Club invention®

An out-of-school-time program of the
National Inventors Hall of Fame® Foundation

Club Invention
Module Summaries

E.Z. Science™

In the **E.Z. Science** module, the dedicated yet absent-minded manager of *E.Z. Science Journal* has enlisted the help of the children in the Club Invention program. Despite his good intentions, E.Z. has misplaced several articles and needs the children's skills in mathematics and science to make the magazine's print deadline.

Children first discover that important portions of this month's feature article are missing. They must conduct experiments – such as measuring time with a time glass and inflating balloons with carbon dioxide – to gather necessary information for the article.

Next, children complete the advice column by solving a knot puzzle, protecting eggs from a 3-foot drop, and creating a game with instructions. After giving their best advice, children move on to the student exchange column, where they design and construct a device to make schoolwork easier.

The magazine is finally ready to print; however, the presses have broken down! Children review simple machines to repair the press and get the wheels rolling. With the magazine printed, children create mazes leading to the magazine's distribution centers and restore order at the *E.Z. Science Journal* by providing inventive science and mathematical solutions to everyday problems.

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Bolder Builders™

In the **Bolder Builders** module, children join engineer, architect, and builder Archie Tek in the restoration of a town called Unlucky. Children create and test various structures for strength and stability.

Children arrive in Unlucky shortly after a hurricane has destroyed all of the homes. They must design and create shelters for the townspeople that are strong enough to withstand the elements of nature. Unlucky's bad luck continues as a series of earthquakes destroy all the bridges in town. Children are charged with reconstruction and determining the strength of beam, arch, and suspension bridges by building and testing prototypes.

Children must rebuild Unlucky in a manner that will stand up to future forces of nature. As children explore the elements of making sound structures, they build models and then test them in simulated earthquakes. Then, children implode their structures – keeping safety in mind. The aesthetics of the town are restored as children explore different colors, textures, and shapes. Lastly, Archie turns to the animal world for inspiration on building sturdier structures. Children build various animal structures including a spider web, a burrowing animal tunnel, and a bird's nest.

Passage to Planet ROG™

During the **Passage to Planet ROG** module, children travel to distant Planet ROG and develop a number of different devices to help them solve problems with their spacecraft and the planet. Children are welcomed as the newest mission members. They learn that their spacecraft needs repairs – and they must create special tools to fix the ship!

Next, children discover that the atmosphere of Planet ROG is similar to Earth. They build an outpost on the planet and create communication, observation, and data collecting devices. Next, children meet the inhabitants of Planet ROG. They use inquiry methods of classification to identify and name inhabitants and then create sculptures of planet creatures.

Children then discover that Planet ROG is rich in minerals. After a game of washer mining, they identify and sort mineral deposits. Children complete their mission by creating a way to transport themselves and the minerals back to their spacecraft and home to Earth.

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Flight Sight™

In the **Flight Sight** module, children explore flight perspective from different altitudes and learn that, as technology enabled man to soar higher, different perspectives of the Earth became visible. Children work individually and collaboratively on a variety of activities about flight and the elevations man has reached.

Children begin by experiencing flight from the ground up to where small planes fly. They experiment with devices that may help them jump higher, create three-dimensional maps, and design and fly huge paper airplanes. Exploring flight from the perspective of fast-moving jets, children make a flight craft of the future and a cockpit simulator.

Children continue to explore flight perspective as they simulate travel beyond our atmosphere to space. They create images of the Earth at night and build astronaut suits to protect them from the environment of space.

Phys. Ed: Physics in Motion™

During the **Phys. Ed: Physics in Motion** module, children create games based on the work of scientists who helped answer questions about how and why objects move. They incorporate the laws of gravity, energy, motion, and magnetism into their activities. A series of fast-paced, innovative games illustrate each concept.

Children first create games based upon the work of Italian physicist Galilei. They participate in a relay race to keep objects from falling to the ground and throw beanbags at a target. Next, they use Sir Isaac Newton's concept of center of gravity to balance an irregularly shaped object and create a tower using shaving cream and index cards. This leads to exploring Newton's First Law of Motion. Designing and creating a miniature golf hole gives children hands-on experience with objects in motion and at rest.

Children then demonstrate the powerful effects of air pressure, as explained by Daniel Bernoulli, by creating a slow parachute and exploring ways to move an object using air. Finally, children investigate the properties of magnets and magnetism, described by William Gilbert. Acting as detectives, children create games using magnetism.