



Module Summaries: The SPARK Program



W!LD: **Wondrous Innovations** **and Living Designs™**

Employed by many scientists and engineers, nature has often served as inspiration to mankind throughout the history of time. During the **W!LD: Wondrous Innovations and Living Designs** module, children embark on a wild animal adventure to investigate some of the most spectacular and innovative animals on the planet. In this module, children are introduced to the concept of biomimicry and explore how nature can be used to inspire new innovations.

On Day One, children uncover the science of color as they investigate the cuttlefish and its ability to camouflage itself by altering chromatophores. Day Two finds children exploring the fire beetle's use of infrared light to navigate a burning forest as they build a maze for a robotic insect. On Day Three, children remove iron from cereal and protect a water balloon in an effort to replicate the behavior of the iron-plated snail, which incorporates iron into its shell – aiding in its protection from predators. On Day Four, children discover how paper wasps build strong structures and may have served as the inspiration for the invention of paper. Finally, Day Five explores the gecko's amazing ability to climb up walls using nano-sized hairs on its toes.



The Curious **Cypher Club™**

Mysterious coded messages have been found at the Curious Cypher Club (CCC) headquarters, and children are enlisted as new members – spending the week deciphering strange messages, sending coded messages, and constructing their own clubhouse. Children use math and logical thinking to interpret codes and practice engineering skills to build their clubhouses and solve a mystery! Working in diverse teams, children utilize Creative Problem Solving processes to determine **who** is sending the coded messages, **what** the message sender wants, and **why** the message sender is leaving the coded messages.

On Day One, children help the CCC decode a message from the mysterious sender and begin construction of a clubhouse. During Day Two, children work in teams to solve a grid code and send a coded message back to “U.R. Rong”, the mysterious message sender. On Day Three, children learn how to use Morse code to decode messages, and employ its use in issuing a response to the culprit. Children use a Caesar cipher wheel to decode a message on Day Four, and create cipher wheels to code their own messages. On Day Five, children solve the last coded message using a Pigpen cipher, and are finally given the chance to question the mysterious U.R. Rong.





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Bounce! An Atomic Journey™

During the ***Bounce! An Atomic Journey*** module, children investigate the science of bouncy balls! Through the dynamic use of chemistry, experiments, and investigations, children bounce their way through atoms, molecules, mixtures, and compounds to figure out how cool matter, like a bouncy ball, is created.

On Day One, children learn that a bouncy ball has been launched into a portal in the sky to another dimension, and the people in this other dimension want to know how they can get more! Children are recruited to explore the science behind bouncy balls through high-bouncing activities, a scientific bouncing investigation, and a flat-edged bouncy ball challenge. On Day Two, children discover the phases of matter, understand atoms as the building blocks of matter, and sharpen their nanotechnology skills by moving around vibrating “atoms”. Day Three finds children exploring the anatomy of atoms through static electricity experiments. Children discover that molecules can combine to form mixtures and compounds on Day Four. On Day Five, teams experiment with special compounds called polymers, and complete their investigations by discovering how to make their own bouncy balls!

I Can Invent: Edison’s Workshop™

In the ***I Can Invent: Edison’s Workshop*** module, children walk in the steps of Thomas Edison as they create multi-step inventions that they name and prepare to market. Children use science, Creative Problem Solving processes, and hands-on applications to further their inventiveness and critical-thinking skills. Working in teams, younger children focus on building ball machines that send a ball into one of two ending points, while older children create multi-step, Rube Goldberg-type machines that raise a flag proclaiming their success.

On Day One, children enter Edison’s workshop, where they are faced with a challenge to better prepare them for their ultimate challenge... creating, marketing, and selling the next great American toy! The excitement builds on Day Two when children dismantle intricate, wind-up clocks and investigate how the gears and springs inside them make their hands rotate. Using this knowledge, children begin planning their ball-moving toys and Rube Goldberg-type machines. Children put their plans into action as they immerse themselves in full-on construction of their machines on Days Three and Four. On Day Five, children name their machines and develop effective advertisements for them. The week ends with children making enhancements to their Rube Goldberg machines by testing, retesting, and making any necessary adjustments before applying for and receiving mock patents.

Game On: Power Play™

The ***Game On: Power Play*** module scores a home run by combining physical activity and creativity. Children practice teamwork, cooperation, coordination, and Creative Problem Solving processes during fun, energetic games. ***Game On: Power Play*** activities are based on the premise that traditional games can be modified using nontraditional approaches. Employing the concept of upcycling, children use found materials to create completely new games. Unlike competitive games or sports, this module stresses Creative Problem Solving, rather than winning or losing, while boosting self-confidence and encouraging active physical participation.

In this module, each day features new and exciting challenges that vary based on children’s ages and abilities. All activities are designed to converge the functions of mind and body while children work collectively in diverse teams. These games facilitate inventive and inquisitive-thinking skills while incorporating 21st century learning skills such as collaboration, communication, and whole-systems thinking. Children play approximately four games per day that sometimes feature nontraditional sporting equipment such as recyclable items, water balloons, and other unconventional materials. Children’s curiosity is sparked with a new line-up of wild and wet games that are sure to enrich and energize.