SCIENTIX LESSON PLAN

Title

DESIGN A GARDEN FOR YOUR COMMUNITY

Author(s)

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Licenses

Subject

List all the subjects that this lesson plan is intended for. If this is an interdisciplinary lesson, list multiple subjects.

Botany, garden design, Mathematics, ICT, Digital Design

Aim of the lesson

Describe in 1-2 sentences what you would like to achieve with your students by the end of the lesson.

In the end of the lesson students must know how to measure with accuracy, scale and digitally draw a small garden plot, choose plants suitable for the aim of the garden and the conditions, developing their creativity and collaborative skills. They are given freedom of choices so that they develop entrepreneurial skills too (according to the EntreComp framework)

Age of students

15-18, high-school students or vocational students of gardening or agriculture

Time

Preparation time: 1 hour

Teaching time: at least 7 hours

Teaching material

Online:

List here all the links of online tools and support documents that you will use during the lesson.

Google Earth https://www.google.com/earth/

Tutorial for Google Earth https://www.youtube.com/watch?v=bgjMSBXsFZQ

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About Garden design https://en.wikipedia.org/wiki/Garden_design

How to measure a garden and plot it on paper https://garden-design-courses.co.uk/how-to-measure-a-garden/

Tutorial video on how to measure a garden plot
https://www.youtube.com/watch?time_continue=121&v=eDxUS9F8NAQ

Tutorial video on how to draw a garden survey plan in scale
https://www.youtube.com/watch?v=AOci9wxahtw

GardenPlanner application http://www.smallblueprinter.com/garden/planner.html

Tutorial for GardenPlanner https://www.youtube.com/watch?v=R4vzG5HGTUg

Web search with key words: seasonal planting charts, vegetables growing in ***, plants growing in*** (*** refers to season, area, weather conditions)

Offline:

List here all the offline tools, such as: paper, glue, etc.

Per group: Measuring tape, paper, pen, ruler, a pair of compasses

Computer and internet connection

21st century skills

Add here how the lesson plan corresponds to 21st century skills. To find out more: http://www.p21.org/our-work/p21-framework .

In order to be completed, the activities require: collaboration among students, creativity, information literacy, communication, content knowledge, initiative

Lesson Plan

Describe here in detail all the activities during the lesson and the time they require. Remember, that your lesson plan needs to correspond to real-world problems in STEM education.

Name of activity	Procedure	Time
Decide what...	Students are divided into balanced groups of 4-5 persons (with mixed skills). They are given a self-assessment rubric to know the requirements in advance. They assign roles to each group member. Each group creates a folder on Google Drive. Students are asked to use Google Earth in order to find their town and explore public areas that could be transformed into gardens. Alternatively, the teacher provides photos of public places where the garden could be created. Students are asked to decide which area they would choose to be planned as a public garden and justify their choice. They keep their notes in a Google Doc in the shared folder. Students reflect on what they need to know in order to plan the garden and organize their work process.	1 hour

Name of activity	Procedure	Time
	Students watch the tutorial videos about measuring a garden plot.	
Measure it…	A visit in the area is organized. The students measure the area, keeping notes about the conditions (location, sunlight, exposure to winds, soil, water availability) and take photos. Alternatively, if a visit is not possible, they can measure the area on Google Earth. In that case they export a photo of the map. All data collected are kept in the shared folder.	1 hour
Scale and draft sketch	In the classroom students watch the tutorial videos on how to draw a garden survey plan. They convert the measurements in the appropriate scale (1:100 or 1:50 depending on the dimensions) using a Google Spreadsheet and they draw the survey plan using Garden Planner application or Google Draw	1 hour
Which plants can grow ...	They decide on what kind of garden they want to plan (e.g. ornamental garden, vegetable garden, etc.) They do a web search with specific keywords like: “seasonal planting charts, vegetables growing in ***, plants growing in ***” (*** refers to season, area, weather conditions) to find plants suitable for the specific garden. They store their findings in a google doc They add planting areas in the plan, and they choose what to plant and where.	2 hours
The digital plan	They finalize the plan in a digital format, arranging planting beds and constructions (if any). They prepare a chart with plants to be used and quantities required, elaborating their calculations of the dimensions of garden beds and the planting distance. In case they don’t know how to use Garden planner or Google draw they will need extra time to watch the tutorial.	1 hour
Presentation of the garden design	They prepare a Google Slides presentation of their work to be submitted to the local authority that is responsible for the public place that they have designed.	1 hour
	(If time available students could even construct a model of the garden in scale)	

Assessment

Describe here the assessment method of the lesson, if any. For example, if you plan on assessing your students with a quiz, include here questions and answer options with color-coding the correct answers.

Students use the rubric for self-assessment that can be found in the end of this document (next page)

Student feedback

Add here the method with which your students will be able to give you feedback and discuss the lesson.

Feedback among students and the teacher can be given with comments in the shared Google files

About Scientix

Scientix promotes and supports a Europe-wide collaboration among STEM (Science, Technology, Engineering and Mathematics) teachers, education researchers, policymakers and other STEM education professionals. If you need more information, check the Scientix portal, or contact either the Scientix National Contact Point or Scientix Ambassadors in your country.

Rubric for students' self-assessment - Lesson Plan *Design a garden for your community*

Categories	Improvement necessary	Some level of mastery	High level of mastery	Excellent level of mastery	Remarks / Comments
accuracy in measuring the plot	☐correct measurements of the dimension of the plot up to 25 %	☐ correct measurements of the dimension of the plot up to 50 %	☐ correct measurements of the dimension of the plot up to 75 %	☐ All measurements of the dimension of the plot up are correct	Teacher must know the dimensions of the plot
accuracy in drawing the plot in scale	☐ correct dimensions of the plot in scale, up to 25%	☐ correct dimensions of the plot in scale, up to 50 %	☐ correct dimensions of the plot in scale, up to 75 %	☐All dimensions of the plot in scale, are correct	Teacher must know the dimensions in scale
the use of plants in the garden	☐Plants are chosen but they are not suitable for the conditions of the plot	☐ Plants are chosen but only 50% are suitable for the conditions of the plot	☐ Plants are chosen but only 75% are suitable for the conditions of the plot	☐ All chosen plants are suitable for the conditions of the plot	Teacher must have a minimum of requirements for plants selection, according to the size of the plot and the type of garden students have chosen to design.
the quality of the design	☐ The design contains some of the designing elements (e.g. borders, paths, planting beds, plants) There are no explanatory texts.	☐ The design contains all elements (e.g. borders, paths, planting beds, plants) There are no explanatory texts about the elements of the design.	☐ The design contains all elements (e.g. borders, paths, planting beds, plants) There are explanatory texts about some elements.	☐The design contains all elements (e.g. borders, paths, planting beds, plants) and there are explanatory texts about each element.	Teacher must have defined a minimum of elements that the garden should include, depending on the size of the plot and the type of garden the students have chosen to design.
collaboration	☐The members of the group didn't collaborate.	☐Only a few members of the group collaborated well.	☐ Some members of the group collaborated well.	☐All members of the group collaborated well.	

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Categories	Improvement necessary	Some level of mastery	High level of mastery	Excellent level of mastery	Remarks / Comments
final presentation	☐ Three or more of the required parts of the presentation are missing or are incomplete	☐ Two of the required parts of the presentation are missing or are incomplete	☐One of the required parts of the presentation is missing or is incomplete	☐The presentation includes: at least one photo of the plot, the reason this plot was chosen and the aim of the garden, the digital design of the garden, explanatory texts for all the elements of the garden, a chart with plants to be used and quantities required	Teacher must have a minimum of requirements for the presentation.