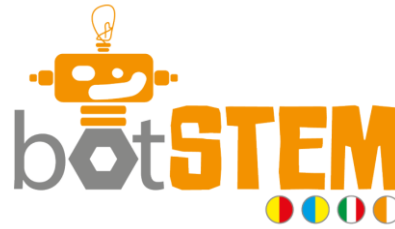


**BotSTEM – Erasmus+ KA2 Project**  
2017-1-ES01-KA201-038204

**Good practice template**

<p><b>1. Title of the activity / practice</b></p>	<p><b>Gravitation and friction</b></p>
<p><b>2. Origin of the activity</b></p>	<p>Design-based approach with preschool teachers and researchers</p>
<p><b>3. Age of the students</b></p>	<p>4-5 years old</p>
<p><b>4. Target group (type of the learners, size of the group)</b></p>	<p>Four children, two per Bluebot robot</p>
<p><b>5. School subjects + topics concerned</b></p>	<p>Physics, mechanics</p>
<p><b>6. Educational goals of the practice</b></p>	<ul style="list-style-type: none"> <li>• What knowledge do we want the children to develop? The children understand inclination and steepness and that friction influences the robot rolling uphill.</li> <li>• What does it mean to understand/know this? The children will find a way to help the robot get up on the table, up the inclined plan.</li> <li>• What separates different ways of understanding this? The children will apprehend the activity in different ways. Some will find one solution and stay happy with that, others will understand more of the complex situation, and what it takes for the robot to get all the way up. Some children will understand and use the physics e.g. words, inclination, friction, force and gravity, while others will use their own everyday words.</li> <li>• How do the children understand this when we start the activity? The children have some knowledge about friction and have tried it both outdoors (hills, slides and ramps) and indoors (built tracks for toy cars with blocks under the carpet). However, this has been focused on movement downhill, not uphill, which is the case here. They have used words like resistance, slippery, and rough.</li> <li>• How will the children understand it after the activity? The children will connect their new knowledge to the physics words.</li> <li>• How do we want them to use the acquired knowledge later on? The children will be able to use the new knowledge in different circumstances.</li> </ul>



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<b>7. Duration</b>	2 h
<b>8. Place</b>	Preschool 3-5 years old children
<b>9. Short description of the activity</b>	Children are challenged with aiding a robot (bluebot) to ascend to a table. A large assortment of planks and boards of different length are provided to help the children build bridges for the robots. The children can choose between short steep "bridges" or longer less steep ones. Hence, the children are given opportunity to discern the golden rule of mechanics and the role of friction and gravity.
<b>10. Evaluation</b>	Teacher's observation
<b>11. Materials / Resources / technical requirements</b>	Bluebot, table, boards and planks
<b>12. Tips for educators / theoretical background (if applicable) or curriculum context</b>	