

Energy Skate Park

Spoken Tutorial Project

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

Meenal Ghoderao

IIT Bombay

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Learning Objectives



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- ▶ **Demonstrate Energy Skate Park, PhET Simulation**



System Requirement



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- ▶ **Ubuntu Linux OS v 14.04**



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- ▶ **Java v 1.7.0**



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- ▶ **Ubuntu Linux OS v 14.04**
- ▶ **Java v 1.7.0**
- ▶ **Firefox Web Browser v 53.02.2**



Pre-requisites



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- ▶ **Learner should be familiar with topics in high school Physics**



Learning Goals



Learning Goals

- ▶ **About law of conservation of energy**



Learning Goals

- ▶ About law of conservation of energy
- ▶ To show Pie chart and Bar graphs for energy changes



Learning Goals

- ▶ About law of conservation of energy
- ▶ To show **Pie chart** and **Bar** graphs for energy changes
- ▶ To use **Energy vs Position** graph to show the energy value at a particular position



Learning Goals



Learning Goals

- ▶ **To change location and observe the energy changes**



Learning Goals

- ▶ To change location and observe the energy changes
- ▶ About change in energy due to change in mass and friction



Law of Conservation of Energy



Law of Conservation of Energy

- ▶ **Energy can neither be created nor destroyed**



Law of Conservation of Energy

- ▶ Energy can neither be created nor destroyed
- ▶ It can only be converted from one form to another



Law of Conservation of Energy

- ▶ Energy can neither be created nor destroyed
- ▶ It can only be converted from one form to another
- ▶ The total energy before and after the transformation is conserved



Potential Energy



Potential Energy

- ▶ **Potential energy** is the energy possessed by an object by virtue of its position



Potential Energy

- ▶ **Potential energy** is the energy possessed by an object by virtue of its position
- ▶ **PE = mgh**
m = mass of object (kg)
g = acceleration due to gravity (m/s^2)
h = height (m)



Kinetic Energy



Kinetic Energy

- ▶ **Kinetic energy** is the energy possessed by a body due to its motion



Kinetic Energy

- ▶ **Kinetic energy** is the energy possessed by a body due to its motion
- ▶ $KE = \frac{1}{2}mv^2$
m = mass of object (kg)
v = velocity (m/s)



PhET Simulation-Link



PhET Simulation-Link

<https://phet.colorado.edu>



Assignment



Assignment

- ▶ Select **Double Well** track from tracks menu and observe the energy changes



Assignment

- ▶ Select **Double Well** track from tracks menu and observe the energy changes
- ▶ Compare the energy changes in **Double well track with Double Well Roller Coaster Mode**



Assignment



Assignment

- ▶ Find the changes in the thermal energy



Assignment

- ▶ Find the changes in the thermal energy
- ▶ Give an explanation



Assignment

- ▶ Find the changes in the thermal energy
- ▶ Give an explanation
- ▶ **Hint:** Right click on the track and select Roller Coaster Mode



Assignment



Assignment

- ▶ Using **Tracks** box,
Create tracks and observe the
change in energies



Summary



Summary

- ▶ How to use Energy Skate Park, PhET simulation



Summary



Summary

- ▶ About law of conservation of energy
- ▶ To show **Pie chart** and **Bar** graphs for energy changes
- ▶ To use **Energy vs Position** graph to show the energy value at a particular position



Summary



Summary

- ▶ To change location and observe the energy changes
- ▶ About change in energy due to change in mass and friction



About the Spoken Tutorial Project

- ▶ Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- ▶ It summarises the Spoken Tutorial project



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- ▶ If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to contact@spoken-tutorial.org



Forum for specific questions

- ▶ Do you have questions in **THIS Spoken Tutorial?**
- ▶ Please visit
<http://forums.spoken-tutorial.org>
- ▶ Choose the minute and second where you have the question
- ▶ Explain your question briefly
- ▶ Someone from our team will answer them



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- ▶ More information on this Mission is available at

<http://spoken-tutorial.org/NMEICT-Intro>

