



AgriTech Solutions: Innovating VET for Sustainable Agriculture
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2024-1-RS01-KA210-VET-000244168

REPORT

From the implementation of an activity for the needs of the project

Teacher training to improve teaching of environmental sustainability and technological progress

Trainers: Branko Aleksovski and Aleksandra Nikolova Dimovska

Training venue: Hotel Mayberry Highway – Sveti Nikole

Date: from 01 to 05 October, 2025

Background

Within the framework of the AgriTech Solutions project: Innovative VET for Sustainable Agriculture with project number 2024-1-RS01-KA210-VET-000244168, funded by the Erasmus + program of the European Union, teacher training in Project-Based Learning is being implemented.

The main objective of this project is to advance vocational education and training (VET) in sustainable agriculture through the introduction of project-based learning (PBL), focusing on sustainable and technologically advanced agricultural practices, inclusiveness and accessibility for all students. This project seeks to **combine** theoretical knowledge with practical applications, thus preparing **students** with the necessary skills to address contemporary agricultural challenges.

Objectives of the PBL Teacher Training: To train 10 selected (5 per country) vocational education and training educators with practical knowledge to effectively implement PBL in their classrooms. One of the main objectives of the project is to modernize agricultural vocational education and training through the inclusion of innovative curricula methodologies. By

training educators in project-based learning (PBL), this activity ensures that teaching staff are well-equipped to deliver the updated curriculum in a way that is not only professionally relevant but also reflects real-world agricultural practices. This practical, student-centered approach to learning is expected to significantly improve the quality of education and student outcomes.

the students.



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Activities: Conducting five-day training sessions for VET educators. Educators will attend intensive training sessions stemming from the short program, engaging in interactive workshops and collaborative exercises.

which will enable them to fully master the planning and learning methodology project based.

Training results

The activity "Strengthening VET educators with expertise in project-based learning" is strategically designed to directly contribute to the overall objectives of the "AgriTech Solutions" project.

Results of the activity:

- **Improving educational methodologies**
- **Promoting sustainability and technological integration**
- **Improving the employability and relevance of the industry**

By the end of the training, participants will:

- Understand project-based learning (PBL) as a pedagogy oriented towards the student, aligned with current trends in agriculture.
- Acquire strategies for integrating sustainability, digitalization and innovation in project-based learning (PBL).
- Learn practical methods for assessing learning outcomes based on projects.
- Learn to create project-based learning (PBL) lesson plans ready for implementation in their schools.

Learning outcomes

During the training, participants will:

- Understand the basics of project-based learning (PBL) and its benefits in agricultural education.
- Be able to design and implement agricultural projects based on learning, related to real-world problems (e.g. soil health, crop management, climate change, smart agriculture).
- Apply tools to improve student motivation, collaboration, and critical thinking.



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- Develop skills for evaluating project results and learning processes to the students.
- Create, present and improve lesson plans for learning based on projects (PBL) aligned with the agricultural vocational curricula education and training.
- Improve cooperation between teachers from different subject areas through the development and implementation of joint projects.
- Create an inclusive learning environment that supports students with learning difficulties and encourages all students to contribute.
- Improve the school's cooperation with the local environment, agricultural manufacturers and other institutions.

Place of implementation of the training

The training took place at Mayberry Highway Hotel, Sveti Nikole. North Macedonia

Training participants

The training was attended by 15 selected teachers (9 from S. Macedonia and 6 from Serbia) for vocational education and training, who have experience in implementing vocational-theoretical curricula and practical training for students, which will help them effectively implement PBL in their classrooms.

Training planning

The planning process included:

Training design: Three basic elements were taken into account as the basis for designing the training: objectives, duration and training participants. Starting from the objectives that were to ensure the modernization of agricultural vocational education and training through the inclusion of innovative teaching methodologies, the main emphasis was placed on project-based learning, a method in which students explore complex issues or real-life problems related to the contents of the curriculum using problem-solving procedures and using various learning sources and materials in order to achieve a final product. Students are involved in projects that require research, critical thinking, creativity and collaboration. Project-based learning can be interdisciplinary, which will allow students to explore topics from multiple perspectives. Particular care was taken in the training to observe two principles. The first principle is to enable involvement in



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activities for all students according to their interests and abilities, visual support for students with learning difficulties, and encouragement for all students to contribute.

The second principle in designing the training was to develop key 21st-century skills.

century: critical thinking, creativity and innovation, communication, collaboration, digital literacy and global and civic awareness. When designing the training, planning and sharing experiences of project-based learning in other countries were taken into account, through the presentation of case studies in EU countries. The duration of the training of 5 days was optimally programmed and had a positive impact on the dynamics of the training, increased opportunities for interaction and successful achievement of the set goals. The criteria for selecting the participants in the training contributed to a full understanding of the contents of the training and active involvement of all participants in the planned work in mixed groups with teachers from both countries. Since the vocational education and training systems are not completely compatible in the two countries, care was taken to provide sufficient space for the exchange of experiences between the participants and clarification of the differences in the curricula and programs for secondary education, for qualifications in agriculture.

Preparation of materials: All working materials for the training were developed based on previously planned activities. At the beginning, a timetable (agenda) for the five-day training was developed, and then several sources of materials for project-based teaching were provided. Based on the materials, presentations were developed for all training activities, translated into Macedonian and Serbian. Working materials were provided for all activities and group work, and two case studies in Austria and Italy were provided for sharing experiences in project-based learning. When developing the materials, the planned work in mixed groups, consisting of representatives from both countries, was taken into account. Before the training, necessary materials for logistical support of the training were also provided: television, whiteboard, folders, notebooks, pens, flipchart, markers, whiteboard markers, post-it notes (colored stickers), paper glue –

self-adhesive and scissors. At the end, each participant received in electronic form all the materials that were used during the training.

Implementation

The implementation covers the course of the training. During the training, the following were implemented: activities:

Day 1 – Understanding Project-Based Learning (PBL) in Agriculture education



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- Welcome, introduction, participants' expectations from the training and "icebreakers".
- What is project-based learning (PBL)? Basic principles and differences from traditional teaching.
- Why Project-Based Learning (PBL) Works in Agriculture: relevance to sustainability, climate change and innovation.
- Sharing experiences among training participants in learning activities project based.
- Case studies of project-based learning (PBL) in agricultural vocational education education and training (examples from schools in the EU).
- Reflection and group discussion: Challenges facing teachers in the engagement of students from agricultural fields.

Result: Shared understanding of the fundamentals of project-based learning (PBL).

Day 2 – Designing Effective Lesson Plans Through Project-Based Learning (PBL)

- Key elements of project-based learning (PBL): driving question, real-world context and student involvement.
- Finding topics in agricultural vocational education and training: examples (biopesticides, greenhouse efficiency, soil sensors, permaculture).
- Workshop: Formulating driving issues for agriculture.
- Linking projects to curricula and learning based on competencies.

Result: Draft of driving questions and initial ideas for projects related to the subjects of the participants.

Day 3 – Implementing Project-Based Learning (PBL) in Practice

- Project-Based Learning (PBL) Workflow: Planning, Execution, reflection.
- Classroom management in project-based learning (PBL) (group work, roles, timeframes, resources).
- Tools and methods: digital applications for project tracking, QR codes in agriculture, field visits.
- Practical activity: Designing the structure of learning curricula project-based learning (PBL) in agriculture.

Result: Structured draft of project-based learning (PBL) curricula by educator/group.



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Day 4 – Assessment and Feedback in Project-Based Learning (PBL)

- How to evaluate project-based learning (PBL): product versus process.
- Assessment frameworks, peer assessment, self-assessment tools.
- Ensuring fair competency-based assessment.
- Workshop: Creating frameworks for curriculums for learning based on projects (PBL).
- Peer feedback session: exchange between participants.

Result: Completed assessment frameworks for project-based learning (PBL) lesson plans

Day 5 – Presentation, reflection and next steps

- Finalizing the project-based learning (PBL) lesson plans.
- Group presentations of designed lesson plans for learning based on projects (PBL)
- Peer evaluation and feedback.
- Planning activities: how to integrate project-based learning (PBL) into their school after the training and how to disseminate it to others colleagues.
- Awarding of certificates and reflection session.

Result: Finalized project-based learning (PBL) lesson plans (ready for piloting in classrooms).

Reflection and conclusion

After the training, a discussion was held on the possibilities for applying and integrating Project-Based Learning into the curriculum with a special emphasis on the areas of: sustainable agricultural practices, precision agriculture, organic farming, renewable energy sources and the use of new technology in vocational education. The following conclusions emerged from the discussion:

- all participants agreed that project-based learning is completely applicable in the implementation of curricula and other forms of teaching in the agricultural profession/sector qualifications.
- the training participants have some experience with implementing learning based on projects, but they did not implement it in such a structured manner as was done during the training.



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- The training participants committed to continue project-based learning activities. The priority will be to implement dissemination to employees in their schools to involve as many teachers as possible in project-based learning. This will enable the involvement of more teachers in planning and implementing cross-curricular teaching.
- In parallel with the dissemination obligation, participants will start forming teams to define a guiding question for the development of a project-based learning plan. The activities should result in a total of 10 projects, of which 5 projects from agricultural schools from the Republic of Serbia and 5 projects from agricultural schools from the Republic of North Macedonia. When selecting the topics for the projects, an effort will be made to cover topics from all five areas: sustainable agricultural practices, precision agriculture, organic farming, renewable energy sources and the use of new technology in vocational education.
- A final event is planned to be held at which the final projects from the 10 schools will be presented and the best projects will be selected. At the event, awards and recognitions will be given to the best teams and their mentors. • All participants successfully completed the training and were awarded certificates of participation and certificates of successful completion of training.
- Trainers and training participants will continue to collaborate on dissemination activities and project development, within the framework of project-based learning.

Attachments: - List of training participants

- Project-based learning lesson plans developed during the training
- Pictures from the training

In Skopje
Date, 10.10.2025

Trainer

/Branko Aleksovski/