hyper pad

TEACHING GUIDE

STEM Learning on iPad

Grades 6-8



Educational Program | By Krystal Yee

hyper pad

About Us

hyperPad is an app that lets you create your own mobile games and interactive apps—like stories, prototypes, and more—without needing to code. You can drag and drop your own pictures, set up actions, and when you're done, you can share your app on the App Store!

You can even make money by selling your app or adding ads using Google Ads. And for those curious, hyperPad runs on cool tech like Cocos2D, Chipmunk Physics, and keeps everything smooth at 60 frames per second.



hyperpad

Unleash Your Creativity

LEARN. CRATE. EXPLORE.

Make your own game,
without code!



HYPERPAD.COM

In Summary

Teachers can use hyperPad in the classroom to teach computer science and STEM skills by helping students quickly create games.

With weeks of lessons and activities, students will learn programming basics while also exploring topics related to the United Nations' Sustainable Development Goals, especially quality education and innovation.





STEM

Use these basic lesson ideas & projects (that you can edit) on hyperPad created by our special users just for you!

SCIENCE

Use hyperPad to learn about global warming & how we can help.

TECHNOLOGY

Learn the importance of innovation & technology in our future.

ENGINEERING

Learn about important facts that are fascinating.

MATH

What is 1 + a =4 ? Draw triangles & solve puzzles with hyperPad.

Overview

hyperPad is a powerful, no-code app for iPad that enables students to create interactive projects and digital experiences. This guide provides structured activities for each STEM subject, allowing students to explore scientific concepts, mathematical models, engineering design, and technology through coding and interactive simulations. With hyperPad's drag-and-drop visual coding interface, students can dive into STEM topics without needing prior programming experience.

Materials

- iPads
- hyperPad app



Module Duration: 4 Weeks (1 Week per Subject)

Grade Level: Middle School (Grades 6-8)

Science

Create interactive science modules to help students easily remember facts & figures by enhancing their everyday lesson plans. Easily develop reusable games that would save you time, effort & paper (Points for saving the environment!).

- Fill in the blanks
  - Name of plant parts, organs, chemical properties.
- True or False
  - Have fun quizzes to let students practice questions at home!
- Create basic Physics
  - Help students understand the basic rules of physics

Try out our simple fill-in-the-blank worksheet on hyperPad. Use the "branch" option to edit.

Week 1: Science with hyperPad

Topic: Ecosystem Simulation

Objective:
Students will use hyperPad to create a digital ecosystem model, simulating relationships between organisms and their environment.

Activity Outline:

1. Introduce Key Concepts: Review food chains, food webs, and ecosystem interactions (e.g., predator-prey relationships).
2. Design the Ecosystem: Students use hyperPad to design a simple ecosystem, adding animated elements for different species (plants, herbivores, and carnivores).
3. Simulate Interactions: Use behavior blocks to simulate actions like movement, consumption, and reproduction. Students can set conditions to illustrate how population changes impact the ecosystem.

Outcome:
Students will understand the basics of ecosystems and food chains, observing how changes in one population can affect others in a digital simulation.

Free Resources for Ecosystem Simulation Project

1. Ecosystem and Food Chain Basics

National Geographic Education

- Provides free articles, videos, and images that explore ecosystems, food webs, and interactions among species.
  - Visit National Geographic Education

PBS LearningMedia – Ecosystems Collection

- A library of videos, interactive lessons, and articles on ecosystems, ideal for introducing basic ecological concepts.
  - Visit PBS LearningMedia

Smithsonian Education – Science and Nature

- Offers free resources, lesson plans, and video content on ecosystems, food webs, and environmental science.
  - Visit Smithsonian Education

BioInteractive by HHMI (Howard Hughes Medical Institute)

- Provides in-depth, scientifically accurate resources like animations, videos, and virtual labs on ecology, food webs, and species interactions.
  - Visit BioInteractive

2. Images and Animations for Digital Ecosystems

Pixabay and Unsplash

- Free, high-quality images of animals, plants, and landscapes that students can incorporate into their digital ecosystems on hyperPad.
  - Visit Pixabay
  - Visit Unsplash

Giphy (Nature Category)

- Find free, simple animated GIFs that can be used to represent moving organisms in ecosystems.
  - Visit Giphy Nature

Canva's Free Animation Templates

- Canva offers pre-made animations, some of which feature plants, animals, and landscapes that can be used to enhance students' ecosystems.
  - Visit Canva

Free Resources for Ecosystem Simulation Project

3. Interactive Simulations for Ecosystem Understanding

PhET Interactive Simulations – Food Chain

- PhET offers free simulations that allow students to interact with ecosystems and observe how population changes impact food chains and webs.
  - Visit PhET Simulations

Interactive Ecology Labs by Glencoe

- Virtual labs that focus on food chains, food webs, and ecosystem balance, allowing students to experiment and see how population changes affect ecosystems.
  - Visit Glencoe Virtual Labs

Google's "Your Plan, Your Planet"

- An interactive tool by Google and the California Academy of Sciences that helps students understand environmental impact and sustainability, which can complement their ecosystem learning.
  - Visit Your Plan, Your Planet

4. Lesson Plans and Worksheets on Ecosystems

TeachEngineering – Ecosystems and Food Chains

- Free, ready-made lesson plans on ecosystems, food webs, and predator-prey relationships. These lessons include hands-on activities that can help set up the hyperPad simulation.
  - Visit TeachEngineering

Science Journal for Kids – Ecosystem Lessons

- A collection of science articles, lesson plans, and worksheets adapted for middle schoolers, covering ecosystems, biodiversity, and food webs.
  - Visit Science Journal for Kids

Teachers Pay Teachers – Free Ecosystem Resources

- A variety of free worksheets, activities, and lesson plans related to ecosystems, food webs, and population dynamics. Use the search filter to find free resources.
  - Visit Teachers Pay Teachers

Free Resources for Ecosystem Simulation Project

5. Video Resources on Ecosystems and Food Webs

YouTube – CrashCourse Kids Ecology Series

- A free video series that covers ecosystems, food webs, predator-prey relationships, and more, explained in an engaging and age-appropriate way.
  - Visit CrashCourse Kids

BBC Earth YouTube Channel

- High-quality video clips showing real-life examples of ecosystems and animal interactions, ideal for students to understand real-world examples of ecological relationships.
  - Visit BBC Earth

Tips for Using These Resources with hyperPad

- Incorporate Visuals: Use images from Pixabay and Unsplash to represent plants, animals, and environments in the ecosystem simulation.
- Introduce Concepts with Videos: Start the project by showing a video on ecosystems from National Geographic or CrashCourse Kids to ground students in key concepts.
- Enhance Simulations: Use interactive tools like PhET and Glencoe's labs to allow students to experiment with population dynamics and see the impact on ecosystems before they design their own on hyperPad.
- Assign Hands-On Worksheets: Use resources from TeachEngineering and Science Journal for Kids to give students a solid grasp of food chains and webs, making it easier to plan their simulations.

Science – Ecosystem Simulation Assessment

Student Name: _____ **Date**: _____

Criteria	Points Possible	Points Earned	Comments
Ecosystem Components Includes a variety of species (plants, herbivores, carnivores)	5		
Interactions Simulation Demonstrates realistic interactions (e.g., food chain dynamics, reproduction)	10		
Understanding of Ecosystem Concepts Can explain how one species impacts others in the simulation	10		
Creativity and Effort Showcases creativity in designing and detailing the ecosystem	5		
Total: _____ / 30			

Technology

Allow students to create their own games following basic rules. Enhance individual creativity & critical skills. By doing so, prepare them for a technological future, only with hyperPad.

- Platform game
  - Make a basic platform game with 2 levels
- Behaviour limits
  - Have students make a game with limited behaviours.
- Themes
  - Create interesting themes that students can follow
    - Renewable energy
    - Recycling

Follow the Basic tutorial videos on our YouTube page, hyperPad to learn How To Make Your Own Platform Game under 10 minutes.

For themes try any one of the many previous events we have held! Tag us with the complete product, #madewithhyperPad

Week 2: Technology with hyperPad

Topic: User Interface (UI) and Game Design Basics

Objective:
Students will explore user interface design and develop a basic interactive app, focusing on technology concepts such as digital literacy and design thinking.

Activity Outline:

1. UI Basics: Introduce the concept of user-friendly design, considering how layout, colors, and functionality impact user experience.
2. Design an Interactive Quiz App: Students create an educational quiz app on a chosen topic, adding buttons, score counters, and feedback for right/wrong answers.
3. Test and Iterate: Students present their app, gather feedback, and improve its usability and visual design.

Outcome:
Students will gain an understanding of app development basics and user interface design, creating an interactive project that emphasizes the importance of accessible, intuitive technology.

Free Resources for Interactive Quiz App on Technology

1. Basic Technology Concepts for Students

Common Sense Education – Digital Citizenship

- Offers free lessons on digital literacy and responsible technology use, a great way to introduce students to technology basics before they create their quizzes.
  - Visit Common Sense Education

Code.org

- Free, beginner-friendly modules on coding and technology that help students understand the fundamentals of digital tools and coding logic, ideal for quiz creation in hyperPad.
  - Visit Code.org

2. Free Image and Icon Resources

Icons8 and FlatIcon

- Libraries of free icons and images that students can use to create engaging visuals in their quiz apps.
  - Visit Icons8
  - Visit FlatIcon

3. Sample Quiz Questions and Templates

Kahoot! Templates

- Access to free quizzes and templates for various subjects, which can give students examples and inspiration for building their own quizzes in hyperPad.
  - Visit Kahoot!

Teachers Pay Teachers – Free Technology Quiz Resources

- Search for free, printable quizzes and worksheets on technology concepts, which can help students structure their quiz content.
  - Visit Teachers Pay Teachers

Technology – Interactive Quiz App Assessment

Student Name: _____ **Date**: _____

Criteria	Points Possible	Points Earned	Comments
User Interface Design Layout is clear and visually appealing	5		
Functionality Quiz operates as intended (buttons work, answers register)	10		
Feedback and Scoring Provides feedback on correct/incorrect answers and tracks scores	10		
Creativity and Effort Shows originality and effort in designing the quiz	5		
Total: _____ / 30			

Engineering

Make use of hyperPad in teaching Engineering by making use of the realistic physic properties available. Enhance computer science logic thinking & creativity with hyperPad. Make classes interactive & fun!

- Physics
  - Develop a better understanding of real life physical rules by using the physics settings on hyperPad.
- Computer Science logic
  - Enrich your creativity & logic thinking on hyperPad with our logic based controls. We promise you won't get bored!

Try this simple project by RXCodes that shows how gravity works. Experiment with the settings to "feel" the difference or create your own game!

Week 3: Engineering with hyperPad

Topic: Simple Machines and Physics Simulation

Objective:
Students will use hyperPad to explore the fundamentals of physics and engineering by building a simulation that models simple machines (e.g., levers, pulleys, ramps).

Activity Outline:

1. Review Simple Machines: Discuss types of simple machines and their real-world applications.
2. Build a Physics Simulation: Students select a simple machine to recreate using hyperPad, adding interactive elements and adjusting parameters to simulate real-world physics.
3. Test Physics Properties: Adjust gravity, friction, and object weight to observe how these factors impact movement and mechanical advantage.

Outcome:
Through hands-on experimentation, students will understand how simple machines work and the physics principles behind them, such as force, gravity, and friction.

Free Resources for Coding Physics Concepts

1. Basics of Physics (Forces, Motion)

PhET Interactive Simulations

- Provides free physics simulations that cover concepts like force, motion, and gravity, which students can replicate or reference in their hyperPad projects.
  - Visit PhET Simulations

NASA STEM Engagement – Physics Resources

- Free lessons, videos, and interactive tools focused on physics concepts that apply to real-world scenarios.
  - Visit NASA STEM Engagement

2. Animation and Motion Resources

Giphy – Physics Animations

- Offers free GIFs and animations related to movement and physics, which students can use as visual aids in hyperPad.
  - Visit Giphy

Pixabay (For Images of Forces in Nature)

- Provides free, high-quality images that can represent forces and motion in their projects.
  - Visit Pixabay

3. Lesson Plans and Worksheets

TeachEngineering – Force and Motion Activities

- Free, hands-on physics activities that help students understand concepts they can later integrate into their hyperPad physics simulation.
  - Visit TeachEngineering

Engineering – Simple Machines Simulation Assessment

Student Name: _____ **Date**: _____

Criteria	Points Possible	Points Earned	Comments
Model Design Simulation includes a working simple machine (lever, pulley, ramp, etc.)	10		
Physics Application Demonstrates understanding of physics principles (e.g., force, friction)	10		
Testing and Iteration Adjusts variables (e.g., gravity, weight) to test machine's performance	5		
Creativity and Effort Shows originality and effort in simulating a real-world machine	5		
Total: _____ / 30			

Mathematics

As educators, the last thing you would want is a boring lesson. With hyperPad, you can make Math full of fun surprises by creating interactive lessons using colourful-visual games, and more!

- Fill in the blanks
  - Complete simple math problems on hyperPad, use fun graphics to illustrate the questions.
- Problem Solving
  - Create puzzle games for students to solve.
- Drawing shapes
  - Use hyperPad to have students draw shapes using behaviours.

Week 4: Math with hyperPad

Topic: Geometry and Spatial Reasoning

Objective:
Students will strengthen their spatial reasoning and understanding of geometric shapes by creating interactive geometry challenges.

Activity Outline:

1. Geometry Basics: Review geometric shapes, properties, and concepts like area, perimeter, and volume.
2. Create a Shape Challenge: Students use hyperPad to build a simple game that involves identifying, matching, or arranging shapes. They can add score counters and time limits for an engaging experience.
3. Apply Mathematical Operations: Integrate math operations such as area calculation or transformation of shapes, encouraging students to apply what they've learned in a visual context.

Outcome:
Students will reinforce their understanding of geometry and mathematical problem-solving through interactive challenges that encourage critical thinking and application of math concepts.

Free Resources for Geometry and Spatial Reasoning Project

1. Geometry Basics and Visual Tools

Mathigon – Polypad

- A versatile platform with free interactive geometry tools, explore shapes, area, perimeter, and volume. It's a great resource to help visualize and manipulate shapes.
  - Visit Mathigon Polypad

GeoGebra – Geometry Toolkit

- Free tools for exploring geometric transformations, measuring shapes, and applying concepts like rotations, reflections, and area calculations, which students can use as a reference for their hyperPad project.
  - Visit GeoGebra Geometry

2. Interactive Math Activities and Challenges

Khan Academy – Geometry Lessons

- Free lessons and exercises covering fundamental geometry concepts like shape properties, area, and volume. These can provide practice and help students create accurate, educational content in their hyperPad geometry challenges.
  - Visit Khan Academy Geometry

NRICH – Spatial Reasoning Challenges

- A collection of interactive geometry challenges designed to improve spatial reasoning skills, ideal for inspiring students as they build their own shape-matching or arrangement games in hyperPad.
  - Visit NRICH Spatial Challenges

3. Free Images and Assets for Geometry

Icons8 – Geometric Shapes

- Provides a wide selection of icons and images, including various geometric shapes that students can use in hyperPad to create an engaging visual experience for their shape challenges.
  - Visit Icons8

Flaticon – Geometry Icons

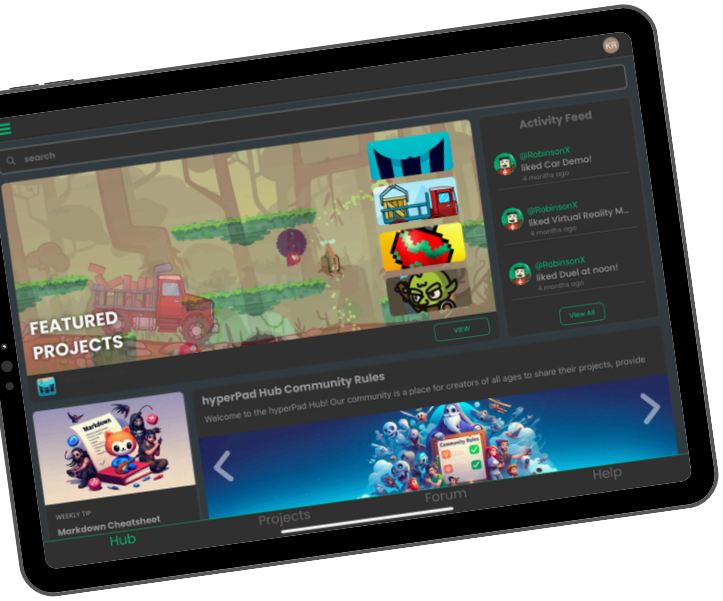
- Free icons for a variety of shapes and math symbols, which can be used to enhance the design and clarity of the geometry challenges in their hyperPad projects.
  - Visit Flaticon

Math – Geometry Challenge Assessment

Student Name: _____ **Date**: _____

Criteria	Points Possible	Points Earned	Comments
Geometry Concepts Includes various geometric shapes with correct properties	5		
Math Operations Demonstrates understanding of math operations (e.g., area, perimeter)	10		
Interactivity and Challenge Shapes and math concepts are interactive and engaging	10		
Creativity and Effort Shows originality in designing the shape challenge	5		
Total: _____ / 30			

What Next?

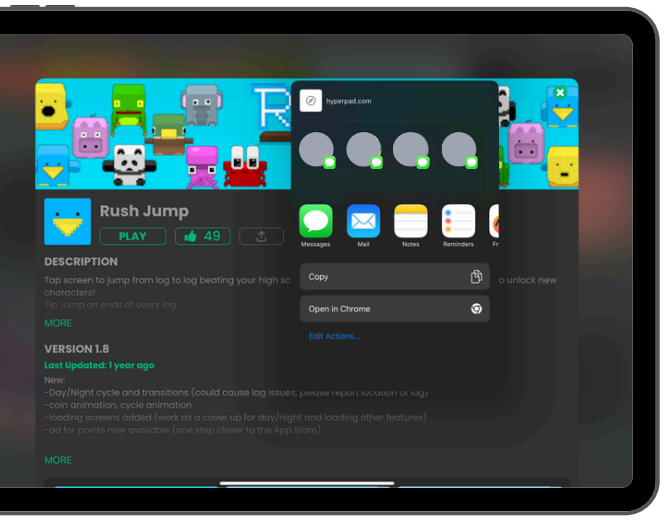


PRACTICE!

Keep creating and exploring on hyperPad with others!

SHARE YOUR WORK

Tag us on socials, use it to document your progress and discuss with fellow users.



COMMUNITY

Connect with us on socials to meet other creators.

Conclusion and Reflection

After completing this four-week module, students should have gained hands-on experience with coding, app design, and simulation across STEM disciplines. Teachers can use hyperPad's user-friendly interface to facilitate interactive learning, promoting creativity, collaboration, and critical thinking.

Additional Tips for Teachers

- Encourage Creativity: Let students personalize their projects to enhance engagement and take ownership of their learning.
- Use hyperPad's Community Hub: The hyperPad community hub offers access to other educators' projects and ideas, providing inspiration and a resource for new lesson plans.
- Iterate and Reflect: Set aside time for students to present their projects, receive feedback, and make improvements, reinforcing a growth mindset in STEM.

Scoring Guide

Each weekly project is scored out of 30 points. Teachers can use this scoring guide to provide both feedback and a final grade for the module.

- **Outstanding (27-30 points)**: Demonstrates excellent understanding and creativity
- **Proficient (23-26 points)**: Shows solid understanding and good effort
- **Basic (18-22 points)**: Displays general understanding with some room for improvement
- **Needs Improvement (Below 18 points)**: Requires additional support or guidance



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We Are Here For You

Want to custom a course with us? Have any questions?

Marketing Coordinator marketing@hyperpad.com