

Construction of a solar tracker – v1:

MaFEA – Making Future Education Accessible
PR3 - EDUCATIONAL LEARNING PATHS

Technology tools:	Software: Thinglink
Tool version:	
Date:	12/112022
College:	Emmaüs Aalter Belgium
Author (optional):	Pierloot Jimmy
Subject of the lesson(s):	Construction of a solar tracker

Lesson title/subject: Introduction to the toolbox from Arduino

Intention: What do you wish for or hope to happen? (Intentions are often not measurable or tangible, but help you in developing the design process.)

Students will make a solar tracker with 2 persons.

1. Students have to search information
2. Students have to make a draft from a solar tracker
3. Students have to make a simple prototype of a solar tracker
4. Students have to make a 3D model
5. Students have to make their own 3D model.
6. Students have to test their model and program it.

Desired Outcomes: One or more measurable and tangible goals the teacher aims for with this lesson/these lessons.

1. The students have to search information.
2. They have to construct a simple model with paper and cardboard.
3. With that model they have to make an 3D model with a pro designing tool like Autodesk Inventor. They have to construct the model so it is easy to construct with a laser machine or a 3D printer.
4. Students have to make the components and assembly it together.
5. The students have to program to solar tracker to work. They can use Arduino.

Agenda: HOW are you going to reach the goals? Description of the lesson plan / educational activities / working methods.

Lesson 1:

1. Students come to the classroom. The teachers ask the students what they know about solar panels.
2. The teachers shows some examples from a solar tracker
3. The teacher explaines how thinglink works.
4. The students can start on their own and have to go trough the thinglink PP.
<https://www.thinglink.com/scene/1649180968600207362>



or QR code:

5. The teachers walk around and help the students.



6. In the first lesson they have to search information and make a draft model.
7. At the end of the lesson, they show their draft to the teacher and the other students. They can discuss the pro and con's of it. They can adjust their model.

Lesson 2:

1. Students come to the classroom.
2. The students have to do step 3, construction of the prototype with paper, cardboard, wood, ...
3. The teachers walk around and help the students.
4. At the end of the lesson, they show their prototype to the teacher and the other students. They can discuss the pro and con's of it. They can adjust their model.

Lesson 3:

1. Students come to the classroom.
2. The students have to do step 4, the students make a 3D model with Autodesk Inventor.
3. The teachers walk around and help the students.
4. At the end of the lesson, they show their 3D MODEL to the teacher and the other students. They can discuss the pro and con's of it. They can adjust their model.

Lesson 4:

1. Students come to the classroom.
2. The students have to do step 5, the students construct the model. They have to make dxf-files for the parts that have to be cut with the laser. They have to make stl-files for making 3D-prints. Then they assemble the pieces.
3. The teachers walk around and help the students.
4. At the end of the lesson, they show their model to the teacher and the other students. They can discuss the pro and con's of it. They can adjust their model.

Lesson 5:

1. Students come to the classroom.
2. The students have to do step 5, the students construct the model, they assemble all the parts to one. They also make the connections with the wires. They also program the solar tracker.
3. The teachers walk around and help the students.
4. At the end of the lesson, they show their model to the teacher and the other students. They can discuss the pro and con's of it. They can adjust their model.

Roles: Who facilitates what? Who participates? What do we expect of the students?

For students STEM from 16 to 17 years old

1. Teacher -> instructs, leads the lesson
2. Students -> take part in the class activity. They have to search, construct, adapt, design, discuss...

Rules: Rules or principles are about how you want to learn and work together.
<ol style="list-style-type: none"> 1. Open atmosphere -> everybody can share his/her experience with the class. 2. Have respect for everybody that is taking part in the activity. Be quiet and let everyone experience the process
Time: Describe the time path: What time do we start / finish / break? When is the time for reflection? What happens between contact times?
<ol style="list-style-type: none"> 1. (5min) students in the classroom. 2. (10min) Introduction to solar panels 3. (3min) The teacher explain what they have to do. 4. (5min) The teacher explains how thinglink works. 5. (25min) The students can start on their own and have to go through the thinglink PP and they have to construct the solar tracker. There are several lessons to make the whole constructions. The teacher helps the students. 6. (2min) The result is discussed at the end of the lesson. <ul style="list-style-type: none"> • Approximately +- 50 min.