Integrated Vocational Skill Develepment Program Framework

1. Summary of the Project:

***Program*:** Partnership for Excellence - Centres of Vocational Excellence (ERASMUS-EDU-2023-PEX-COVE)

Application Deadline:08 June 2023

Why is this Project necessary?

Today, human beings are faced with threats due to many changes such as the climate crisis, Industry 4.0, and the rapid change in people's preferences. When the strategies carried out by the countries are analyzed, it is seen that the future work and workforce are generally tried to be built on the basis of sustainable, economic, harmonious, environmentally friendly and conducive to human health. In this context, the importance of raising qualified people who have the skills to adapt to new professions is increasing.

In this sense, through the project, it is aimed to reintegrate children, having mechanical and technical interests, kinesthetic learning skills, who will receive education and training in accordance with their competencies, develop their skills and achieve a successful position in business life in the long run. In this context, the project proposes a model, which includes intensive industry cooperation, besides raising human resources that will adopt the technologies of the future and create value in the industry, by keeping the higher education path open to successful students, their economic structuring, production styles and production ways are a model for creating a society that gains meaning and differentiates with their cultural structure. In this framework, the goal is to contribute to solve the problem of intermediate workforce by introducing an out-of-school skill development training to meet the need for skilled and qualified workers for batteries and renewable energy storage by harmonising the best practices in the world via the project partners and the Turkish context via analysing the experience of the Ottoman era and modern Turkey from the First to the Fourth Industrial Revolutions to see why the problems in this particular area have persisted, to adapt the right training model proper to the unique conditions of the country and the region.

Contribution to the goal of becoming a “carbon neutral” continent of the European Green Deal of EU by encouraging the sharing of knowledge and experience with international partners, and with the participation of local partners by bringing forward the issues specific to the social and cultural activities of the region on the one hand, on the other hand by bringing up the "sustainability" and "respect for the environment" issues of the climate crisis, today's threat.

Project duration: 2 years

City the pilot project will be implemented: Gaziantep (*some features:earthquake, industry, migration (Syrians particularly*)

Gaziantep is one of the 11 provinces affected by the earthquake in Kahramanmaraş-centered Turkey on February 6, 2023. The earthquake covers a large part of the Southeast geographically and includes a population of 13.5 million for 2022. Of these provinces, Gaziantep has the largest industrial zone. In addition it has a crowded Syrian population.

Key target beneficiaries: open to all students for K12 (12-14 ages) from secondary school who are volunteer and having skills to be chosen. The number of the students will be 60.

Instructional Design: Students will receive 10 hours of training per week; on weekdays after receiving their normal education at schools they will be trained for 2 hours, 3 days a week and on Saturdays for 4 hours.

Training location: Discussed with Gaziantep Provincial Directorate For National Education (GPDNE) & Gaziantep Industrialized Site- Vocational and Technical Anatolian High School (GIS-VTAHS). Most probably GIS-VTAHS will provide the classes,labs and other facilities such as admin staff' rooms, toilets to be used for the project without any payment. In case all will not go as discussed, GPDNE will open all secondary and/or high schools to be used. However the expenses such as heating, electricity etc will be paid.

Number of classes:3 classes

Number of workshops/labs: 4 workshops

2. The Program Detail:

The program content has 4 dimensions:

1. **Orientation program:** awareness of the developmental characteristics of children and awareness of emerging professions; The training program conducted to have information about the social and psychological development of newly registered students and to introduce these students to the professional development academy. 30 hours in total.
2. **Skill devepoment:** Creative thinking; body awareness; discovery; invention, success in social relations, innovation, leadership, agility and flexibility, strategic thinking, being analytical, project management. To be implemented throughout the project. At least 2 hours per week
3. **Technical skill development:** Technical training to be given to secondary school students for battery and renewable energy storage.
   Draft content:
   Electrical and electronics; regenerative energies; energy storage systems; introduction to energy storage systems; electrochemical voltage source; battery systems and fuel cells; lithium-ion battery systems; analysis and diagnostic procedures; safety; drive technology; power electronics; vehicle technology (PHEV and BEV); e-fuels; *Lifecycle engineering and sustainability (Software Development, robotic coding, AI).*
   Workshop/lab: Electric vehicles workshop, energy storage systems, regenerative energies, Drive technology, material technology, life cycle engineering and sustainability
4. **Basic Courses:** Creating a theoretical infrastructure through basic courses such as mathematics, Sciences (physics, chemistry-including materials sciences), social studies (Turkish, history of Technology and Science, geography).
   It will be implemented throughout the project. Especially in the first year, at least 2 hours a week; with a minimum of 1 hour in the second year**.**

School Period: beginning and end dates are in parallel with the national academic year (generally starts mid September, and ends mid June) (the second year will end at the end of May)

- 1st year:
  - First semester:
    Orientation program:30 hours
    Skill development:
    Theory: 10 hours
    Application: 50 hours
  - Mid-year-break (February)
    Student's technical trip to foreign partner in
  - 2nd semester
    Theory+workshop/lab: 12 hours
- 2nd year
  - First Semester
    Theory+workshop/lab: 12 hours
  - 2nd semester
    Theory+workshop/lab: 15 hours
    Team projects
    National trips, etc.

3. Why is partners' support necessary for structuring the project?

3.1. In the Turkish Education System, there is no vocational educational level for secondary school. The age group of the Project is 12-14 years old students (shortly, K12). and there is no model or information about the program, materials, methods, teaching environment design, measurement and evaluation techniques, management and evaluation of the program that we will take as an example. At the same time, we do not have a professional technical teacher staff trained for this age group. We expect all of this information from the partners with whom we will cooperate. In other words;

- To create a curriculum for K12 studenta on the subject of "Battery and Renewable Energy Storage Technologies" for vocational training of K12 (age 12-14). In the project, we designed the program as 4 slices; orientation slice, Basic sciences (Science, Mathematical thinking, Social Sciences (History-Geography), Professional-Technical knowledge (Battery and Renewable Energy Storage Technologies) and Skill development (art, sports, culture, development courses).

We look forward to your support in the program development process, which is detailed as below

- Guidance in the design of the orientation program for studnts of this age, such as how to create awareness of professional technical knowledge and skills, how to create interest, what should be considered when organizing the adaptation process;
- The method of teaching the content of basic science fields as different from the normal school program; For example, how to create mathematical feeling-thought? How can instructional designs be created to create processes such as analytical thinking, problem solving, environmental awareness, scientific thinking, and engineer-like thinking, and to provide children with competencies suitable for 21st century skills?
- How should project-based activities that will use mechanical-technical skills in workshop activities and instructional designs to produce projects be arranged?
- What activities can be designed for art, culture and physical development that will improve the affective, social, cognitive and motor skills of children of this age?

b. Designing appropriate teaching materials for students to effectively learn the subject of "Battery and Renewable Energy Storage Technologies" for K12 students for a background creation, and skill development to further vocational education.

c. Selection of methods, techniques and design of training environments for effective learning of "Battery and Renewable Energy Storage Technologies" for K12 vocational training.

d. Developing alternative assessment evaluation and performance measurement tests for K12 vocational training to determine how much the subject of “Battery and Renewable Energy Storage Technologies” has been learned.

e. Trainer training model to transfer the subject of “Battery and Renewable Energy Storage Technologies” on K12 students who will take vocational training. In the project, teachers working in vocational high schools will train the students. For this reason “train the trainer program” should be designed. While the program is being designed, partner support is needed in structuring the following processes:

- To train trainers who have the competence to give technical lessons to vocational training to K12 students,
- For the selection, education and training of K12 vocational training students in terms of their professional development characteristics;
    - High-level use of technology, digitalization will benefit (VR, AI)
    - To carry out project-based experimental laboratories studies and activities,
- To manage K12 vocational training students effectively in the fields of application in industry cooperation

3.2. Developing a scale to identify students with mechanistic and technical interest and kinesthetic learning skills to select K12 students who will receive vocational training

3.3. Collaboration with an industrial organization or school that will organize a technical visit to show different practices and school examples to K12 students who will receive vocational training.

3.4. Collaboration of teachers to provide K12 vocational training student practices, teaching model and peer support.

3.5. Designing promotional brochures explaining the purpose of the project for the parents of K12 children thus aiming to increase the prestige and preferability of vocational education

3.6. Partnership to upskill the project staff: Supporting Project staff to upskill their skills to organize, manage, coordinate the vocational training

3.7. Partnership for cooperation identity and infrastructure programming and integration of the programme to the National Education System.

3.8. Support for visibility and advertising activities such as brochures preparation, social media content preparation and dissemination; event organization such as stage setup.

3.9. Support for equipment (*including maintenance/repair/update services and if any problem raises to be replaced with a new one)* : donation of the equipments from private companies

- Tech equipments
  - ✓ *For the Project area such as energy technology equipment, electric drives equipment*
  - ✓ *For the innovative training methods such as VR*

- Office equipments
  - ✓ *Computer hardware, Computer Software (security&operation), monitors, laptops, internet connection , photocopiers&printers, furniture (desk, chair, table, bookshelves, filing cabinet), kitchen supplies), stationery, storage equipment; Collaboration tools, Office waste and recycling tools like shredder*