


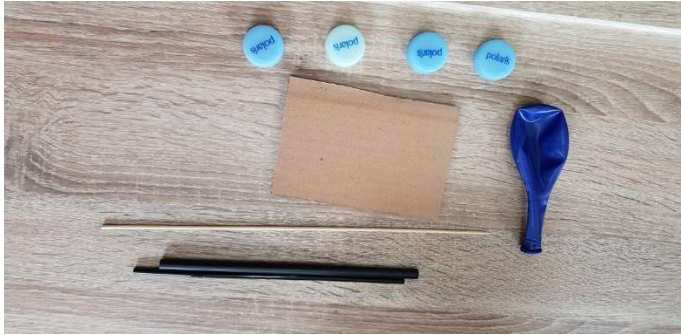
In2steam Lesson Plan (Activity) Template

1. Name of the lesson	<i>My own vehicle</i>
2. Target group	8-10 years old
3. Duration	45 minutes
4. STEAM Skills/ 21st Century Skills	Creative Thinking Critical Thinking Problem solving Tech Literacy 
5. Expected learning outcomes	By the end of this unit, students will be able to: <ul style="list-style-type: none"> ● Build their own vehicle which moves by using air flow as a driving force of the vehicle ● Understand the mechanism of operation of vehicles ● Think about mechanical aspects of machines' construction ● Prepare all of the elements necessary to create a simple machinery ● Notice the connection between technical and artistic-designing knowledge
6. Subjects and topics covered	Math, physics and arts In particular: <ul style="list-style-type: none"> ● Students can use their manual skills and available materials to create a small invention, mechanism which work as the machines seen everywhere around. ● By use of creative thinking students can figure out by themselves what is necessary to build something, where they can find it, which objects have specific, needed features to implement into the specific mechanism and how to connect all of them to receive desired effect. ● During discussions made in the classroom before the activity students can revise their knowledge about fundamental and necessary components of the vehicle. Thanks to that they can find connections with other mechanisms and get the pattern which stays behind many of them. ● By using their manual and artistic skills students better understand the way of work of specific mechanisms and how to create them to fulfill their function. ● Thanks to this activity students may be able to get more interests in technical work and see that building and constructing is not very difficult and even they can do that by using simple materials.
7. Methodologies	Design Thinking Inquiry Based Learning Problem Based Learning

8. Integration of the Arts	Arts is integrated during the whole activity as students will deal with arts, designing and constructing. Students will thus develop manual and artistic skills.
9. Learning Environment	Classroom
10. Required resources	<ul style="list-style-type: none"> • Cartons and papers • Scissors • Adhesive tape • Glue • Wooden sticks • Balloons • Plastic straws • Plastic bottle caps • Rulers
11. Prior knowledge a. teacher b. students	<p>In order to deliver this lesson, the teacher will need to have the following knowledge and skills set:</p> <ul style="list-style-type: none"> • knowledge about the operation mechanism of vehicles • knowledge about basic components of the vehicle • knowledge about the law of physics related to the driving force of air • construction skills • good management in the classroom <p>In order to be able to participate and contribute to this lesson, the students will have achieved the following standards:</p> <ul style="list-style-type: none"> • knowledge about basic components of the vehicle • knowledge about using basic tools, e. g. scissors, adhesive tape, ruler
12. Detailed description of the step-by-step sequences of the unit, incl. specific activities to support the learning experience	<p>STEP 1: Brainstorming Ask your students: What does a car need to move and be easy to drive? Possible answers could be: wheels, tires, engine, hood, steering wheel, mirrors, lights, etc.</p> <p>STEP 2: Looking for the materials Ask your students which objects from our closest area can we use to build a vehicle – what can be used as wheels, as a vehicle’s cabin, as an engine.</p> <p>STEP 3: Discussion about mechanism of car’s movement. If we want our vehicle to move what criteria must be met? Possible answer could be: the wheels must rotate (they can’t be stuck or attached by something what will not allow them to rotate) wheels must be in the same distance on each side from chassis, the engine must produce some kind of energy to let the vehicle move without anyone’s interference.</p> <p>STEP 4: Discussion about engine and driving force. Ask a question: What does give a power to the car that it moves? Answer: Engine. Ask a question: What does the engine need to get this power? Answer: Fuel/gas.</p>

	<p>Ask a question: What can we use as engine in the car we will build? What will be the fuel?</p> <p>Answer: Balloon will be an engine and air inside will be a fuel which will give driving force to our car.</p> <p>After this discussion students should think how to place engine (balloon) on the vehicle to let it move and in which direction it will go depending on the balloon's placement.</p> <p>STEP 5: Building of the vehicle (you can find pictures in Annexes)</p> <ol style="list-style-type: none"> 1) Cut a rectangular shape out of cardboard which will be used as a chassis 2) Attach a plastic straw to the chassis in the middle of it to have two endings of the straw sticking out of the rectangular shape 3) Make small holes in each plastic bottle cap 4) Stick the wooden sticks to the down part of chassis ensuring that the sticking-out-part has the same length from each side (if the sticks are too long cut off some part of it) 5) Insert wooden sticks inside the holes of bottle caps at each end. Check if they rotate freely and there is nothing what can block them from moving. Check using your hand if the vehicle moves forward and backward. 6) Inflate the balloon, place a straw attached to chassis inside it and tape balloon's entrance with adhesive tape to not let the balloon to deflate. Remember also to cover the other ending of the straw. 7) when all of the elements are ready you can place the vehicle on the empty area and open the other ending of the straw to start the air flow. Because of the strong air flow your vehicle should move. <p>STEP 6: A car race with use of the built vehicles. Children can compete amongst each other which vehicle is the fastest.</p>
<p>13. Gender-inclusive strategies and activities planned</p>	<p>All of the students in the classroom will participate in this activity. All – girls and boys will have opportunity to discuss about components of vehicle, objects which can be used to build their own car, mechanism which must be used to make the vehicle to move. All of the children will have opportunity to give ideas, share them with others and build their own vehicle.</p>
<p>14. Assessment & Evaluation</p>	<p>Thanks to this activity students can:</p> <ul style="list-style-type: none"> - Develop their technical skills and interest about mechanisms and its importance in today's technologies - Improve their knowledge about materials which can be used to create some self-made mechanisms - Develop imagination and creativity - Notice the connection between technical and artistic-designing knowledge

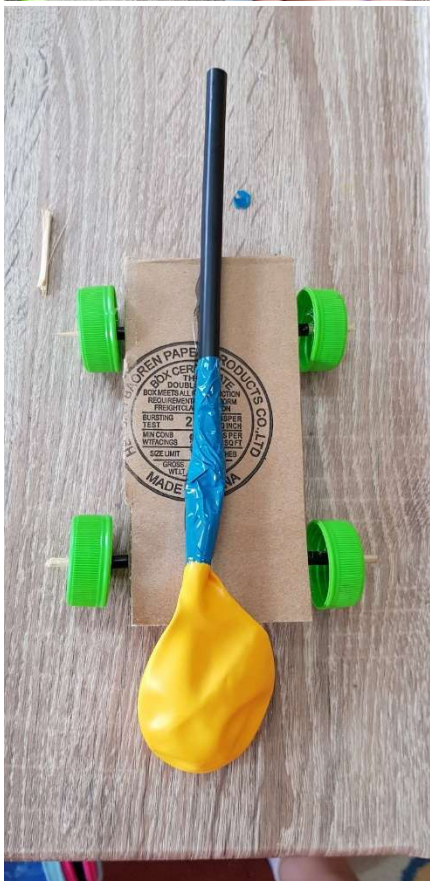
STEP 1



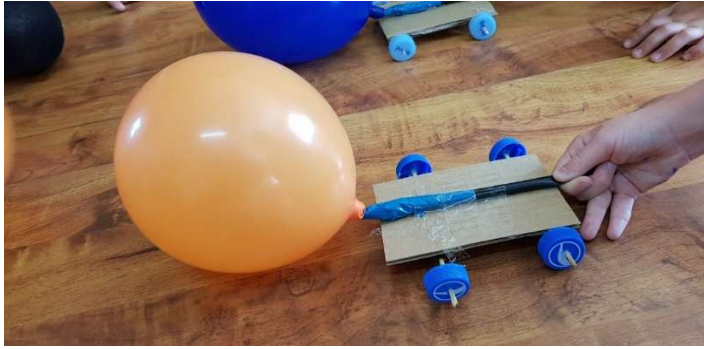
STEP
2,3,4,5



STEP 6



STEP 7



STEP 8

