Game Based Learning

Exploring Digital Games For Learning

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Training on Game Based Learning, 20-24 June 2022, CIET, NCERT, Delhi

Learning Outcomes : Exploring Digital Games for Learning

At the end of this session, you will be able to

- Identify elements of digital, real life games and simulations
- Discuss main theories around game based learning
- Extrapolate role of teachers in digital game based learning and OER
- Create criteria for selecting effective games for learning

How we will learn

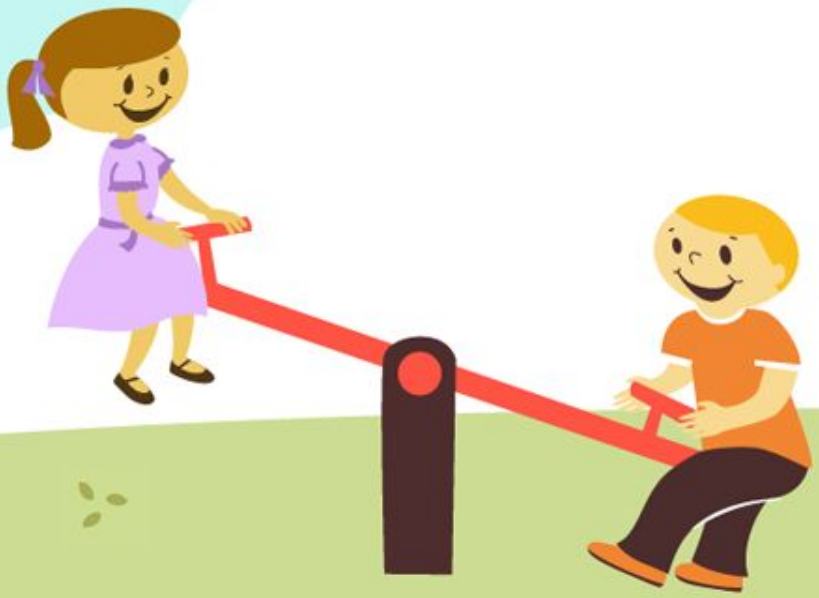
- Stories, videos and scenarios
- Learners, collaboration and experiences
- Activities & QA

Learning Level	Games and Simulations	Areas
Early Years	Sugarizer and others	Subject agnostic
Secondary School	Connected Learning Initiative (CLIx), Google lens, maps	Science Maths Languages Social Science
Higher Learning	PHET, Play-Learn IITB and others	Science, Technology

When to use digital games during learning

- Introducing a new topic
- Explaining a difficult concept
- Assessment
- Summary
- Entire topics can be taught through games

Activity 01 : Have you played a digital game?



Please share the name of the game and/or weblink in the chat box.

Look at what your colleagues have posted and test any one game from their choice. You have another one minute to share your experience on chatbox!

Duration : 02 Minute

How was the game playing experience?

- Motivating?
- Engaging?
- Connecting with other learners?
- Challenging, competition stressing?
- What was your criteria for choosing a particular game?

…

Levels of Engagements in games

Novelty

Curiosity, Imagination, inquisitiveness …

Relevance

Context , situation and Scenario…

Engaging/Fun Elements

Collaboration, constructions, connections …

Level of Challenge

Problem solving – Creativity, imagination, Construction…

Fulfillment

Success, Reward, Award, Achievement, Opportunity…

Motivation to repeat the experience …

How are digital and real games different

- Teams engagement, Peer Learning
- Physical, mental , social growth
- Discipline
- Joy, Fun, Happiness, Break from routine
- Connecting with another world
- Problem Solving with colloboration
- Sense of achievement
- Practice and self improvement

- PHYSICAL GROWTH & DEVELOPMENT
- SOCIAL CONNECT

Personal Augmented Learning : Learning Ecosystem

With an aim to align individual learning needs to context and scenarios offered during instructions to focus on a particular concepted is highlighted.

This magnifies the environment conducive to learning a specific area of difficulty or interest of an individual learner to make learning process effective.

https://www.gettyimages.in/

Constructionism

Seymor Papert : Turtle Logo

A little girl, counting steps, turning left or right by degrees to exit the room…

“Papert built on Piaget's theory of constructivism with a learning theory of his own: constructionism. It proposed that **the best way to ensure that knowledge is built in the learner is through the active construction of something shareable — a poem, program, model or idea**.”

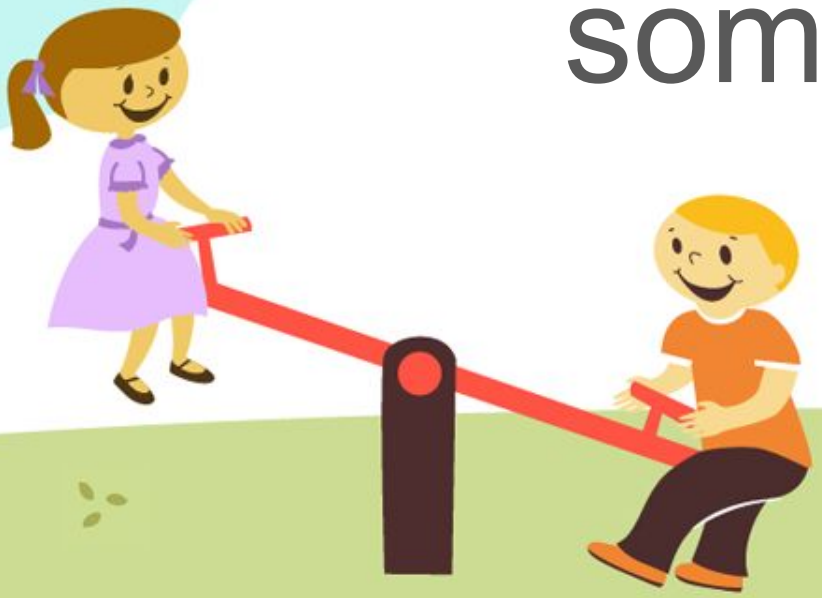
Principles of constructivism.

- Knowledge is constructed. ...
- People learn to learn, as they learn. ...
- Learning is an active process. ...
- Learning is a social activity. ...
- Learning is contextual. ...
- Knowledge is personal. ...
- Learning exists in the mind. ...
- Motivation is key to learning.

https://el.media.mit.edu/logo-foundation/resources/onlogo/index.html

http://dailypapert.com/multimedia/

Activity 02 :
Do you recall constructing something ?



Share on chat box, what did you construct and when.

What did you learn when constructing?

Duration : 02 Minute

Sugarizer : Digital Learning Games – OER Level 01

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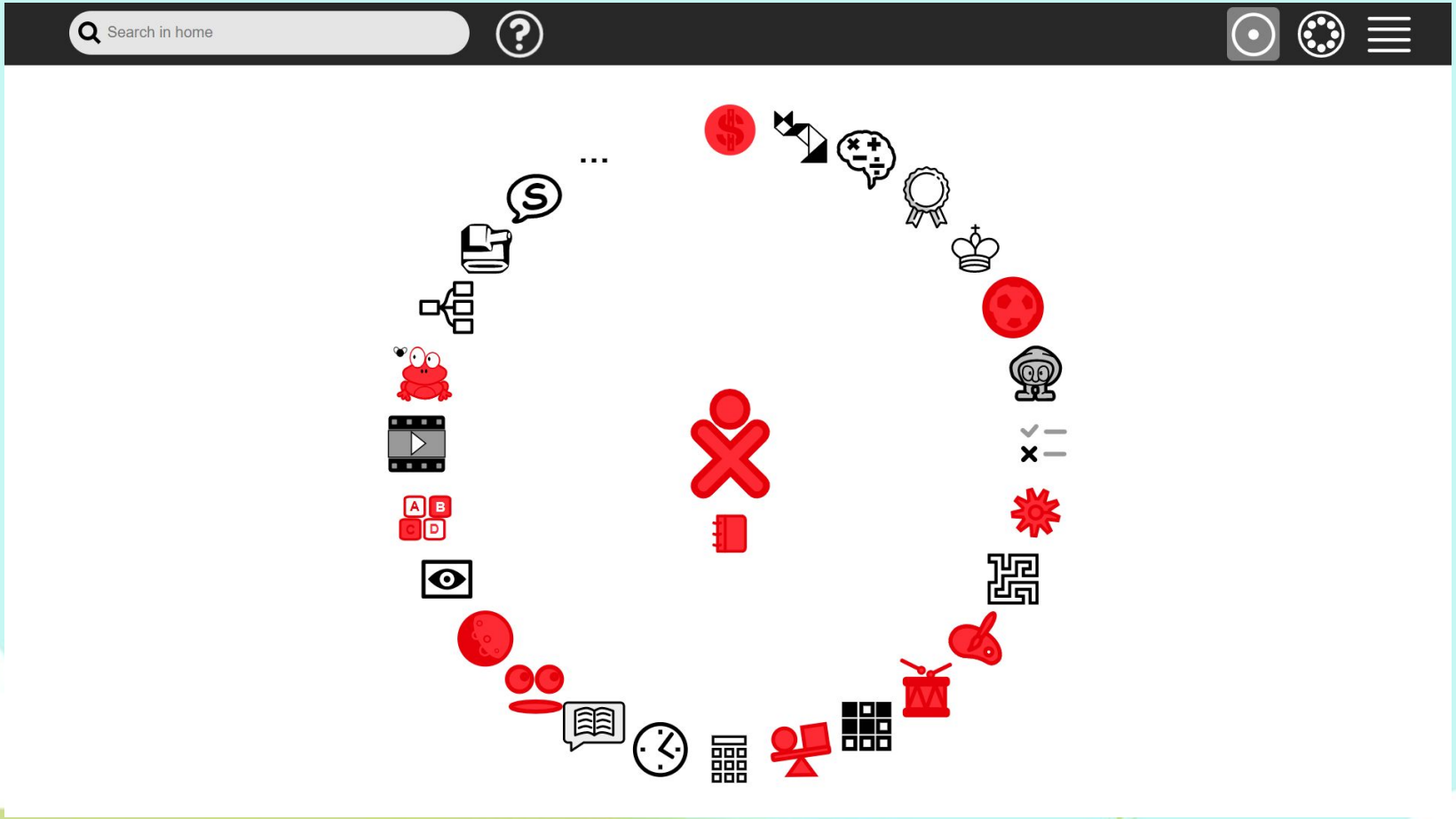
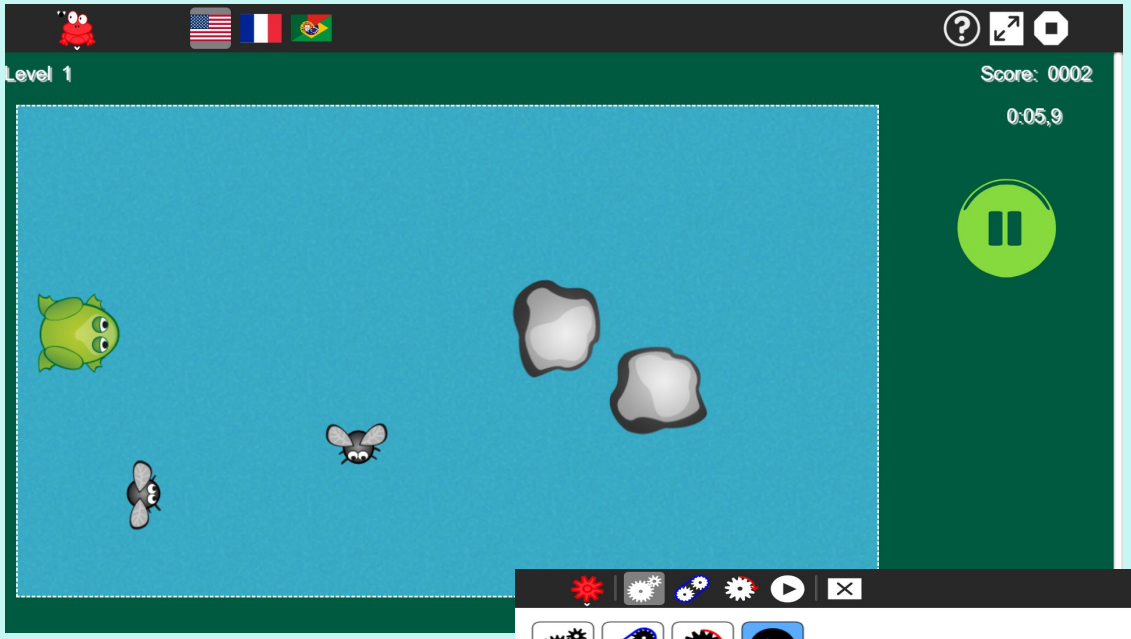
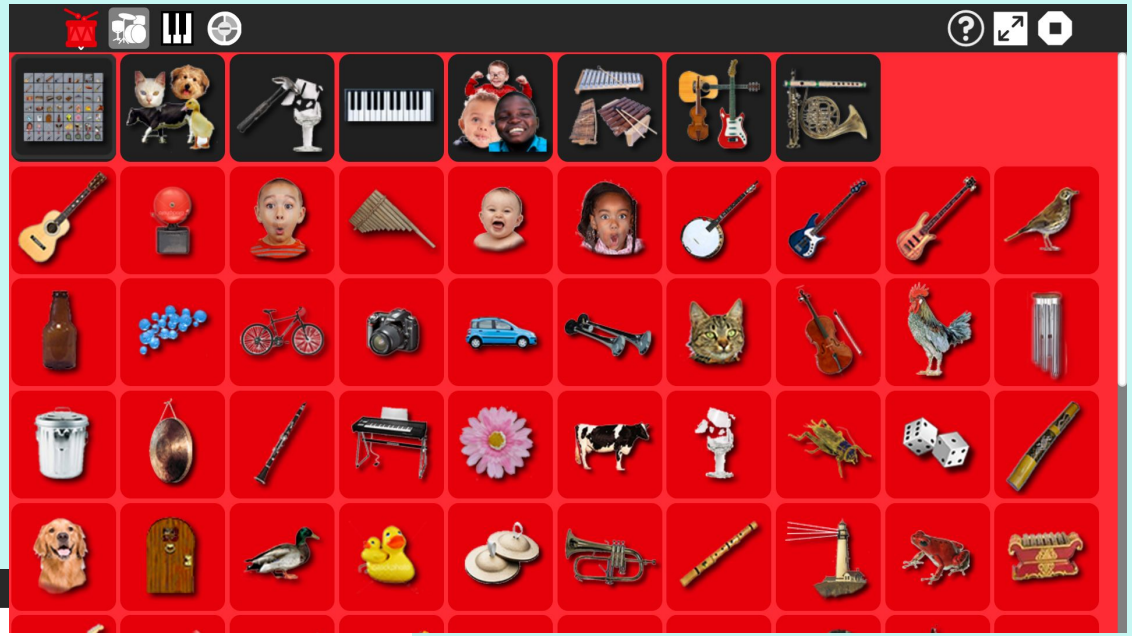
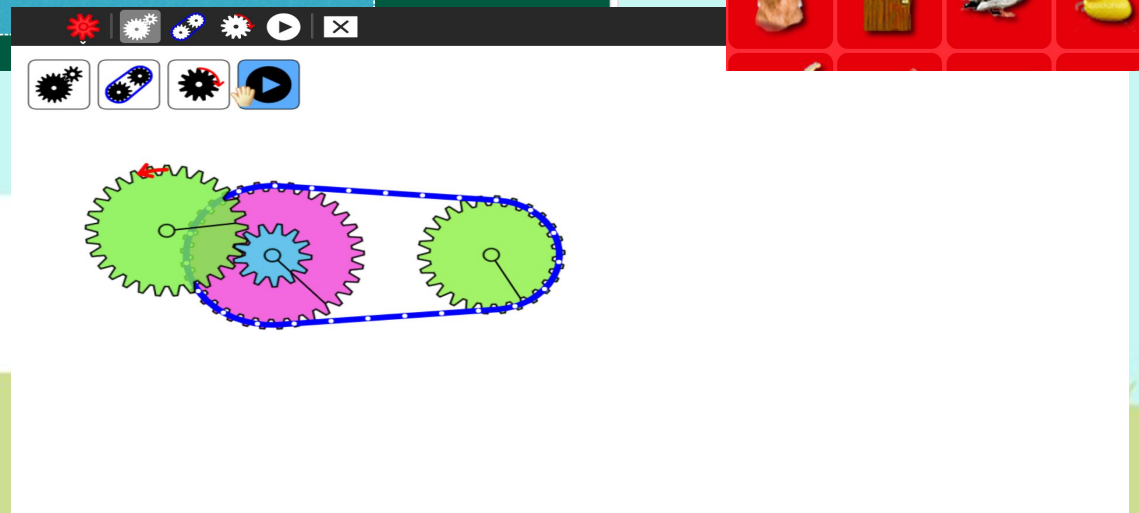


https://sugarizer.org/

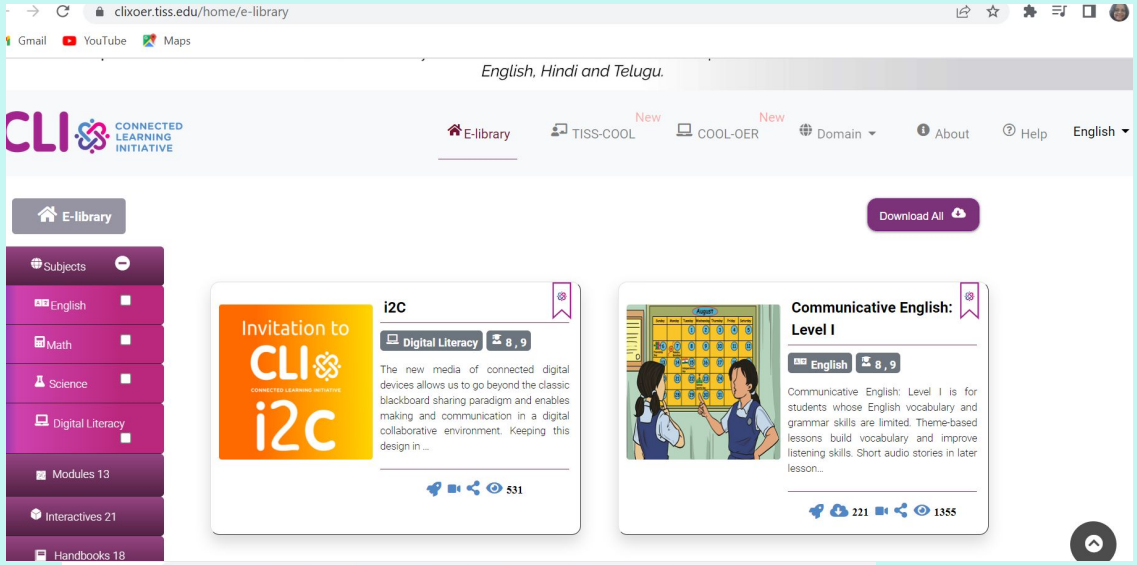
Sugarizer : Digital Learning Games – OER Level 01

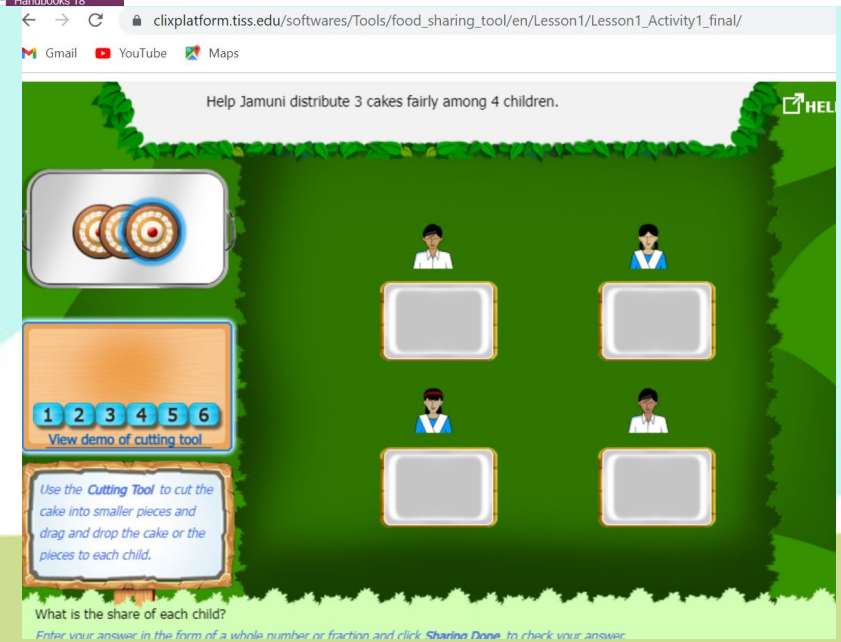


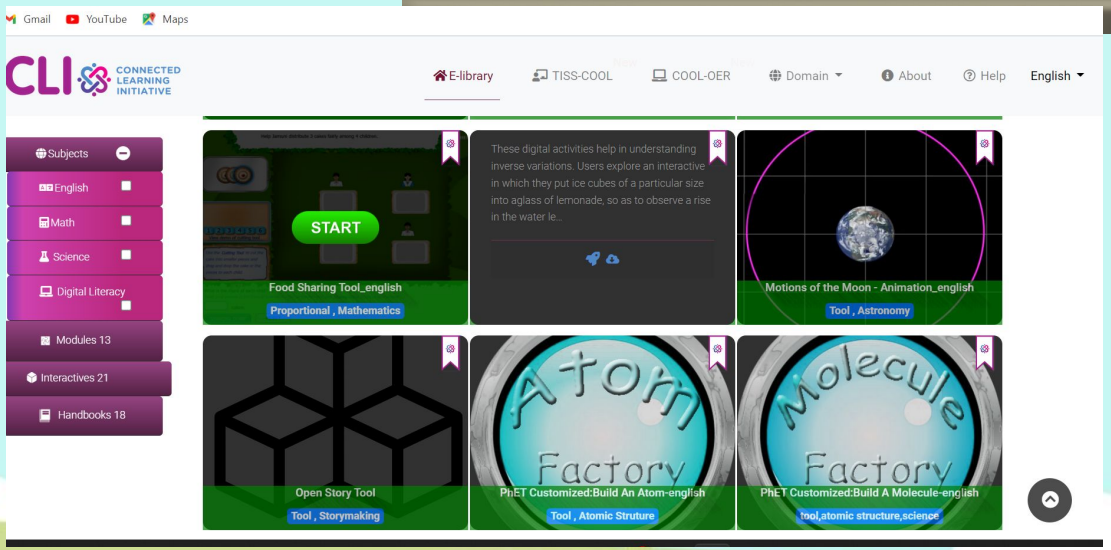




Learning with Digital Resources : Secondary Levels : Example CLIx







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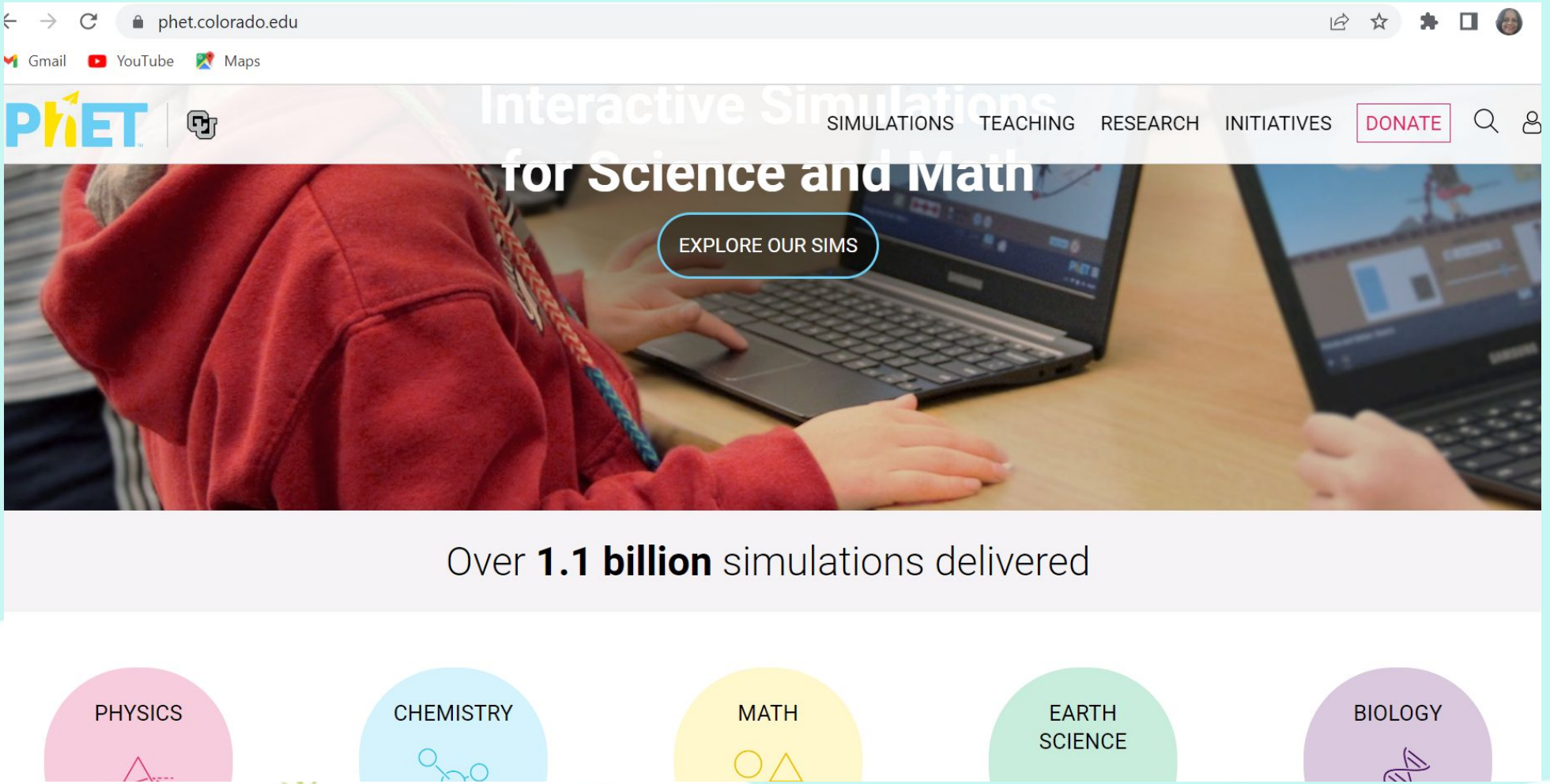
Higher Learning : Science Simulations



https://phet.colorado.edu/

Higher Learning : Science Simulations

PhET | Browse Filter SIMULATIONS TEACHING RESEARCH INITIATIVES DONATE

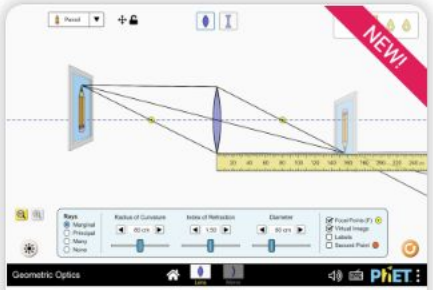
SUBJECT

- [x] Physics
  - [x] Motion
  - [x] Sound & Waves
  - [x] Work, Energy & Power
  - [x] Heat & Thermo
  - [x] Quantum Phenomena
  - [x] Light & Radiation
  - [x] Electricity, Magnets & Circuits
- [ ] Chemistry
  - [ ] General Chemistry
  - [ ] Quantum Chemistry
- [ ] Math
  - [ ] Math Concepts
  - [ ] Math Applications
- [ ] Earth Science
- [ ] Biology

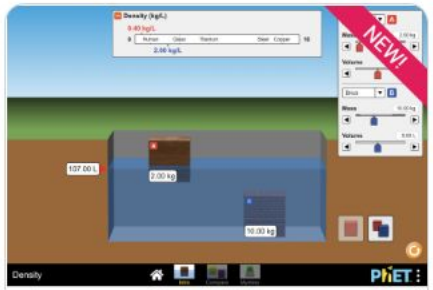
50 Results

Sort by: Newest

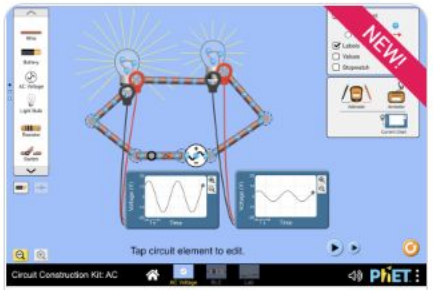
Physics × HTML5 × HTML5 Prototype ×



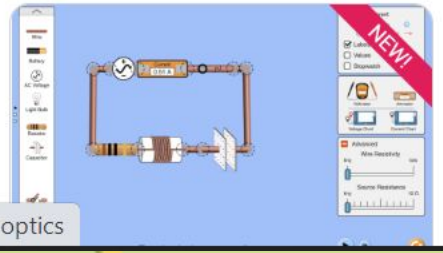
Geometric Optics

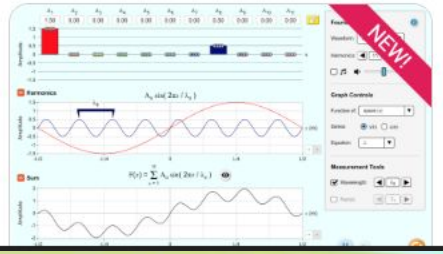


Density



Circuit Construction Kit: AC





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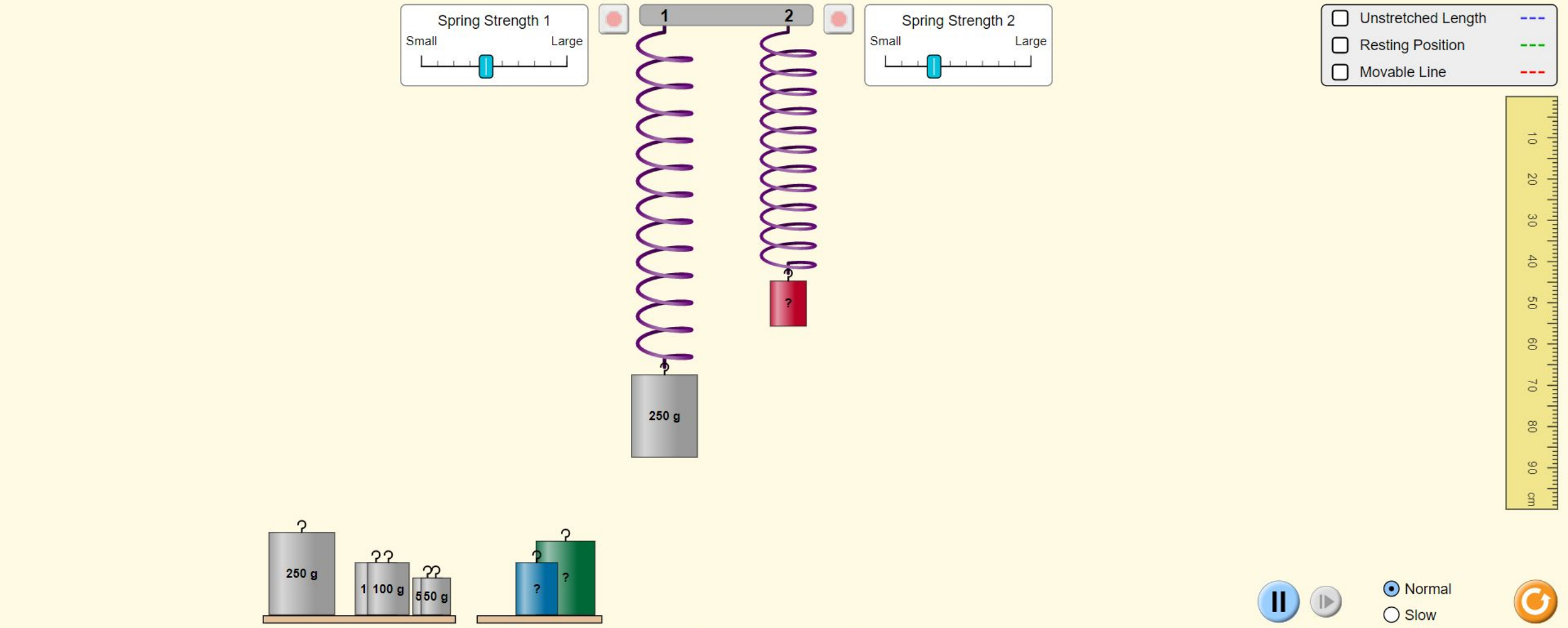
https://phet.colorado.edu/


Spring Strength 1
Small
Large
1
2
Spring Strength 2
Small
Large
Unstretched Length
Resting Position
Movable Line
?
250 g
10
20
30
40
50
60
70
80
90
cm
250 g
1 100 g
50 g
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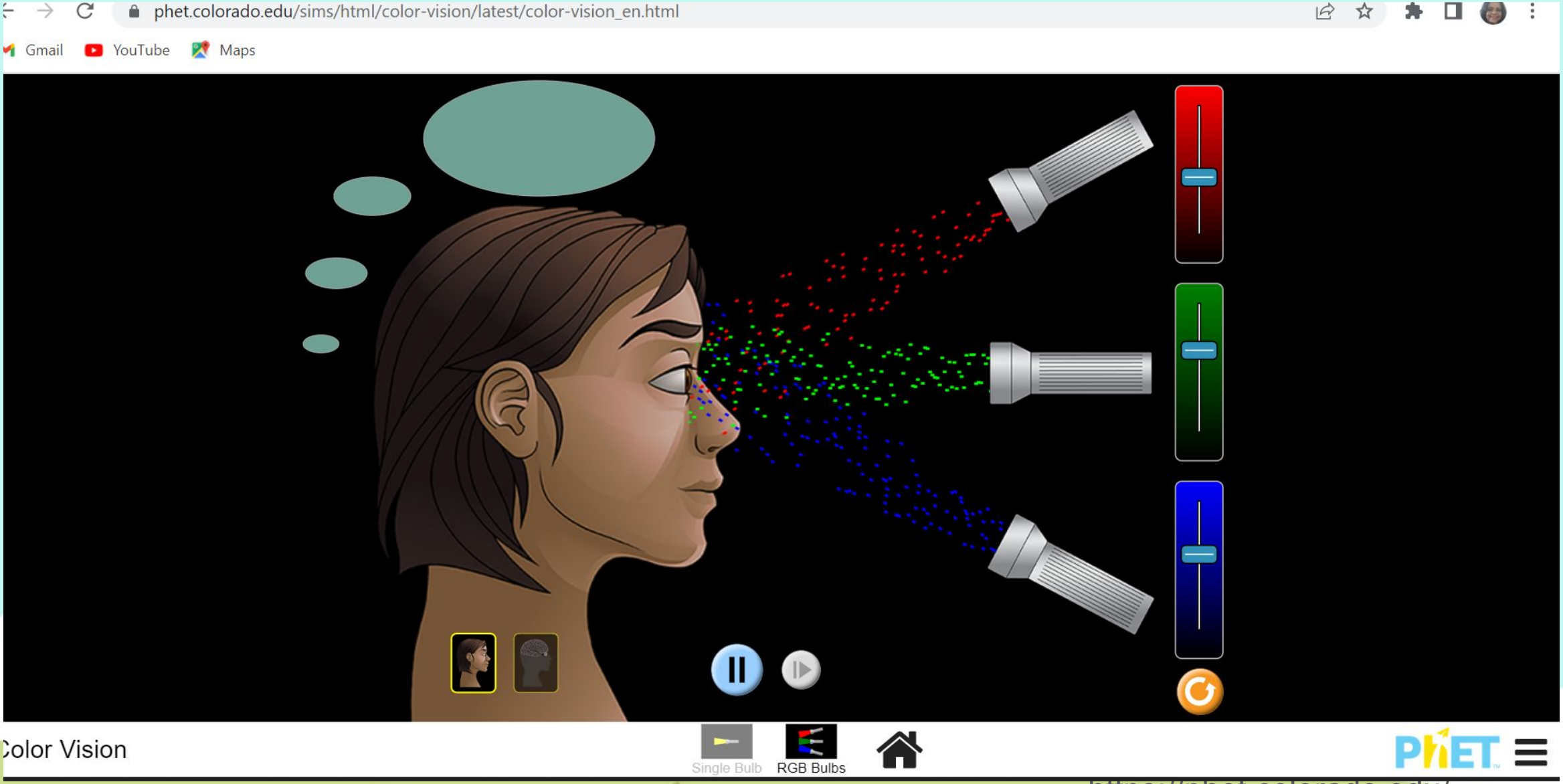
?
Normal
Slow
Masses and Springs: Basics
Stretch
Bounce
Lab
PhET

Higher Learning : Science Simulations



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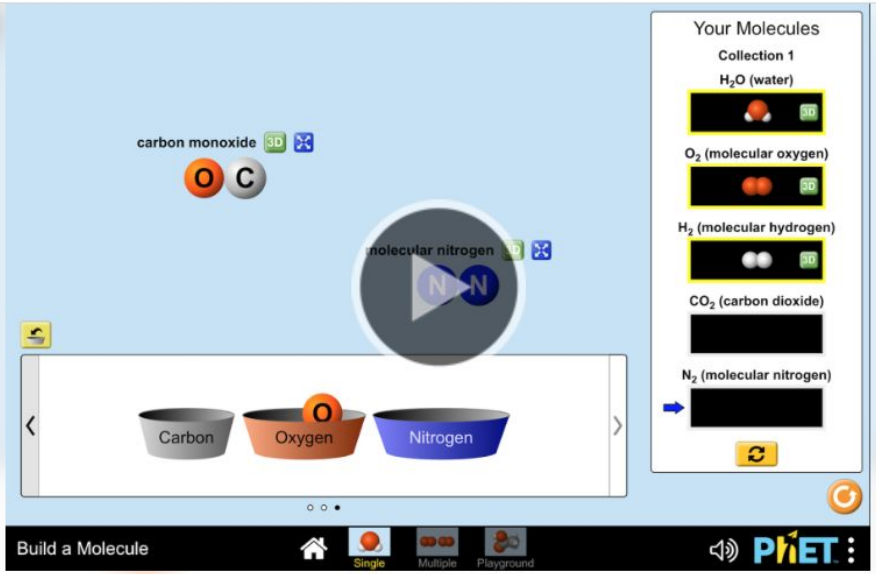
Higher Learning : Science Simulations

phet.colorado.edu/en/simulations/build-a-molecule

Gmail YouTube Maps

PhET INTERACTIVE SIMULATIONS | University of Colorado Boulder

SIMULATIONS TEACHING RESEARCH INITIATIVES DONATE



Build a Molecule

https://phet.colorado.edu/

Activity 03 :
What is the criteria for selecting a game?

How will your criteria change if you had to use this game for teaching?

Duration : 02 Minute

Role of teachers in game based learning

- Coach
- Meta Learner
- Guide
- Researcher
- Community of Practice

https://www.gettyimages.in/

Criteria for selecting game for learning

- Practicality
- Economy
- Context
- Learning level
- Learning stage
- Learning ecosystem
- Quality of reward system

https://www.gettyimages.in/

Let us add and create criteria for selecting digital games for learning:

Novelty

Curiosity, Imagination, inquisitiveness …

Relevance

Context , situation and Scenario…

Engaging/Fun Elements

Collaboration, constructions, connections …

Level of Challenge

Problem solving – Creativity, imagination, Construction…

Fulfillment

Success, Reward, Award, Achievement, Opportunity…

Motivation to repeat the experience …

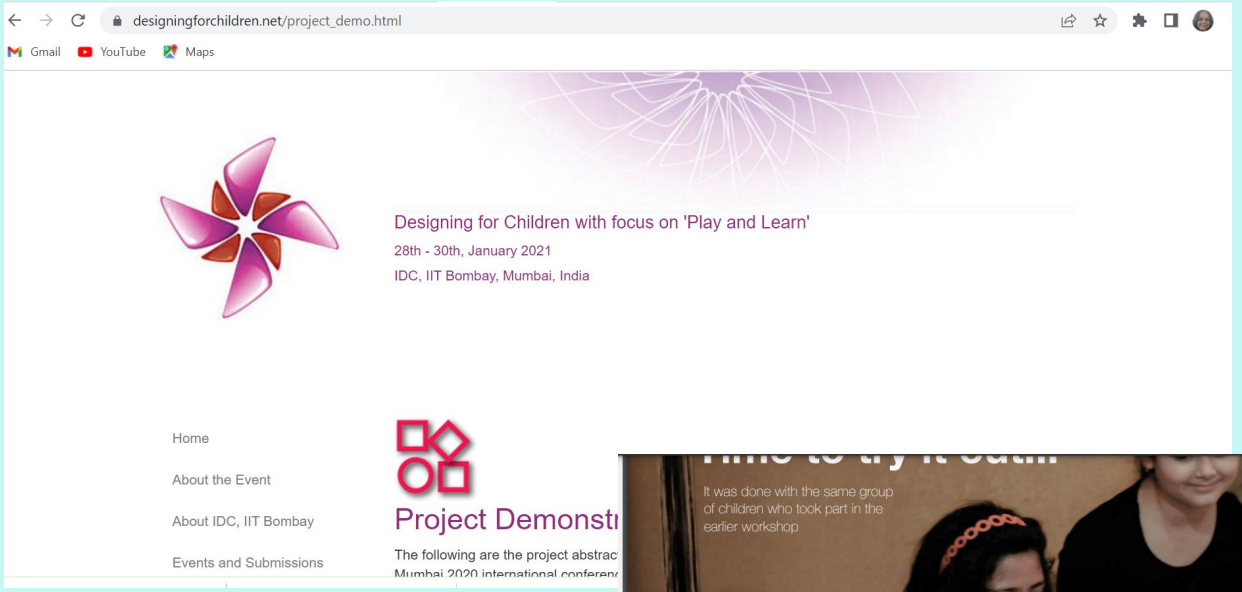
Summary

You have learned about

- Differentiation between digital, simulations and real life games
- Teacher’s role in game based learning situation
- Criteria for selecting games for learning
- Theoretical basis for learning with games
- …

https://www.gettyimages.in/

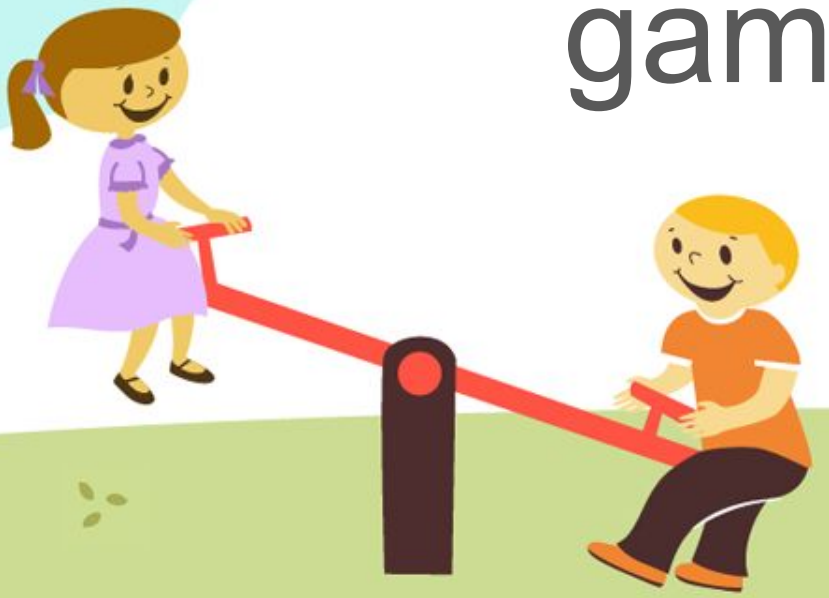
Ongoing explorations on digital games for learning: IIT Bombay



https://www.designingforchildren.net/project_demo.html

Carry home:
What are the challenges of game based learning?

Reflect and discuss.



Thank You !

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