

### Lesson Plan Table

Subject: Physics

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Estimated time: 50 minutes

Summary: APP'S IN CLASSROOM: Physics Toolbox Sensor Suit, Sonic Tools and Accelerometer Meter

<b>Objectives</b> (Specify skills information that will be taught)	<b>Activity/ Information Teacher Guide/ Student guide</b>	<b>Materials Needed</b> (Other resources - web, book...)	<b>Assessment Methods</b> (steps to check for student understanding)	<b>Time Where?</b>
<p>The Smartphone's have many sensors and these apps, allow you to take advantage of them:</p> <p><b>Know Concepts or Keywords :</b></p> <p><u>Physics Toolbox Sensor Suit and Sonic Tools</u> -To use the oscilloscope to observe waveform of simple and complex sounds and to measure the wave period.</p> <p><u>Accelerometer Meter</u> - To measure acceleration of a free-fall object.</p> <p>-To measure the acceleration on an object moving on an inclined plan and to compare the result with the theoretical value.</p>	<p><b><u>Motivation Activities</u></b></p> <p>Use smart phone as a sensor and learn more about physics.</p>	<p>Phone or tablet with WIFI connection</p>		<p><b>In Classroom</b></p> <p>50 minutes</p>

<b>Description of the activity:</b>	
<b>Introduction</b>	<p><u>Physics Toolbox Sensor Suit and Sonic Tools</u> To use the <b>oscilloscope</b> to observe wave forms produced by simple tones, such as tuning forks and more complex sounds such as the xylophone. The wave form is regular because the tuning forks produce a pure sound and so you may measure the period and the</p>



	<p>amplitude. On the other hand, the xylophone produces a very complex sound, so the wave form is irregular. The louder the sound is, the biggest will be the amplitude and vice versa.</p> <p><u>Accelerometer Meter</u> : To use the <b>accelerometer</b> to measure the acceleration of a free-fall object.</p> <p>To use the accelerometer for measuring the acceleration on an object moving on an inclined plan and to compare it with the theoretical value. Students must realise that acceleration only depends on the angle of the inclined plan</p>
<b>Main activity</b>	Install the APP's using QR code and use them.
<b>Lesson Guide (Step by step)</b>	<p><b><u>Physics Toolbox Sensor Suit</u></b>  <b>To observe the waveform of simple and complex sounds and to measure the wave period</b>          -to set the oscilloscope mode          -to observe the waveform          -to measure the wave period</p> <p><b><u>Accelerometer Meter</u></b>  <b>To measure acceleration of free fall object</b>          -to set the phone so that you see the screen in the portrait mode and perpendicular to the floor          -To drop the phone on a soft surface and to register the acceleration on the axis Y.          -To check the slope angle which must close to 90°</p> <p><b>To measure the acceleration on an inclined plan</b>          To measure the slope angle of the inclined plan          To measure the acceleration only on the axis Y and to compare it with the theoretical value (<math>a=g \cdot \sin x</math>)</p>