular educational program along with a summative evaluation of existing programs to examine the possibility of integration.

For the program's efficient implementation, it is critical to tailor the suggested curriculum activities to the specific needs and resources of different secondary vocational schools. The teaching approaches need to adjust to the needs of students, the labour market, and the resources of the secondary vocational school. Understanding the students' individual needs at the particular secondary vocational school is the key to curriculum adaptation.

For instance, the current curriculum at one of the participating schools incorporates the entrepreneurship course, and the school actively engages in a range of practical activities aimed at fostering the acquisition of entrepreneurial skills, such as the creation of fictional companies by students. In comparison, the existing curricula of other two participating schools do not include the entrepreneurship course. These schools teach selected entrepreneurial skills as part of other business-oriented courses.

In one of the schools, for example, students have the opportunity to engage in processes such as founding, managing, marketing, and managing a company through simulated situations and collaboration with other virtual practice businesses. Although they do not offer a specific entrepreneurship course, other courses, such as Business Economics and Exercise Enterprise, include this content. They also identified other courses through which other entrepreneurial skills such as business plans, market analysis, and risk management are already developed or could be developed in the future. Furthermore, they highlighted the need for increased focus on promoting sustainability and addressing issues like resource management, energy efficiency, and the utilization of renewable energy sources in a business setting.

The existing curriculum of the one of the schools already includes courses related to sustainable development, such as renewable energy sources. The teachers from this school agreed that entrepreneurship could be organized as an optional course.



Teachers of the two participating schools pointed out how entrepreneurial concepts are already intertwined with existing courses and considered additional possibilities to include and link entrepreneurial concepts with existing courses. This is because the current curriculum lacks an independent course on entrepreneurship, and students frequently show little interest in extracurricular activities. Future initiatives and measures should focus on finding practical ways to integrate entrepreneurial elements into current courses, particularly those found in the GTECH project's modular educational curriculum. Teachers should receive learning materials, including videos, to incorporate entrepreneurial content into their courses. The schools should motivate teachers to review the learning materials and include relevant content in their existing courses. Furthermore, after conducting learning sessions with students, schools should encourage teachers to provide feedback on the learning content and methods.

The latest reform of educational programs in BiH has encouraged the application of new teaching approaches and methods in vocational schools. The teachers are increasingly aware of the importance of student-centered approaches. The schools encourage cooperation with businesses, governmental and non-governmental organizations and perform financial literacy programs. Teachers are observing that there are expectations that vocational school is oriented mainly towards the labour market, which may not be encouraging enough for those students who could otherwise continue with tertiary education. Apart from this, institutional barriers in BiH, such as a lack of cooperation between the Ministry of Secondary Schools in BiH and the Faculty of Economics, still hinder the faster updating of learning content in secondary vocational schools in BiH. A systemic approach to overcome institutional barriers is needed.

The evaluation of the modular educational program, which includes the following modules: introduction, operations, finance, green market, innovation, and market entry, resulted in minor adaptations and refinements to the specific content of the individual modules as well as guidelines for instructors to follow when creating videos and other learning materials.

Applying good practices of challenge-based and active-based learning methods

Challenge-based learning and other active learning methods are essential for the curriculum's efficient implementation. As a result, the continuous professional development of teachers plays a critical role in the implementation of the curriculum.

The GTECH project contributes to recognizing, sharing, and disseminating existing good teaching practices, as well as brainstorming about potential new good teaching practices, especially active-based learning. Based on the curriculum evaluation, we have further expanded on additional examples of good practices to enhance the curriculum.

The teachers who attended focus groups emphasized that the teachers have to be innovative. They have to take into account the students' goals, their needs, and their culture, put themselves in the students' perspective, and adapt content and teaching approaches to their needs, often not only at the level of the generation but on the individual level. It is important to consider that the student is at



the center of the teaching process, and each student has unique needs and plans. Teachers need to be innovative and allow that the learning process develops differently in such a way that students' needs are considered in the formulation of problems and that students are able to develop their own unique solutions to the problems. Further, teachers agreed that students like working in small groups, in which each student can express himself or herself and contribute to the outcome. Educational programs should also promote teamwork and students' ability to attain a certain goal while working with others.

It is crucial to find what motivates students. When the students are motivated, they produce better results. The teachers who attended the focus groups recognized that the following approaches are particularly welcome to encourage student motivation: group learning; a case study approach; applicable hands-on activities and practical work; active learning methods such as project-based learning and challenge-based learning; active involvement with companies and other organizations; and developing critical thinking. In addition, according to the teachers who participated in the focus groups, teachers can enhance student motivation by enabling students to choose their own activities and topics that are relevant to them, by choosing their own approach to solving the task, by engaging students in solving important local community problems, and by assessing the final result of the work with a grade, ranking, recognition, or an award.

Learning how to teach and learning how to learn need to be continuously developed. To develop their teaching skills and innovativeness, teachers rely on different techniques and methods of formative monitoring, self-evaluation, and peer evaluation according to set criteria.

The teachers, who could hardly overstate the importance of applicable hands-on activities within class, mainly agreed with the old Chinese proverb, "Tell me, I forget; show me, I remember; involve me, I understand." (Chinese proverb, Quoteresearch, 2019).

For example, one of the schools actively participates in several projects. They reported that combining several projects brings great added value for the school and the students. For example, the national agency is encouraging the development of entrepreneurial skills as part of regular lessons in secondary school. Teachers and other mentors assist students in establishing their own imaginary businesses and gaining hands-on experience in the entire entrepreneurship process, from starting a company to closing it down. This process encompasses identifying business concepts, brainstorming, formulating a business plan, making presentations, delivering goods or services, marketing, interacting with the business environment, issuing invoices, and conducting analyzes. The goal is for students to learn about the entire entrepreneurship process, including how to establish their own company and how to maintain an entrepreneurial spirit even when they eventually work for large corporations.

Another example of how a school actively involves students is when they design a meaningful project that focuses on sustainable solutions in ecology. The students create a project within a team, where everyone is able to contribute their part. The students, in collaboration with their mentor teachers, establish the framework for their entrepreneurial activity. They determine what (funds) and whom





(persons) they will need to implement within the framework of their entrepreneurial process. In addition to resources (space, materials, and supplies), they obtain appropriate mentoring (younger entrepreneurs from start-ups, teacher mentors, or experienced mentors from companies or other institutions) who are able to advise young people appropriately regarding the development of their idea and business model, all until the first product prototype.

Teachers also reported that projects can support the implementation of practical exercises in several groups or team teaching. According to the teachers' experience, implementing the teaching model with two teachers present in the class is a successful practice, particularly for practical exercises and hands on activities, but also for other lessons. Increasing teacher-student ratio through partnership and cooperative teaching of two teachers in one classroom also has benefits, according to mainstream findings from, i.e., Creese (2006), and the Norwegian Reading Centre (2020).

Schools need to establish a safe environment in which students can experiment and in which mistakes are allowed. Besides, students need a supportive environment, which is very important if they are supposed to develop their skills quickly and effectively. Moreover, the students appreciate well-prepared learning materials, which are used during the lesson or outside of the lesson.

Furthermore, all participating teachers agreed that schools needed to constantly build relationships and cooperate with businesses, for example, by inviting guests from business, organizing a career fair, or a fair of products and services created by students. It is also extremely welcome that teachers have previous practical experience and teach based on their own experience.

Projects that encourage the exchange of experience and knowledge through the participation of students from different secondary schools and participation in various contests and competitions have also proven to be extremely effective.

Extracurricular activities

Teachers who attended the focus groups emphasized that students often lack the time and resources to attend extracurricular activities. They emphasized that the students should gain some kind of benefit based on their participation in extracurricular activities. These benefits could include travel, informal recognitions, and financial rewards. Especially in low-income regions, where students often need to work after school, providing material rewards would be important to encourage students to participate in extracurricular activities.

Similarly, teachers would be more engaged to mentor, supervise, and prepare extracurricular activities when students expressed a greater interest in actively participating and when both students and teachers gained some material or other benefits.



When designing extracurricular activities, it is important that they have clear goals and purposes. Furthermore, when teachers need to select only a certain number of students to receive benefits such as travel, teachers can organize the selection of students transparently through multiple short extracurricular activities.

When we inquired which extracurricular activities work particularly well and are appealing to students, the answer was activities with a defined purpose, through which students gain specific concrete abilities, and where students perceive obvious short-term benefits. Teachers from participating schools concurred that encouraging skill development through regular lessons yields significant results. Extracurricular activities also contribute to skill development, but students are more engaged and active when they receive advantages such as travel or additional benefits for the activities they attend outside their regular schedule.

Based on the findings of the focus groups, we conclude that integrating the proposed educational program into regular classes would be significantly more effective than implementing it in an extracurricular format.

Assessing student learning

The effectiveness of the educational program cannot be comprehensively addressed without an assessment of student learning. Although the modular educational program is still in the early phases of its implementation, it is relevant to address the possible assessment methods that will be applied once the program is implemented or integrated into the existing courses. As a result, the participants in the focus groups discussed the students' assessments, particularly with regard to existing educational programs.

Teachers who participated in the focus groups have reported they are often applying techniques and methods of formative and summative assessment (Joshi, 2020; Carnegie Mellon University, 2024). Occasionally, they apply assessment before or at the beginning of the course (diagnostic assessment) and assessment according to predetermined criteria (criterion-reference assessment). When relevant, teachers also encourage students' self-assessment and peer evaluation according to set criteria.

For example, one of the schools in the focus group stated in their report that they provide flexibility in the way they evaluate students to better reflect students' progress and achievements. They enable them to demonstrate their knowledge and skills in various forms, including tests, presentations, work assignments, or portfolios of assignments.

In addition, teachers in one of the schools presented an example of good practice in students' assessments. They reported that the participation of external experts and business partners in the provision of feedback on the presentation of products or services that students developed within a project additionally motivated students to engage and to delve deeper into the problem they were



analyzing. Students were simply more vigilant in receiving feedback when it was provided not only by the teacher but also by a couple of external experts. As shown in the example, adequate feedback and assessment can motivate students to continue working and studying in depth.

Teachers in the focus groups agreed with the previous research findings that the type of assessment should align with the learning content and subject matter (Tang et al., 2020; Gao et al., 2020; Struyven et al., 2005; Van de Watering et al., 2008). The assessment should cover the content that was covered in class and not some other content. It is critical that students demonstrate progress compared to their previous performance and that the teacher acknowledges the progress they are making. Too much emphasis on comparison with others can have a negative effect on self-esteem, which is definitely not desirable. Comparison with the results of others is appropriate when it additionally motivates the individual to continue to engage, progress, and learn, but not to discourage this student from further activity or reduce engagement.

Continuous enhancements and improvements

Planning for continuous improvements at the school level and at the course level can importantly contribute to designing the best-suited delivery of the curriculum (school level) and the subject matter (course level) in such a way that it is properly adapted to the needs of specific vocational school students. It should not be neglected, since it importantly contributes to the quality of educational programs and their outcomes.

The participating schools reported that they are applying formative and summative monitoring and evaluation of the existing school curriculum and individual course implementation. Furthermore, the teachers pointed out that they diligently update their courses' learning content and apply self-evaluation techniques to improve their teaching. Furthermore, the participating schools also collect feedback from students on teaching satisfaction.

The OECD (2022), which performed a Review of Evaluation and Assessment in Education for BiH, warns that a lack of school external evaluation and self-evaluation can result in poor program implementation quality. The review (OECD, 2022) reports large differences between individual schools and points out that "school self-evaluation is not mandatory" for all schools in BiH. Moreover, the external school evaluations were not carried out regularly at the time when the review was performed. The measurements are needed to improve efficient system-level planning through mandatory continuous improvements and enhancements. While the OECD has carried out such a review for BiH (OECD, 2022), a review of evaluation and assessment in education for Slovenia and Croatia has yet to be prepared (OECD, 2024).

The participating teachers agreed that evaluation and self-evaluation, when performed, should consider guidelines such as applying the appropriate methods and techniques depending on what kind of educational program is being evaluated and in which implementation phase the educational program is (EvalCommunity, 2024A). Recommendations (Morrison, 2017), such as, for example, that



as part of the evaluation, it is necessary to determine what changes can be made and that it makes no sense to ask for feedback on something that cannot be changed or to collect information on the same deficiencies over multiple evaluation cycles, must also be considered.

An important part of the professional development of teachers includes their participation in professional assets. The cooperation in professional assets contributes, among others, to the improvement of work methods and the exchange of good practices.

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14.9 Attachment I: Findings from the students' survey

The evaluation process included a survey of students from the three participating schools. The survey inquired about students' experiences and opinions, particularly about their preferred teaching methods and approaches. We also inquired about the knowledge and skills the students believe they will require in their first job or when starting their own business. The purpose of the survey was to update the learning content, enhance the teaching methods, and improve the overall quality of the educational program.

The measurement instrument for the survey among students was developed specifically for this evaluation. The survey purposefully included a lot of open questions to collect as much qualitative data as possible. We considered this appropriate because our primary goal was to conduct a formative evaluation of the proposed educational program, which is currently in the early phases of implementation. And because we complemented the formative evaluation with a summative evaluation of the curriculum's current implementation in participating schools, we also investigated the possibility of incorporating parts of the program into the existing curriculum or individual courses.

We acknowledge that in future evaluation cycles, it would make sense to additionally investigate objective measurements such as grades or other quantitative or qualitative assessments of learning outcomes or acquired competencies.

Before delving further into the findings of the student survey, let us briefly highlight some of the key features of secondary vocational and technical education that we are focusing on. The primary goal of vocational and technical education is to prepare students for a high-quality, competent career soon after graduation. These are also employers' expectations when hiring novices after they graduate from secondary vocational schools. Companies may typically only provide minimal tutoring and mentorship, if any at all, because they require fully qualified employees to execute their duties autonomously to the greatest extent possible.

The questionnaire was distributed among students from three participating schools in the evaluation process in the last week of April 2024.

Overall, the questionnaire was completed by 3 students of the School 1, 25 students of the School 2, and 12 students of the School 3. An additional 14 students have started the questionnaire but have not completed it. The majority of students who completed the questionnaire were female (52.5%) and attended either the 3rd or the 4th year of their secondary vocational studies.





	School 1	School 2	School 3	Total	Share
Completed questionnaires					
Completed	3	25	12	40	74.07%
Partially completed	1	8	5	14	25.93%
Total attempts	4	33	17	54	100%
Gender					
Man	2	8	9	19	47.5%
Female	1	17	3	21	52.5%
Total	3	25	12	40	100%
Study year					
4th	3	6	9	18	45%
3rd	0	19	3	22	55%
Total	3	25	12	40	100%
Do you think it is possible that you establish your own company one day?					
Yes	3	16	5	24	61.54%
Maybe	0	8	7	15	38.46%
No	0	1	0	1	2.56%
Total	3	25	12	39	100%

Table: The demography of completed questionnaires

Although the majority of students (61.54%) believe it is possible that they will one day establish their own company, the majority of students do not intend to do so right after graduation.

The School 1 students, who will become economic technicians after graduation, intend to either open one or more businesses (1 student), continue with education at the tertiary level (1 student), or do not intend to get employed (1 student).

Most of the students of the School 2, who will become economic technicians after graduation, intend to continue with education at the tertiary level (14 students in the same field, 1 abroad, and 3 students in other fields: psychology, criminology, and sports). Those who intend to get employed right after graduation, intend to work in accounting, finances, financial audit, or accounting forensics (2 students), in a company (2 students), in a bank (1 student), in a small and medium enterprise where their friend works (1 student), or intend to work with people or organize events (1 student).

Most of the students of the School 3, who will become media technicians, graphic or web designers (9 students), or electrical technicians (3 students) after graduation, intend to continue with education at the tertiary level (5 students in the same field, 1 abroad, and 3 students in other fields: economics, organization and informatics, art academy, or graphical design). Those who intend to get employed right after graduation intend to work as a media technician or web designer (1 student), 3D animation and modeling (1 student), or as a policeman (1 student).





We note that a sizable proportion of students who completed the questionnaire want to continue their studies. As a result, many students may not look for work right after graduating from vocational secondary school.

Students are aware that they need more skills and other support to establish their own company, particularly those related to opening a business, financial resources, and start-up capital, as well as the mentorship of experienced experts. They are also aware that their company would require a team of people with the same vision and an innovative and creative approach. They point out that reaching a good position in the market requires being well acquainted with your own product, possessing strong marketing skills, multiple distribution channels, and a network of clients and partners. They also need moral support. Students are aware of the high number of companies that have failed, and they are eager to learn how to succeed once they establish their own company. They would like to get in touch with investors, mentors, and people of similar interests so that they can work with them. Some of the student's statements:

"I would definitely need more skills in recognizing what the company should be actually doing and how to stand out over the competition. I would also need help setting up my own business because I don't know how to act right now. I've heard of the start-up program, and I'd probably start my company with it, but I don't know how to approach it." (School 3)

"I would need confidence, patience, courage, and determination." (School 3)

"To achieve that, I should have had the support of my family and someone who truly cared." They put me down and say bad things about me, but that only makes me stronger. I would like the support of my colleagues and professors, but I feel I do not have enough. It would mean a lot to me if more people appreciated my work and effort. (School 3)

"I think the most important thing in the beginning is financial and moral support. I think we all need the support of our family, the people who are around us, and society." (School 2)

"Establishing a company requires a lot of skills, from communication to orientation, freedom of expression, and a lack of fear of failure." (School 2)

"I also think it takes courage because it's a big step." (School 2)

"I think we need a lot of skills but also a lot of support, because without support, everything is difficult to achieve." (School 2)

The students have highlighted the following general individual skills and competencies that are important to boost their career: organization and time management skills, communication skills, innovation and creativity, leading and managerial skills, problem-solving skills, analytical skills, and social and soft skills.

They also highlighted the following personal characteristics: confidence, persistence, ingenuity, quick thinking, withstanding pressure and uneasy situations, ability to focus, attention to detail and accuracy,



open-mindedness, good awareness, efficiency, punctuality, resourcefulness, teamwork, conflict management, courage, reliability, responsibility, and physical and mental fitness.

Additionally, they highlighted the importance of professional skills such as ICT skills, language skills, marketing skills, financial and legal literacy, market skills, and technical skills such as general knowledge of electronics, amplifiers, frequency modulation, and signal processing.

The students believe that schools could further support their endeavors by organizing more startup weekends after regular classes, enabling participation in startup programs, providing mentorship from experienced experts, facilitating more practice and experience, updating the curriculum, focusing on the development of problem-solving and critical thinking skills, providing financial support, and learning from examples and role models. Students also pointed out that they need to learn about a particular topic more deeply so that they can “become experts in one field instead of amateurs in everything.” Students need trust, both in themselves and in the companies they work for. Some of the student’s statements:

“Regular and friendly communication with professors who can give us expert advice is needed.” (School 2)

“I am grateful to be able to participate in the workshops and visits to production facilities during my studies. I am glad I took part and had the opportunity to see the practical application.” (School 2)

“We need a course on entrepreneurship. The curriculum we currently have is extremely old, the literature is outdated, and professors should follow modern economic trends.” (School 2)

“We should learn about a particular topic more deeply rather than learning everything a little bit, so that we can be experts in one field instead of amateurs in everything.” (School 3)

“I will need experienced mentors who can provide guidance, advice, and support. I’m going to need financial support, like scholarships and investment funds. Besides, I need access to quality educational materials, online courses, workshops, and seminars.” (School 3)

“Personally, I would need support in setting up the company; I should know the steps I should take; and I would need mental support. I believe that incorporating the Start-Up program into our schools’ activities would inspire more students to launch their own businesses, demonstrating that establishing a company is not as difficult as it seems”. (School 3)

Students pointed out the following in-class activities, which they find beneficial and in which they like to participate: activities that include dialogue, interaction, debates, discussing current problems, creative brainstorming about ideas or about the problem, learning based on examples and activities that develops independent thinking, feedback from other students, workshops that carry a certain prize, competitions, teamwork activities, research work, game approach, interactive methods of teaching, simulations, activities that support creativity and less templates, visits to companies, workshops, more practical exercises, presentations and public speaking, story-telling, real projects, less emphasis on the tests and grades and more on feedback and progress, student mentoring other





students, transferring knowledge to other students, sports, activities that develop working habits, activities that develop memory and cognitive, logical skills.

They occasionally enjoy learning outside of school and in natural settings. Students also like to follow the pomodoro technique, where the class consists of 50 minutes of learning and a 10-minute break. They also feel they need better time-management skills to better balance in-school and out-of-school obligations. They'd like to develop general confidence, particularly confidence in feeling prepared for a future job. Some of them recognized that they have trouble concentrating during class and would like to be able to concentrate better. They feel they need to progress both mentally and physically. They expect themselves to complete tasks on time. Students also tend to miss more activities that foster a sense of responsibility.

Students believe that teachers should always aim to include students in a way that is familiar and interesting to them and to deal with the topic in a way that is close to them. Students also prefer to choose their own topic and work on actual problems rather than the one assigned to them. More activities should be undertaken that encourage students to develop innovative projects, especially those that focus on solving concrete sustainability and green technology problems in their local community or beyond. Students also like to simulate company operations, which allows them to determine whether or not they want to take on leadership roles in the future.

They advocate for increased encouragement of group and pair learning practices, as well as learning through plays and games. They describe a lot of positive experiences they have had with group and pair learning. Students feel that professors often process the material too quickly, so they do not have enough time to think about it and work more in depth on some skills. Furthermore, incomplete activities or projects frustrate students. When school projects remain unfinished, students perceive their partial creations as unsuccessful and unworthy of their effort. They prefer to cover less and to complete the activities that are covered. They also feel the teachers should provide constructive feedback, advice, and guidance as often as possible.

Although it is obvious that participating schools organize group activities within regular hours, some students expressed the opinion that the opportunities to participate in group projects and activities with two or more people are very rare. Students would also like to use school computers and have access to more modern computers. Some of the students' statements about the activities they prefer to participate in are as follows:

"Covering real-life problems enables the generation of business ideas and subsequent implementation." (School 1)

"I think that discussions in marketing classes were very useful, but otherwise I would like to see more teamwork activities." (School 2)

"I like solving problems and tasks we haven't faced before." (School 2)

"The most effective activities include the games, where students learn through play." (School 2)





"Debates. It is necessary to think logically and be objective when composing arguments. Presentation. It allows you to get out of your comfort zone, and it is possible to improve communication skills, IT skills, and cooperation." (School 2)

"I used to meet with a classmate to discuss the subject matter and learn together for a particular course. This helped me a lot." (School 2)

"Presentations helped get rid of fear of public speaking. I like to develop communication skills and be confident speaking in a non-native language." (School 2)

"I would like to focus my attention on the challenges that await us when we finish school. May this be managing our own finances or challenges where we need our resourcefulness and creativity." (School 2)

"I would like to focus mostly on solving the problem of feeling more prepared for a future job." (School 2)

"The group effort to start my own company was very useful because we shared knowledge and opinions and learned from each other." (School 2)

"One activity that I personally found very useful was when my colleagues and I performed a simulation of submitting loan applications in group work. One person submitted the application, while the other two were bank employees who decided whether the client was legible. I chose this activity because it best showed how students will cope when they are in the place of employers." (School 2)

"By creating an advertisement for my partner's fictional brand, I have acquired various skills that I will certainly be able to use in the future." (School 2)

"Group work activities where we perform surveys and inquiries, analyze, and present results." (School 2)

"We made a short video. We had to write scripts and edit the final video, and the whole process took about a month. Through this process, I developed my organizational skills. I also needed to do a lot of research, so I developed my research skills as well." (School 3)

"Electrical installations, electrical engineering, and workshops. Because they offer the most hands-on experience." (School 3)

"Assembling computers was important because it included group work in which we had to assemble the computer. We specifically spliced parts or researched on the Internet whether all parts were compatible." (School 3)

"Mathematics because it has many useful formulas that describe the environment." (School 3)

"Writing a script together based on random keywords." (School 3)

"Quizzes that require knowledge of the whole team and teamwork." (School 3)

"Honestly, each of the activities sounds interesting to me, and I like it in my own way... Discussions (yes and no), games (I love them), problem solving (I'm an expert, of course depending on which problem it is), quizzes (depends on what they are), teamwork (goes solidly, but it depends on what kind of team or team I get, whether to agree with everyone or not), workshops (it also depends on what it is)." (School 3)





"I find brainstorming effective, especially if multiple people are working on the same project. I also believe that there should always be a designated leader who acts as a spokesman. Working with experts and peers is also a good activity." (School 3)

"To support entrepreneurship, I suggest organizing a competition in which our team competes against teams from other schools. The media would write about it, and the investors would invest in the startups the students would establish during these competitions." (School 1)

Let us conclude this chapter with the two final thoughts that the students shared:

"Unfortunately, knowledge alone is not sufficient; entrepreneurs draw success from trauma and solve it in some way by succeeding." (School 2)

"If I had, each of us would pay a little more attention to the people and the world around us. Everyone deserves their chance. If you have the chance, help others get and seize theirs by providing them the knowledge to do so." (School 3)

