

The background is a deep space scene. In the top left, a large, fiery orange and red sun is partially visible. In the top right, a grey, cratered asteroid floats. Below it, a bright blue comet streaks across the sky. In the bottom right, the Earth is shown from space, with blue oceans and green landmasses. Above the Earth, the grey, cratered moon is visible. Several other smaller asteroids and comet streaks are scattered throughout the dark blue space.

EARTH DEFENDER APP

KAMFLIX CLUB X 2025 NASA SPACE APPS CHALLENGE GLOBAL HACKATHON

A comprehensive tool set for global disaster
preparedness and public education

@Thompson Rivers University
Kamloops, BC, Canada

Project Overview

Goal:

To create an interactive, data-driven tool that empowers the public to understand, visualize, and prepare for asteroid impact risks.

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- Uses NASA Near-Earth Object data to model asteroid trajectories and damage zones
 - Integrates USGS, GEBCO, and WorldPop layers for realistic environmental and population analysis
 - Generates evacuation and emergency-response briefs automatically
 - Promotes public education through gamified learning, videos, and digital storytelling

Impact:

Bridging science, safety, and education — turning complex space data into simple, actionable knowledge that builds global awareness and community resilience.

Our Proposed Solution

Interactive Meteor Visualization & Simulation APP:

- Emergency preparedness survey
- Mitigation & response planning
- Impact/damage zone mapping
- Energy & blast effect calculations (fireball, tsunami)
- Population & infrastructure overlay

Education & Outreach:

- Interactive videos and gamified learning tools
 - Digital comic/storybook *"The Day the Meteor Came"*
 - Kamflix Emergency Planning Guides & printables
 - *"Defend the Earth"* community booths and school outreach
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- Uses real data from NASA & USGS
 - Target users: General public, policy planner, students, educators, community stakeholders



Add Interactive Meteor Visualization & Simulation to Your Home Screen?

Add this app on your home screen for quick and easy access when you're on the go. Here's How:

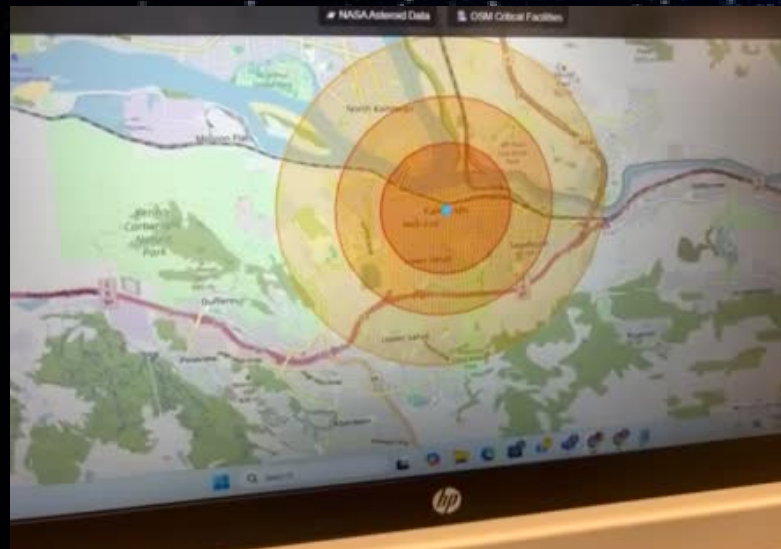
1. Tap the share menu below 
2. Select 'Add to Home Screen'



Interactive Meteor Visualization & Simulation

APP

DOWNLOAD THE APP BY SCANNING QR CODE



The screenshot displays the 'If It Hit Here' app interface. At the top, the title 'If It Hit Here — NASA Space Apps 2022' is visible. Below the title, a search bar contains the text 'kamloops'. Two buttons, 'Analyze Impact' and 'Hide Panel', are positioned below the search bar. The main content area shows the results for asteroid 247517 (2002 QY6), including its distance (~702 m @ 18.3 km/s), impact energy (21687.17 Mt TNT eq.), equivalent earthquake (Mw 10.1), and severe damage radius (~2.5 km). A section titled 'Critical Infrastructure Summary' lists 12 medical facilities, 83 schools/community centres, and 21 fire/police stations. Below this is a 'Decision Brief' with five bullet points: evacuate population within 2 km, use 83 schools as shelters, deploy responders from the orange zone, use WorldPop & GEBCO overlays to estimate evacuee density, and coordinate with national emergency agencies. At the bottom, there is a loading status 'Loading NASA & OSM data ...' and two buttons: 'NASA Asteroid Data' and 'OSM Critical Facilities'. The bottom of the image shows a map with concentric circles representing the impact zones and various colored dots indicating critical infrastructure locations.

Impactor-2025: Meteor Threat Simulation Project: If It Hit Here

- Uses NASA NEO data to map asteroid size, speed, energy, and impact zones.
- Adds USGS/GEBCO layers for flood & tsunami risks.
- Overlays WorldPop for population density.
- Integrates OpenStreetMap to show hospitals, schools, fire stations.
- Auto-generates evacuation & response brief.

Simulator Link:

<https://fuuraku111-stack.github.io/if-it-hit-here/>



Gamified Learning & Simulation Strategy

Kamflix Skills in Action

Complete Curriculum for Schools

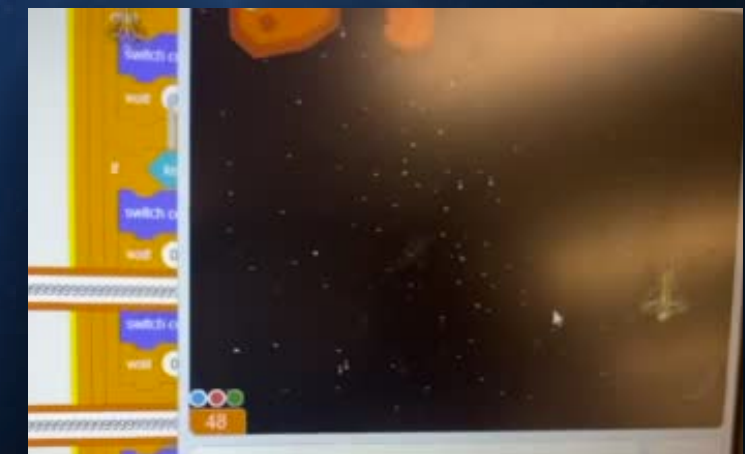
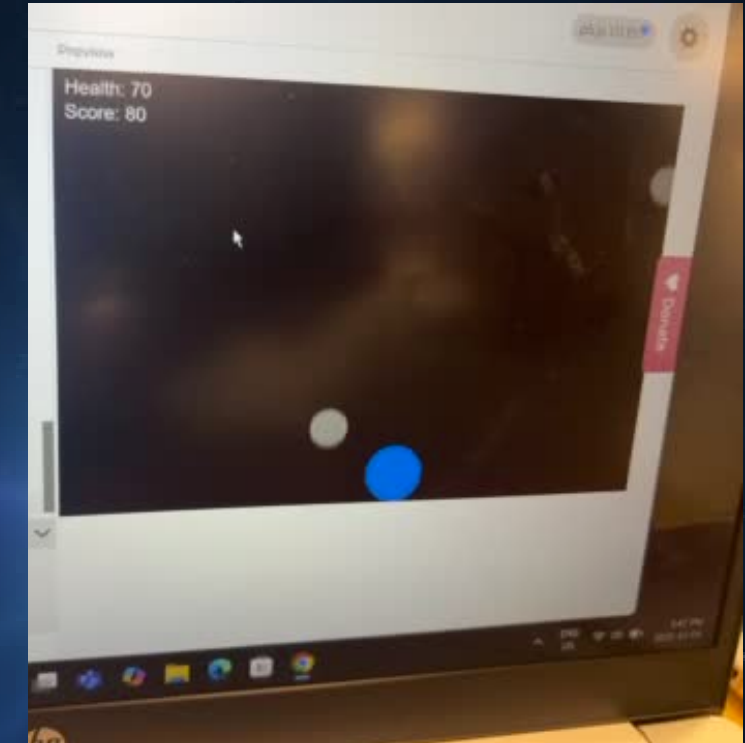
Learning Games

<https://scratch.mit.edu/projects/258666126/editor/>

Gamified Learning Resources
Using Java Script

Educational (LEGO Stop Motion) Movies
in our Youtube Channel

Info Graphics/ Printables for Governments and General Public





Community Engagement Strategies

1

**Gamified YouTube
Channels–Social
Media Campaign**

2

**Digital comic
or storybook:
“The Day the
Meteor Came”**

3

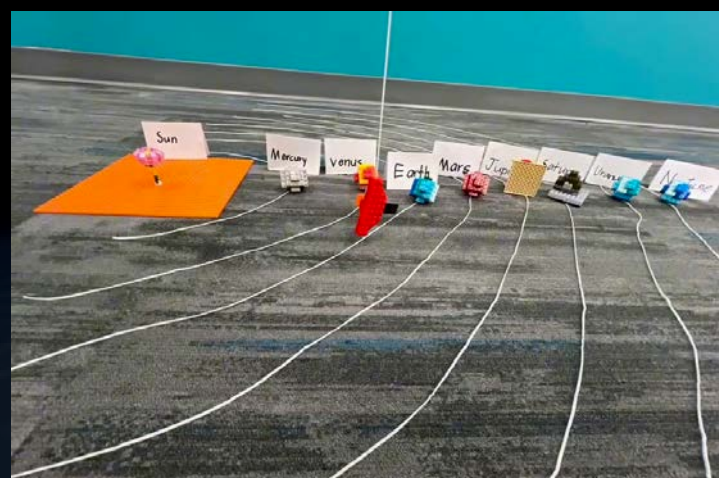
**Kamflix Emergency
Planning
Guides/Printables**

4

**School
Outreach \ Curriculum
Dissemination**

5

**“Defend the Earth”
Community Booths**





Project Summary Key Messages

- Global Awareness: Empower people to understand real asteroid risks using NASA data.
- Preparedness: Provide practical tools for disaster planning and emergency response.
- Education: Engage students and communities through gamified, story-based learning.
- Collaboration: Bridge science, technology, and public outreach for a safer planet.
- Impact: Turn complex data into accessible guidance that saves lives and inspires action.



Thank You

— Together, We Defend the Earth

***“The Earth is the only home we have —
we must take care of it.”***

— Astronaut Mae Jemison

 **Team Kamflix**

Inspiring the next generation of space
explorers and problem-solvers.