


In2steam Lesson Plan

1. Name of the lesson	<i>Create your personal STE(A)M Lab</i>
2. Target group	Pupils 8-11 years old
3. Duration	1,5 h
4. STEAM Skills/ 21st Century Skills	Problem Solving Critical Thinking Creative Thinking Tech Literacy 
5. Expected learning outcomes	By the end of this unit, learners will be able to: <ul style="list-style-type: none"> ● think creatively, develop their imagination, explore, invent, develop critical thinking; ● the activity will be used to introduce the concept of STEM Lab and to explain to the students the characteristics of a STEM Lab; ● experience the creation of a scientific instrument, combining elements belonging to art and human subjects in general; ● recognize that science can also be learned through experimentation with art.
6. Subjects and topics covered	<p>Learners are presented with wide-ranging tools and materials that they can choose to create their own STE(A)M Lab.</p> <p>The purpose of the activity is to create a little Lab with different tools, that will be chosen by students, selecting the tools that they believe are most useful in the creation of this small Lab and in order to deal with different topics at school, retrieved from biology, history, maths etc.</p> <p>The students are invited then to use the selected supplies to invent experiments, pretending to be a scientist.</p> <p>They have to use artistic material that the teacher will have settled on the table of tools to choose from.</p> <p>At the end of the activity, students will acknowledge that STEM subject can be learned through arts.</p>
7. Methodologies	Tinkering
8. Integration of the Arts	Students will create their <i>personal STE(A)M Lab</i> with tools and materials that they will choose and select themselves.
9. Learning Environment	In the classroom or in a school laboratory.
10. Required resources	List resources required for a successful lesson: <ul style="list-style-type: none"> - Paper box: to be used by each student as a base of the Lab; - A series of simple tools (fabric threads, polystyrene balls, coloured sheets, pencils and so on ... being careful to include artistic materials among other scientific instruments): from which the students will select the tools to furnish their lab; - Availability of the laboratory of the school.

<p>11. Prior knowledge a. teacher b. students</p>	<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"> • Teachers must have basic knowledge about the characteristics of a STEM Lab; • Teachers involved have to know about the Tinkering approach. They will apply the Tinkering approach, using arts and fantasy to explain scientific concepts. <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"> • Students will learn how to select the right tools (logic process) and to use separate elements to create something new, starting from a teacher's indication; • By planning, designing, making, testing, and refining in a personal process of creating something new, the learners draw on their prior knowledge, creates connections between different existing ideas and concepts, and builds new understanding which is synthesised into their existing mental models.
<p>12. Detailed description of the step-by-step sequences of the unit, incl. specific activities to support the learning experience</p>	<p>STEP 1: The teacher sets up a table where it will be a series of simple tools (fabric threads, polystyrene balls, coloured sheets, pencils and so on ...). Each student is given a box (even an empty shoe box).</p> <p>STEP 2: Students are invited to choose from the materials prepared on the table by the teacher and bring them to their workstation. They will then use the tools collected to create their personal STEMLAB inside the box.</p> <p>STEP 3: Once they have collected the tools, students are invited to pretend to be a scientist and to invent an experiment with the materials collected in their own personal STE(A)M Lab.</p>
<p>13. Gender-inclusive strategies and activities planned</p>	<p>Identify specific steps to ensure girls are as motivated and as engaged as boys across all activities: Teachers will pay attention that each student is engaged in the activity: specifically, they will invite male and female students to use their imagination and inclinations in the creation of the STE(A)M Lab.</p>
<p>14. Assessment & Evaluation</p>	<p>Include activities to check for understanding, opportunities for self-assessment and reflection; make allowances to evaluate the work during the lesson, so that necessary adjustments can be made and findings can be used for further planning: The moment of evaluation and analysis of the activity will be held with the involvement of each student, in order to engage them fully in the activity and to make sure that the concept will be transmitted easily and in such a way that the moment of learning is a moment of sharing.</p>