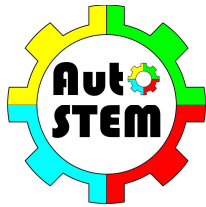


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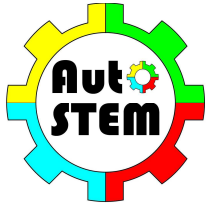
AutoSTEM lesson plan example 2

<i>Title of your project lesson</i>	"The Actobat"
<i>The Children</i> • Age	7 – 8 years (3 rd grade)
<i>Learning Objectives</i>	<ul style="list-style-type: none"> • Gaining knowledge of physics and mechanisms, especially linkages • Development of engineering competencies for analysis and design • Improving mathematical concepts in the process of construction and assembly • Problem solving and creativity
<i>Automata to be constructed</i>	The acrobat is a moving toy that makes acrobatic movements when the connections are complete and the rotation is done manually
<i>Resources</i>	colored cardboard, shoe box, wooden skewers, split pins, corks, scissors, pencils, felt-tip pens, line
<i>Cross-curricular links</i>	Mathematics, Surrounding World, Technology and Entrepreneurship
<i>STEM content</i>	<ul style="list-style-type: none"> • Integration of competencies from the individual subjects • Application of mathematical skills for measurement and drawing • Knowledge of the human body and its movement • Improvement of technical abilities



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<p><i>The script</i></p> <p><i>Expected project results</i></p>	<ul style="list-style-type: none">• Each toy construction allows children to experience one or more areas of STEM,<ul style="list-style-type: none">○ to find connections between different disciplines,○ to develop problem-solving skills, and○ the ability to make sense of scientific concepts related to real-life situations.• Students organize and plan their activities, develop mathematical and engineering competencies.• Teamwork helps to improve their skills for cooperation, tolerance and communication.
<p><i>Activity description, plan</i></p>	<ol style="list-style-type: none">1. Introduction to the topic: The lesson begins with solving a crossword puzzle for geometric shapes (triangle, circle, rectangle, square). Which word is hidden in the colored rectangle? / game / From the word game form a verb / play /; adjective / playful /; feminine noun, singular / toy /. What is the meaning of the word toy, where can we find it? / In the dictionary - An object that serves for children's entertainment, play / Do you have a favorite toy? How do you play with it? What toys do you prefer - static or moving? Do you think it is possible to make a moving toy yourself?2. Setting the topic: Today we will make a toy with you - Acrobat. Where can we see an acrobat? What movements does he make? The teacher shows a model of the product and introduces the students to a video showing the functioning and manufacture of the product: https://www.youtube.com/watch?v=a8Wlwm1UDJ03. After the observation, a discussion and comments are held about how the acrobat moves and how it is constructed, what the body parts look like, what shapes they are and how they are located. Particular attention is paid to the way of



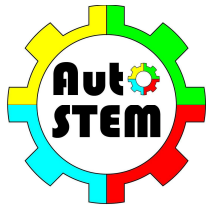
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connecting the individual parts and the types of connections are discussed - movable and immovable. / The connection is a rigid element with a hinge at each end to connect with other elements. The links are used to connect different elements together and to transfer movement from one place to another./ The possibility of using recyclable materials to make nature is discussed when making the toy.

4. **The students are divided into 5 teams.** They are tasked to discuss what materials are needed, to distribute their roles in the team so that everyone is an active participant, to plan and organize their activities in order to work as quickly and efficiently as possible. The actual work is carried out in two consecutive lessons in mathematics and technology and entrepreneurship. The students watch the instruction again. The necessary materials are discussed and whether each team has them. The different parts of the acrobat are discussed - how many they are, what shapes they are, how they are arranged. What does the body look like? And the arms and legs? Are they the same size? What shape is the head? How can we draw it, since we have not yet learned how to draw a circle? / With a water bottle cap / How can we make the holes in the connection points? / Using scissors, skewer or pencil / Which part of the shoe box will we use for support? / the side parts of the box and we will cut the bottom and one short side / Where will we place the support, what will we use as a base? / box lid /

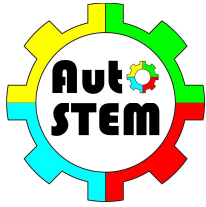
5. **Making the moving toy – The Acrobat**

- a. Draw the parts of the acrobat – a large rectangle for the body 80mm and 65mm (be sure to specify the fold for its lengths), eight rectangles for the arms and legs 45mm and 15mm, small rectangles for the palms and



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	<p>soles (estimate dimensions), a circle for the head .</p> <p>Consider where to mark the holes for drilling holes so that the connection is strong and effective. Students are given the opportunity to be creative and decorate with colored paper or draw their acrobats with pencils, felt-tip pens.</p> <ol style="list-style-type: none"> b. Cut out the shapes and fold in the required places. c. Drill the holes and connect the individual parts with the pins. d. Make the support - think about where to drill the holes so that the acrobat does not touch the base. e. Cut four circles from the corks. f. Place the acrobat on the support with a wooden skewer and cork rings. g. Place the structure on the base. <p>6. Demonstration of the working mechanism by each team. If necessary, an adjustment is made.</p> <p>7. Assessment of the result: The lesson ends with an assessment by the teacher and self-assessment by the students. The knowledge of the individual subjects, the applied different skills, the manifestations of cooperation are encouraged.</p> <p>8. If desired, such toys can be made at home with a changed character – animal, clown, superhero and others. and then demonstrate to the class.</p>
<p><i>Criteria for assessment and self-assessment</i></p>	<p>Students</p> <ul style="list-style-type: none"> • demonstrate their knowledge in individual subjects, • apply different skills, • show cooperation, • evaluate themselves and their classmates



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AutoSTEM 2018-1-PT01-KA201-047499

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