

1 **Supplementary Information**

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**The Effect of Common Knowledge Construction Model-  
based Teaching on the Cognitive and Psychomotor  
Learning of 7th Grade Students**

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1 **Appendix 2**

2 **Application Plan for Experimental Process carried out in Experimental Group**

<b>Subject</b>	<b>Time</b>	<b>Activities</b>	<b>Targeted Concepts</b>
<b>Mass and Weight Relationship</b>	80 minute s	Gravity Force From Past to Present Is there a difference with Mass and Weight? Last trip with Apollo-17	<b>Mass</b>
	80 minute s	Is my weight the same on different Planets? Newton and the Law of Gravity What if it wasn't gravity?	<b>Weight</b> <b>Gravity</b>
	80 minute s	At the poles or at the equator? Conceptual change text Let's find the right outlet Let's answer the questions Mass and Weight	<b>Gravitation</b>
<b>Force, Work and Energy Relations</b>	80 minute s	Let's move on, do work In which case do we do work? Let's apply force, do work	<b>Physical Work</b>
	80 minute s	What does kinetic energy depend on? What does gravitational potential energy depend on?	<b>Kinetic Energy</b>
	80 minute s	Energy unit "joule" Which brings more energy? Conceptual change text How did my toy car move?	<b>Gravitational Potential Energy</b>
	40 minute s	In what case was the work done? Concept map: force, work and energy Structured grid: Let's determine the types of energy	<b>Flexibility Potential Energy</b>
	80 minute s	Both transformed and protected What happened to my car's speed?	<b>Conservation of Energy</b>
<b>Energy Conversions</b>	80 minute s	In the air or in water the faster? The effect of air resistance and water resistance on daily life The conquest of Istanbul and friction force	<b>Kinetic Energy Loss With Friction Force</b>
	80 minute s	Conceptual change text: if there is no movement, there is friction force The invention that will change friction force laws from Turkish scientists Biomimetic: Aerospace plane and dogfish	<b>Weather and Air Resistance</b>

40 minute s	Let's solve the puzzle I think and I answer Is it increase or decrease?
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2 **Appendix 3**

3 **The Application Process Related to “Mass and “Weight” for Experiment and**  
4 **Control Group**

	<b>Experimental Group</b>	<b>Control Group</b>
	<p>The lessons were carried out according to OBYM. The activities developed by the researcher were used as a source.</p> <p>In the “<i>Exploring and Categorizing</i>” phase;</p>	<p>The lessons were carried out in accordance with the science course teaching program. The Science textbook was used as a source.</p>
<b>Practice</b>	<p>The students’ preliminary knowledge on the subject of “Mass and Weight” was discovered with the “Weight or Mass” activity and the “Word Association Test” applied before the instruction. The answers given to the questions by the students were classified by the researcher outside of school hours. As a</p>	<p>In the introduction phase; to reveal students’ ideas about mass and weight “What is mass? What is gravity? What is weight?” questions were directed to the students. Students' opinions about the concepts of mass and weight were taken. Discussions were held on these concepts.</p>

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result of the classification, the students' prior information was categorized and the students were divided into groups. Then, "Gravity Force from Past to Present" activity was applied to make students aware of the nature of science.

In the "*Constructing and Negotiating*" phase;

"Weight? Mass?" Based on the activity, an in-class discussion was started on the question of "How can we measure the weight of a bag full of marble?". Class discussions were held by students sharing their opinions with the class. In order for the students to observe and discover the differences between the concepts of mass and weight, the activity "Is there a difference with Mass and Weight?" Prepared according to the POE strategy was applied. With this activity, students are expected to gain scientific inquiry skills. Then, "The last trip with Apollo-17" and "Is my weight the same on different planets?" activities were carried out. Group discussions were held after the event.

In the "*Translating and Extending*" phase;

"Newton and the law of gravity" activity was held with students. With this activity, students were able to comprehend that scientific knowledge includes

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In the light of the information received from the students at the introduction phase; The activity called "Let's Measure the Weights of Objects" was held. With this activity, it was ensured that the students realized that the concepts of "Mass and Weight" are different from each other. Then "How do mass and weight change on different planets?" Group discussions were held by addressing the question to the students.

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In the evaluation phase; In order to reveal the students' learning about mass and weight, an activity named "What We Learned" in the textbook was carried out.

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imagination and creativity. Then “What if it wasn’t gravity?” activity was carried out. With this activity, students were asked to choose one of the difficulties we would encounter if we had lived in an environment where there was no gravity, to come up with solutions and to discuss their suggestions with their class.

In the “*Reflecting and Assessing*” phase;

To assess students’ learning about mass and weight; Matching, short answer questions and diagnostic branched tree activities were used.

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