**Video & board games:**

\*There are some games which are more based on visual perception & fine motor skills but which have a science theme to them (e.g. Dr. Beaker, Dr. Microbe). I have not included those or the games which have a science theme without really engaging the players with STEM in a more than superficial way (e.g. Astronomy Fluxx, Chemistry Fluxx, Anatomy Fluxx, Math Fluxx, Nature Fluxx). The same applies to games which are basically memory games, e.g. Draw 4: Dig for Dinos. While these games would be entertaining & valuable for skill-building in some sense, they only have a STEM “skin”, not real STEM content. I also did not include puzzle games unless they had some real STEM content, e.g. coding.

**Game companies which focus on education or working with teachers:**

Genius Games

The company’s mission is to bring real STEM content into the classroom in a fun manner. They do education bundles for schools. They also offer games based on science history, as well as puzzles & children’s books focusing on women in science.

<https://www.geniusgames.org/>

ThinkFun

The website has resources, not just games, but focuses on gamifying education. They have downloadable games, options for ordering for classrooms, etc. They’re probably best known for their Rush Hour puzzle games or for their Math Dice. They also feature problem-solving & mystery themed games.

<https://www.thinkfun.com/>

<https://www.thinkfun.com/teachers/>

**Online, downloadable, and print-and-play games:**

Some of these may require you to create a Steam account (easy & free to do). Some sites have multiple games, some of which require Flash, which is no longer supported, so be aware of that.

Math Blaster

Free online math games for preK-middle school.

<http://www.mathblaster.com/parents/math-games>

NASA Space Place

Free Earth & space science games. K-middle school+

<https://spaceplace.nasa.gov/menu/play/>

National Geographic kids

Games & puzzles for K-elementary, maybe some middle school.

<https://kids.nationalgeographic.com/games/>

PBS kids

Online STEM based games, mostly for the younger students.

<https://pbskids.org/games/science>

<https://pbskids.org/games/math>

Sheppard Software

Free online games, preK-early high school, math, science (including dinosaur themed games)

<https://www.sheppardsoftware.com/math.htm>

<https://www.sheppardsoftware.com/science.htm>

TryEngineering

Online games for ages 5 – 18, variety of topics. Also includes online resources & tools.

<https://tryengineering.org/students/games/>

BrainPOP STEM games

Online games for K – 8th. BrainPOP also includes ELL resources.

<https://www.brainpop.com/stem/>

Smithsonian Science Education Center

Free online & downloadable games, mostly K-middle school

<https://ssec.si.edu/game-center>

Chem4Kids

Grades 3-8, chemistry

<http://www.chem4kids.com/>

Cells alive!

Grades 6-12, images & videos, etc. with cells

<https://www.cellsalive.com/>

Wonderville

STEM games of all types. Requires an account, but apparently you can rent games.

<https://wonderville.org/>

Math Warehouse

There are a variety of games for different levels, mostly focusing on fractions, unit circles, distance vs. time, division, etc.

<https://www.mathwarehouse.com/games2/>

Bioman biology games

Free online biology games, elementary/middle/high school, scroll to the bottom to see the games.

<https://www.biomanbio.com/index.html>

cK-12 Exploration series

Free simulations & games based on them, physics & chemistry.

<https://interactives.ck12.org/simulations/physics.html>

EcoOcean

Free online game about overfishing.

<https://www.ecoocean.de/play-online/>

Digital Commons @ Georgia Southern U

A list of free STEM apps for the common core. Many of these, such as Crayon Physics & Celestia, are games or simulations.

<https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1017&context=stem>

**Steam:**

Steam is an online store for PC games. Not all of the games would lend themselves to enhancing STEM education, and very few of them have free versions, but Steam does have sales. The games are more likely to be better family resources than classroom resources. Some examples of decent educational games include: Universe Sandbox, Sokobond, and Plague Inc. There also many simulators, e.g. Rover Mechanic Simulator and Reentry (based on NASA missions).

<https://store.steampowered.com/>

Kerbal Space Program (& 2)

There is a free to try version as well as a paid version. Create your own space program, with all of the challenges, etc. It can be a tough game to master, but a lot of students seem to enjoy it. The second edition should be out soon. Can be purchased via Steam.

<https://www.kerbalspaceprogram.com/>

<https://www.kerbalspaceprogram.com/games-kerbal-space-program-2>

**App-based games:**

Happy Little Farmer

Younger kids, showing kids challenges involved in growing plants.

<https://www.giggleup.com/pages/moreinfo_app_011/>

Educational App Store

Here is a list of free & paid STEM apps for kids, generally around preK-8.

<https://www.educationalappstore.com/best-apps/stem-apps-for-kids>

Simple Physics

Middle school, design, build, & test bridges, etc. Minimal cost

<http://jundroo.com/app/simplephysics/>

Oddrobo

A collection of games, ~elementary-high school, mostly math based. Free. Includes King of Math.

<http://oddrobo.com/>

Common sense education

STEM apps for higher-order thinking – a list of free & paid apps for ~preK-12. Some of the apps turn your phone into a measuring device for data collection.

<https://www.commonsense.org/education/top-picks/stem-apps-for-higher-order-thinking>

ASME – STEM apps for students

A list of free & paid apps, most of them gamifying educational concepts. ~K-12. The list also includes platforms which allow students & teachers to create their own games.

<https://www.asme.org/topics-resources/content/7-stem-apps-for-students>

**Board games:**

Math tic tac toe

Elementary & middle school, free but requires crafting

<https://www.whatdowedoallday.com/math-tic-tac-toe/>

Absolute Blast

Institute of Play free downloadable game for grades 6 – 8, about operations with integers & absolute values. Includes common core standards alignments. They also have Socratic Smackdown for humanities grades 6 – 12 & a how to design your own teaching game resource.

<https://clalliance.org/wp-content/uploads/2020/02/Absolute-Blast.pdf>

<https://clalliance.org/wp-content/uploads/2020/02/Design-Pack-Games-And-Learning.pdf>

Five Field Kono

Korean game, free printable board, requires objects used as counters, based on logic/spatial thinking. <https://www.whatdowedoallday.com/five-field-kono/>

Mū Tōrere

Maori game, free printable board, requires tokens which can be crafted, based on logic/spatial thinking. <https://www.whatdowedoallday.com/mu-torere/>

Teachers Pay Teachers

Some of these are digital, some are downloadable, all are developed by teachers.

<https://www.teacherspayteachers.com/Browse/Search:game/Grade-Level/Not-Grade-Specific/PreK-12-Subject-Area/Science>

<https://www.teacherspayteachers.com/Browse/Search:game/Grade-Level/Not-Grade-Specific/PreK-12-Subject-Area/Math>

Addition Bingo

Free printable addition Bingo version.

<https://activity-mom.com/2021/12/addition-bingo-math-game/>

BoardGameGeek – general games list

Most of the games below can be found on BoardGameGeek, which is the definitive list of board games. Their search engine can be a little annoying, so it might be best to Browse by Category. They update their list & ratings all the time. They include games in multiple languages as well as out of print games, so be careful. History games can also be found under educational games.

<https://boardgamegeek.com/>

<https://boardgamegeek.com/boardgamecategory/1094/educational/linkeditems/boardgamecategory>

Zimbbos

Ages 3+, 1-4 players, counting/stacking/balancing game for younger kids

<https://www.blueorangegames.com/index.php/games/zimbbos>

Alana’s Animals

Ages 4+, 2-4 players, shorter game about addition & subtraction

<https://www.geniusgames.org/products/alanas-animals>

Robot Turtles

Ages 4+, 2+ players, coding

<https://www.thinkfun.com/products/robot-turtles/>

Absolute Zero & Absolute Zero Jr.

Ages 5+, 2-5 players, combine positive & negative numbers to create zero. Available on Amazon. The Jr. version is simplified (smaller numbers, etc).

<https://boardgamegeek.com/boardgame/332007/absolute-zero>

Potato Pirates

Ages 7+, 3-6 players, coding in the if/then manner

<https://www.thinkfun.com/products/potato-pirates/>

Acorn Paws

Ages 7+, 2-4 players, shorter game, counting, dividing.

<https://boardgamegeek.com/boardgame/313350/acorn-paws>

Super Genius Addition

Ages 7+, 1-6 players, shorter card game based on building addition skills & focus

<https://www.blueorangegames.com/index.php/games/super-genius-addition>

Covalence

Ages 8+, 2-4+ players (co-op), shorter game, players cooperate to build molecules

<https://www.geniusgames.org/products/covalence-a-molecule-building-game>

Super Genius Multiplication 1 & 2

Ages 8+, 1-6 players, shorter card game based on building multiplication skills & focus. The first one uses times tables up to 5, the second goes up to times 9.

<https://www.blueorangegames.com/index.php/games/super-genius-multiplication>

<https://www.blueorangegames.com/index.php/games/super-genius-multiplication-2>

Ion

Ages 8+, 2-7 players, shorter game, card drafting game focused on building ions (or sets of noble gases)

<https://www.geniusgames.org/products/ion-a-compound-building-game>

Geologic

Ages 8+, 1+, build a planet’s surface using biome tiles

<https://www.thinkfun.com/products/geologic/>

Qwixx

Ages 8+ dice game, 2-5 players, math/probability

<https://gamewright.com/product/Qwixx>

Math Dice

Ages 8+, 2+ players, uses dice to do mental math/create equations/etc. Uses d6 & d12 dice.

Also comes in Math Dice Jr (6+), My First Math Dice (3+), Math Dice Chase (8+)

<https://www.thinkfun.com/products/math-dice/>

Prime Climb

Ages 8+/10+, prime numbers

<https://mathforlove.com/games/prime-climb/>

Photosynthesis

Ages 8+, 2 – 4 players, longish game, about trees & photosynthesis, also has an Under the Moonlight expansion

<https://www.blueorangegames.com/index.php/games/photosynthesis>

<https://www.blueorangegames.com/index.php/games/photosynthesis-under-the-moonlight>

Virulence

Ages 8+, 2-5 player bidding/collection game focusing on components etc. of viruses

<https://www.geniusgames.org/products/virulence-an-infectious-card-game>

Planet

Ages 8+, 2-4 players, each player builds their own planet with different biomes & can win animal cards

<https://www.blueorangegames.com/index.php/games/planet>

Laser Maze

Ages 8+ logic game, mostly solo, also comes in Jr. (5+) & Laser Chess (2 player)

<https://www.thinkfun.com/products/laser-maze/>

<https://www.thinkfun.com/products/laser-chess/>

Math Rush (1, 2, & 3)

1: Addition & Subtraction, ages 8+, 1-5 players, shorter

2: Multiplication & Exponents, ages 8+, 1-5 players, shorter

3: Fractions, decimals, percentages, ages 8+, 1-5 players, shorter

<https://www.geniusgames.org/products/math-rush-bundle-addition-subtraction-multiplication-exponents-fractions-decimals-and-percentages>

Constellations

Ages 8+, 2-4 players, build constellations while learning about the spectral sequence of stars (note: final positions of constellations usually do not reflect that of the actual night sky)

<https://boardgamegeek.com/boardgame/218200/constellations>

Outnumbered

Ages 8+, 1-6 players, shorter game, co-op superhero math game

<https://www.geniusgames.org/products/outnumbered-improbable-heroes>

Ecosystem

Ages 14+ (honestly 8+), 2-6 players, fairly fast card-drafting game, about building an ecosystem

<https://www.geniusgames.org/products/ecosystem-family-card-game-animals-ecology-habitats-biodiversity>

Periodic

Ages 10+, 2-5 players, longer game, strategy game based on the periodic table

<https://www.geniusgames.org/products/periodic-a-game-of-the-elements>

Aeon: The Emergence of Life

Ages 10+, 2-6 players, longer game. Focuses on what’s necessary for life to evolve on Earth.

<https://boardgamegeek.com/boardgame/342888/aeon-emergence-life>

On the Origin of Species

Ages 10+, 2-4 players, longer game, science history

<https://www.geniusgames.org/products/on-the-origin-of-species>

Planetarium

Ages 10+, 1-4 players, build planets from materials around a newborn star

<https://boardgamegeek.com/boardgame/200454/planetarium>

Cytosis

Ages 10+, 2-5 players, longer worker placement/resource management game about cell biology, has a virus expansion

<https://www.geniusgames.org/products/cytosis-a-cell-biology-game>

Hacker

Ages 10+, 1+ players, coding

<https://www.thinkfun.com/products/hacker/>

Peptide

Ages 10+, 2-5 players, fairly quick card drafting/resource management game about building proteins

<https://www.geniusgames.org/products/peptide-a-protein-building-game>

Wingspan

Ages 10+, engine building game focused on birds & their habitats, longer game, 1-5 players, multiple expansions

<https://stonemaiergames.com/games/wingspan/>

Terraforming Mars

Ages 12+, easily 2+ hours, will appeal more to people who like Sid Meyer’s Civilization games & other long strategy games, does a good job of showing how much work & what types of work would be involved in terraforming a planet, multiple expansions

<https://www.fryxgames.se/games/terraforming-mars/>

Evolution

Ages 12+, 2-6 players, longish game, but it’s really good at showing how evolution can make or break a species. This is highly competitive so it’s not really fun for only two players.

<https://www.northstargames.com/products/evolution>

Evolution: Climate

Ages 12+, 2-6 players, similar to Evolution but with a focus on how climate affects species’ adaptability

<https://www.northstargames.com/products/evolution-climate>

Oceans

Ages 12+, 2-4 players, similar to Evolution but focuses on survivability in the ocean

<https://www.northstargames.com/products/oceans>

Compounded

Ages 13+, 2-5 players, longer game, strategic chemical compound building game

<https://boardgamegeek.com/boardgame/118174/compounded>

Subatomic

Ages 14+, 2-4 players, longer game, deck-building game based on atoms & subatomic particles

<https://www.geniusgames.org/products/subatomic-an-atom-building-game-2nd-edition>

Lovelace and Babbage

Ages 14+, 2-4 players, shorter game, math & coding focused game, science history

<https://www.geniusgames.org/products/lovelace-babbage>

Genotype

Ages 14+, 1-5 players, longer worker placement/dice drafting game about mendelian genetics

<https://www.geniusgames.org/products/genotype-a-mendelian-genetics-game>

Tesla vs. Edison

War of Currents: Ages 14+, 2-5 players, longer, science history game

Duel: Ages 14+, 2-player version, shorter, science history game

<https://boardgamegeek.com/boardgame/132544/tesla-vs-edison-war-currents>

<https://www.geniusgames.org/products/tesla-vs-edison>

Cellulose

Ages 14+, 1-5 players, longer worker placement/resource management game about plant cell biology

<https://www.geniusgames.org/products/cellulose-a-plant-cell-biology-game>

Power Failure

Ages 14+, 2-4 players, longer game, power plants, card management, stacking

<https://www.geniusgames.org/products/power-failure-card-game-build-an-energy-empire-stack-blocks-on-the-carbon-tower-hope-they-dont-collapse>

**One player games (probably better for parents/students than classrooms):**

Balance Beans

Ages 5+, solo player, gravity, torque

<https://www.thinkfun.com/products/balance-beans/>

RollerCoaster Challenge

Ages 6+, solo player, gravity, energy, etc.

<https://www.thinkfun.com/products/roller-coaster-challenge/>

Code Master

Ages 8+, solo play, programming logic

<https://www.thinkfun.com/products/code-master/>

Gravity maze

Ages 8+, logic/gravity, uses marbles/build a tower, solo player

<https://www.thinkfun.com/products/gravity-maze/>

Circuit Maze

Ages 8+, uses logic/electricity, solo player

<https://www.thinkfun.com/products/circuit-maze/>

On the Brink

Ages 8+, solo player, coding

<https://www.thinkfun.com/products/on-the-brink/>

Rover Control

Ages 8+, solo play, coding/rovers

<https://www.thinkfun.com/products/rover-control/>

Robot Repair

Ages 8+, solo play, coding

<https://www.thinkfun.com/products/robot-repair/>