Responsive project plan

Project basics

Project title:		Complete cultivation technology of Viola as a model plant
Branch:		Agriculture, Horticulture
EQF/EQF level		5
Education/profession to which the project relates:		Horticultural technician, horticultural engineer
Special area:		Ornamental plant cultivation
Estimated duration (weeks):		10
Estimated teacher input (hours)		20
Estimated student expenditure (hours)		15 hours theory, 5 hours practice, 5-8 hours individual work
Estimated expenditure by the company (hours)		5
Planned start:		end of February 2024
Institution:		Magyar Gyula Horticultural Technical and Vocational School
Labour market partner:		Szuvandzsiev Ornamental Gardening
The plan was developed	For the company:	Peter Szuvandzsiev PhD
	For the school:	Ildikó Orosz, Zsolt Dorogi, Borbála Veress

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About the project

The problem the project aims to solve (the "why")

The aim of the project is to get to know the individual work processes of ornamental plant cultivation through the entire cultivation technology of two model plants, from variety selection to the sale of the finished marketable plant.

Specific objective of the project (the "what")

Today, an up-to-date and modern ornamental horticulture can operate effectively if it takes care of the plants and its environment in a sustainable way.
Gardening based on the principles of sustainability ensures the preservation of natural resources and a harmonious environment not only for present but also for future generations.
The goal is to broaden students' knowledge by giving them a glimpse into a business, which has been operating stably for years, where they can acquire knowledge such as climatization of greenhouses, sustainable water use, aspects of variety selection, commercialization, and plant protection.

Necessary tools, equipment (the "Whereas")

Growing equipment with two layered greenhouse with large air space, with full equipment (irrigation, nutrient supply, heating, etc.).

Implementation environment (the "where")

The theoretical training takes place in the Magyar Gyula Horticultural Technical School and Vocational Training School.
The practical session is at the location of the participating company (Szuvandzsiev Ornamental Garden)

Occupational safety regulations (if any)

Adherence to general occupational health and safety regulations at the company's premises.

Project plan

Introducing the project team

KMagyar Gyula Horticultural Technical School and Vocational Training School, 13th grade: József Dániel Szente, Csanád Botond Bodri, Beatrix Gayerhoz, Levente Nagy, Levente Bacsárszki, Dávid Lengyel, Roland Gláz, Levente Tóth, Levente Szóka, Diána Galambos, Péter Kaba.

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Working method, communication, evaluation

In addition to face-to-face meetings, students are kept in touch during the project with the help of digital tools.
The results of the project are developed primarily by joint editing of documents placed in a shared folder on the Google Drive interface.
They can keep in touch with each other using the Google Chat application, where they create a Project area. On this interface, you can directly see and jointly edit the shared files and documents.
If necessary, the Google Meet application can be used to supplement the contact options.

During the learning process, the input diagnostic evaluation is done using a test sheet. During the processing of the topic, self and peer evaluation come to the fore. The teacher evaluates the sub-tasks orally and in writing according to a predetermined system of criteria.

Documentation is possible with documents uploaded to the folders of the Drive interface. Students are given access to specific files according to their assignments. Only for reading - so that they can closely follow the work of the other team, Reading and writing* - for the sake of the joint work of team members working together.

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Results, products, performance indicators

Planned results and products of the project

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	Appellation	Description	Responsible	Availability, format	Indicator (pcs, sides, sec)	Assess(es)
1.	Introduction to ornamental gardening	General knowledge of ornamental plant gardening	Ildikó Orosz	theory		Members from the group of MAKESZISZ 3
2.	Presenting Viola x wittrockiana	Presentation of Viola x wittrockiana and Viola cornuta plants	Ildikó Orosz	video		Members from the group of MAKESZISZ 3
3.	Creating a plant house and growing medium	Construction of a greenhouse, design aspects. Special design of the ideal growing medium. Comparison of different growing media.	Ildikó Orosz	video		Members from the group of MAKESZISZ 3i
4.	Irrigation, nutrient supply	Supplying plants with water and nutrients, presentation of the irrigation system. Basics of plant nutrition and nutrient supply.	Zsolt Dorogi	video		Members from the group of MAKESZISZ 3
5.	Basic plant protection procedures	Different plant protection procedures and principles. Comparison and significance of various procedures.	Zsolt Dorogi	theory, video		Members from the group of MAKESZISZ 3
6.	System of criteria for variety selection	Overview of the aspects of variety selection.	Zsolt Dorogi	theory		Members from the group of MAKESZISZ 3
7.	Measurement of greenhouse climate data	Simple climate control procedures. Use of different measuring devices, interpretation of data.	Ildikó Orosz	theory, video		Members from the group of MAKESZISZ 3
8.	Merchandising, offering finished goods	Viola commodity, value, salability.	Borbála Veress	video		Members from the group of MAKESZISZ 3

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Required knowledge, skills, ability, responsibility and autonomy

Activity/ milestone	Knowledge	Ability	Attitudes	Responsibility and autonomy
Knowledge of the project topic. Knowing the schedule.	Know the process of group work.	Cooperate with teammates, evaluate their own work and also others, and make suggestions for changes for the sake of the common goal.	Open to the goal set in the project. Willing to cooperate with others and learn together. Interested in technical innovations and open to modern solutions.	Take responsibility for the work, results and failures.
Basics of plant knowledge.	Know the scientific Latin names of plants (double nomenclature) and identify them with certain knowledge.	Working with ornamental plants.	Committed to the tasks related to the propagation of the ornamental plant. Student sees his work as valuable.	Perform the propagation tasks of ornamental plants independently.
Basics of growing ornamental plants - propagation.	Know ornamental plants and their sexual or asexual reproduction methods.	Propagate ornamental plants.	Committed to tasks related to reproduction. Students value their work. Student sees his work as valuable.	Perform the propagation tasks of ornamental plants independently.
Ornamental plant cultivation basics - propagation	Know growing media and the composition of soil mixtures.	Prepares propagating material and plants.	Keep in mind the economics of cultivation. Dedicated to tasks related to the cultivation of ornamental plants.	Apply the appropriate growing media and use propagating materials independently.

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Activity/ milestone	Knowledge	Ability	Attitudes	Responsibility and autonomy
Basics of growing ornamental plants - propagation	Know the technologies of reproduction and education.	Produces, nurtures and cares for seedlings and saplings.	Keep in mind the economics of cultivation. Dedicated to tasks related to the cultivation of ornamental plants.	Apply the appropriate growing medium and use propagating materials independently. Take responsibility for the ornamental plants they grow.
Basics of growing ornamental plants - irrigation	Know nutrient supply, irrigation methods and care work.	Performs nutrient supply, irrigation, and plant care work.	Open to the new results and innovations of the given field, strive to get to know, understand and apply them. Strive to monitor changes affecting their work.	Define plant protection tasks under professional supervision. Perform general and special plant care operations independently. Take responsibility for their work, achievements and failures.
Basics of growing ornamental plants - plant protection	Know the basics of plant protection, methods of protection against pests, with particular regard to integrated control options.	Perform plant protection tasks under the supervision of a plant protection specialist.	Open to the new results and innovations of the given field, strive to get to know, understand and apply them. Strive to monitor changes affecting their work.	Define plant protection tasks under professional supervision. Perform general and special plant care operations independently. Take responsibility for their work, achievements and failures.

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Activity/ milestone	Knowledge	Ability	Attitudes	Responsibility and autonomy
Ornamental plant cultivation - basic cultivation technology	Know the tasks related to nursery, field and greenhouse cultivation.	Performs extraction, picking and harvesting of ornamental plants.	Open to innovations affecting the field, accept new things related to cultivation, and strive for accurate and precise work.	Perform cultivation-related work independently, with continuous self-monitoring.
Ornamental plant cultivation - basic cultivation technology	Know the different cultivation equipment, the parts, materials and equipment of the cultivation equipment.	Operates and maintains cultivation equipment.	Open to the application of material and energy-saving solutions and technologies that can be used in modern growing equipment.	Operate the cultivation equipment independently and assume responsibility for their activities.
Basics of growing ornamental plants - plant protection	Know the legal, labor, fire, environmental, safety and quality assurance regulations of the profession.	Use protective devices and protective equipment as intended.	Rule follower in the field of work, fire and environmental protection. Committed to regular employment and try to avoid labor irregularities.	Take responsibility for their safety. The work, fire, environmental protection, safety technology, hygiene and quality assurance legislation and official regulations regarding the cultivation of ornamental plants are fully observed and enforced.
Production and sale of basic ornamental plant cultivation products	Know the work processes of growing ornamental plants.	Carry out the planning and organization of the work processes of the cultivation of ornamental plants.	Open to cooperation with professionals in their field.	Take responsibility for the work, results and possible failures of the group.

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Activity/ milestone	Knowledge	Ability	Attitudes	Responsibility and autonomy
Production and sale of basic ornamental plant cultivation products	Aware of the ways of managing individual and group work.	Manages persons and groups performing ornamental plant cultivation tasks and sales.	Open to cooperation with professionals in their field.	Take responsibility for the work, results and possible failures of the group.

Missing skills (which we plan to master in the microcourse)

Activity	Knowledge	Ability	Attitudes	Responsibility and autonomy
System of criteria for variety selection.	Know the aspects of choosing the right breed.	Choose varieties.	Open to innovations affecting the field, accepts new things related to cultivation, and strives to get to know, understand and apply them. Strive to learn about the care needs of new breeds.	Choose varieties independently and take responsibility for the ornamental plants they grow.
Irrigation, nutrient supply.	Know the ways of sustainable ornamental plant cultivation. (e.g. aquaponics).	Practice sustainable cultivation.	Open to innovations affecting the field, accept new things related to cultivation, and strive to get to know, understand and apply them.	Take responsibility for the work, results and possible failures of the group.

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Activity	Knowledge	Ability	Attitudes	Responsibility and autonomy
Creating a plant house and growing medium.	Know the methods of producing growing media and soil mixtures (e.g. soil mixer).	Produce growing medium.	Keep in mind the economics of cultivation.	Take responsibility for the work, results and possible failures of the group.
Merchandising, offering finished goods.	Know the ways of making ornamental plants into goods and of offering finished goods.	Prepare a commodity plant.	Open to innovations affecting the field, accept new things related to cultivation, and strive to get to know, understand and apply them.	Take responsibility for the ornamental plants they grow, for the work they do themself and for the work, results and possible failures of the group.
Evaluation of the learning process	Know the forms of self- and peer assessment.	Perform self- and peer evaluation.	Open to professional cooperation with professionals in their field.	Take responsibility for the work, results and possible failures of the group.

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Pedagogical plan broken down by activity

Activity:	**1. PROJECT PRESENTATION. INTRODUCTION TO ORNAMENTAL GARDENING.**			
Activity Description:	The students get to know the topic and schedule of the project.			
Learning outcomes	**Knowledge**	**Skill**	**Attitudes**	**Responsibility and autonomy**
Professional:	Know the basics of growing ornamental plants.	Perform ornamental plant cultivation tasks.	Committed to tasks related to the cultivation of ornamental plants, and consider their work valuable.	Perform ornamental plant cultivation tasks independently.
Project management knowledge, transversal skills:	Know the topic and steps of the project.	Perform the planning and organization of individual work processes.	Cooperates with group mates. Gather information to expand new knowledge. Look for cause and effect relationships.	Take responsibility for the work, results and possible failures of the group.
Digital skills:	Knowledge of digital tools. Independent use of Google products: Drive, Meet, Forms, Chat.			
Forms of work, methods, tools	Work in small groups and individually.			
Check, evaluate, feedback				
During project work	Digital evaluation (Redmenta, Kahoot) to assess the acquisition of basic concepts and botanical knowledge.			

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Activity:	**1. PROJECT PRESENTATION. INTRODUCTION TO ORNAMENTAL GARDENING.**
Assessment of transversal (soft) skills acquired in project work at the end of the activity	Peer evaluation in digital form (Kahoot).

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Activity:	**2. PRESENTATION OF VIOLA AS A MODEL PLANT**			
Activity Description:	Students learn about the morphology, habitus, and environmental needs of Viola x wittrockiana and Viola cornuta plants.			
Learning outcomes	**Knowledge**	**Skill**	**Attitudes**	**Responsibility and autonomy**
Professional:	Know the scientific Latin name of the plant and identify it with certainty. Know the concept and importance of biennial ornamental plants.	Propagate ornamental plants.	Committed to tasks related to the cultivation of ornamental plants, and consider their work valuable.	Perform the tasks of propagating ornamental plants independently.
Project management knowledge, transversal skills:	Collect information, interpret and organize them.	Collect and organize information.	Interested in new knowledge.	Actively participates in collecting and organizing knowledge related to the topic. Join the joint work.
Digital skills:	Collecting relevant information from the Internet. Creating and presenting a digital summary.			
Forms of work, methods, tools	Independent work. Systematization and processing of the collected material on a common platform. (Google Drive)			
Check, evaluate, feedback				
During project work	Self- and peer evaluation. The teacher's continuous reflection during the progress of processing the topic.			
Peer review at the beginning and end of the activity	Digital assessment (Kahoot).			

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Activity:	3. Creating a plant house and growing medium			
Activity Description:	Production of growing medium.			
Learning outcomes	**Knowledge**	**Skill**	**Attitudes**	**Responsibility and autonomy**
Professional:	Know growing media and the composition of soil mixtures. Know the various cultivation equipment, their parts, materials and equipment.	Prepare propagating material and plants. Operate and maintain cultivation equipment.	They keep in mind the economics of cultivation. Open to the use of materials and energy-saving solutions and technologies that can be used in modern growing equipment.	Use the appropriate growing media and propagating materials independently. Operate the cultivation equipment independently and assume responsibility for their activities.
Project management knowledge, transversal skills:	Collect and organize information.	Complex problem solving.	Recognize and consider a problem. Able to absorb new information.	Independent work.
Digital skills:	Creation of a digital comparison table of different cultivation equipment and soil mixtures.			
Forms of work, methods, tools	Group work.			
Check, evaluate, feedback				
During project work	Self-checking. They can list the advantages and disadvantages of different greenhouses and growing media, as well as the limitations of their practical application.			
Peer review at the beginning and end of the activity	Teacher development assessment, reflection.			

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Activity:	4. Irrigation, nutrient supply			
Activity Description:	Comparison of different irrigation methods, advantages and disadvantages.			
Learning outcomes	**Knowledge**	**Skill**	**Attitudes**	**Responsibility and autonomy**
Professional:	Know nutrient supply and irrigation methods.	Perform nutrient supply and irrigation.	Open to new results and innovations in the field, strives to get to know, understand and apply them. Strive to monitor changes affecting their work.	Perform general and special plant care tasks independently. Take responsibility for their work, results and failures.
Project management knowledge, transversal skills:	Systematization of knowledge.	Problem solving, cooperation.	Seek to understand the practical significance of modern procedures.	Independently.
Digital skills:	Making a comparative table of different irrigation methods.			
Forms of work, methods, tools	Group work.			
Check, evaluate, feedback				
During project work	Self- and peer evaluation.			
Peer review at the beginning and end of the activity	They can list the advantages and disadvantages of different irrigation methods and the limitations of their practical application.			

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Activity:	5. Basic plant protection procedures			
Activity Description:	They get to know the basic plant protection procedures that can be used in the greenhouse.			
Learning outcomes	**Knowledge**	**Skill**	**Attitudes**	**Responsibility and autonomy**
Professional:	Know the basics of plant protection, pest control methods, with particular regard to integrated control options.	Perform plant protection tasks under the supervision of a plant protection specialist.	Open to new results and innovations in the field, strive to get to know, understand and apply them. Strive to monitor changes affecting their own work.	Define plant protection tasks under professional supervision. Take responsibility for their work, achievements and failures.
Project management knowledge, transversal skills:	Collect, organize and prioritize information.	Solve problems, react to unforeseen events.	Open minded.	Critical thinking.
Digital skills:	Create a table comparing the different procedures.			
Forms of work, methods, tools	Group work.			
Check, evaluate, feedback				
During project work	Self evaluation.			
Peer review at the beginning and end of the activity	Digital assessment of the applicability of the learned methods.			

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Activity:	6. System of criteria for variety selection			
Activity Description:	They get to know the aspects of variety selection and marketability criteria.			
Learning outcomes	**Knowledge**	**Skill**	**Attitudes**	**Responsibility and autonomy**
Professional:	Aware of the needs of biennial ornamental plants.	Perform ornamental plant cultivation and sales tasks.	Strive to learn about the care needs of new breeds.	Take responsibility for the ornamental plants they grow.
Project management knowledge, transversal skills:	Collect and organize information.	Consideration of professional standards, problem solving, analytical ability, decision making.	Open minded.	Take responsibility for the ornamental plants they grow.
Digital skills:	Collecting relevant information from the Internet.			
Forms of work, methods, tools	Individual and group work.			
Check, evaluate, feedback				
During project work	Self evaluation.			
Peer review at the beginning and end of the activity	Peer evaluation.			

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Timeline - Gantt chart

Planned activities, schedule										
Duration: 10 weeks (26.02.2024.. – 28.04.2024.)	1	2	3	4	5	6	7	8	9	10
Management tasks										
Division of groups and tasks										
Introduction to ornamental gardening										
Theoretical and practical course material										
Presenting Viola x wittrockiana										
Creating a plant house and growing medium										
Irrigation, nutrient supply										
Basic plant protection procedures										
System of criteria for variety selection										
Measurement of greenhouse climate data										
Merchandising, offering finished goods										
Field practice										
Field work, data processing										
Management tasks										
Closing the project, summarizing and evaluating the results										

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