CFAES

College of Food, Agricultural, and Environmental Sciences

Mahoning County Presents

Extension in the Classroom

Hands-on Educational Experiences for K - 12th

Menu Booklet

Mahoning.osu.edu

The Ohio State University
EXTENSION

Our Mission

Engage in hands-on learning experiences to teach scientific inquiry, research, analysis, investigation, exploration and science application.

Benefits

All Extension in the Classroom curriculum is based on Ohio Academic Content Standards and Indicators for students in K through 12th grade.

Our programs actively engage students to teach scientific inquiry, research, analysis, investigation, exploration, and science application.

Who

- Teachers & students, K through 12th grade
- Programs are available for public and private school classrooms, after-school and home school groups.

What

- These curriculum are designed to provide impact-driven educational experiences.
- The lessons cover a wide range of topics and satisfy many leaning standards.

Cost

- Program costs vary by curriculum; the fee covers your classroom's enrollment and material expenses.
- Contact us to discuss partnership opportunities and payment options.

When

- Program dates and times vary and can fit the needs of your organization.
- During and after school programs are available.
- We must receive two weeks prior notice to implement programming at your site.

Info

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Robotics

4-H and National Geographic have teamed up to bring cutting edge content to students. Using hands-on STEM activities and videos, participants will learn about robots, engineering, problem-solving and creative thinking. The activities can be used separately or in tandem with National Geographic's film, ROBOTS 3D.

Concepts:

The Robotic Industries Association (RIA) defines a robot "a reprogrammable, multifunctional manipulator designed to move material, parts, tools, or specialized devices through variable programmed motions for the performance of a variety of tasks."

Robotic technology is used in many places, including medicine, manufacturing, space programs, and even the military. From robots that help build new cars to ones that allow surgeons to perform surgery through a tiny hole in a patient's skin, it is clear that robots play an increasingly important role in our lives.

Participants will learn more about the tools and machines they use everyday through lesson plans and activities that allow them to experiment and even build there own robots!

Programs: Money Management

Real Money, Real World

Help youth develop money management skills and better understand the financial world they live in. Students learn about spending, saving, budgeting, credit, career and educational choices and earning power.

Includes:

- Four classroom lessons taught by teachers to prepare students for a real-world simulation brought to the school by OSU Extension and local businesses giving students a taste of how far a dollar can stretch to meet needs and wants.
- Program is targeted for middle and high school students and meets the personal financial literacy requirement for high school graduation and supports social studies content standards as well.
- Real Money. Real World. has three primary goals:
  - To increase participants' awareness of how education level and corresponding career choice influence personal income and financial security.
  - To increase the students' knowledge of money management tools used in daily spending for cost-of-living decisions.
  - To increase participants' awareness of how income and lifestyle choices affect the amount of money available for discretionary spending.

Project WILD

Project WILD's mission is to provide wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. All curriculum materials are backed by sound educational practices and theory, and represent the work of many professionals within the fields of education and natural resource management from across the country.

Concepts:

- Project Wild introduces youth to the many concepts related to wildlife, citizen science, climate, conservation, sustainability, and more
- All activities are hands on and designed for youth to be an active learner about nature

Includes:

- Over 80 different activities to choose from to meet the needs of your classroom
- Each lesson comes with instructions, student pages, materials lists, and additional external supporting resources which could include YouTube and internet based materials

Additional Options:

- Activities are also available from Flying Wild (birds), Aquatic Wild (water wildlife), and Growing Up Wild designed specifically for early childhood education

Programs: STEM

Hands-On Stand-Alone STEM Activities

Looking for something engaging to infuse into your already existing curriculum? Choose from tons of great hands-on activities to engage your class in a variety of ways.

Concepts:

- Dr. Bob 10 Minute Science Activities using everyday materials
- Stand alone activities to add to your curriculum or develop longer STEM based lessons encompassing multiple learning modules

Includes:

- Number of lessons and activity length can be tailored to what the educator needs
- Topics include:
  - Exploding Coke
  - Lifting Water
  - Mandalas and Symmetry
  - Pizza Box Solar Cookers
  - LED Parachutes
  - Roller Coaster Challenge
  - Science Bug Activity
  - Splash 20
  - Straw Rockets
  - Water Windmill
  - and more!

Go Plants!

Searching for a way to get to the root of plant science? Dig into the GO PLANTS! curriculum. Students explore plant-science through a variety of skill-building activities.

Includes:

- Option 1: Go Plants! 5 week-program
  - Designed with the busy teacher in mind this five-lesson unit focuses on a specific part of the plant each week.
  - Designed to be taught in 60 minute increments with the option to extend to 120 minutes.
  - Kit includes materials needed to complete activities.

- Option 2: Grow Light Kit
  - Designed to combine technology with biology, this kit offers students a hands-on approach to plant production
  - Kits include grow light setup and all things needed to complete activity and create a plant keepers journal

Programs: Science Alive

CHICK QUEST: Chicken Embryology

Bring biology to life by exploring with your students how an egg becomes a chick. Students will observe a fertilized egg hatch, while learning about the parts of the egg, its nutritional value, and explore the development of the embryo.

Concepts:

- What can we learn from a chick? This school enrichment program challenges youth to use science, technology, engineering, and math skills to investigate the life cycle of an embryonic chicken egg.
- From monitoring living eggs to observing fluffy chicks, these lively activities pique curiosity, encourage collaboration and communication, and provide young scientists with unforgettable experiences.

Includes:

- Incubator, one dozen fertilized eggs, a waterer, chick feed and teaching materials.
- Hatched chicks are given to local farmers and 4-H members to use in their poultry operations.

Rockets Away

This popular favorite is more effective than ever at teaching the concepts of forces and motion via rocketry. The project's exciting conclusion is building and launching 2-liter bottle water rockets.

Programs: STEM

Concepts:

- Blast off for an action-packed adventure in math, engineering, aerospace, and physics with this three-unit study of rocketry science.
- Explorations in motion, gravity, and aerodynamics send students' interest soaring.
- Understanding aerodynamics.
- Designed for classrooms (3rd–8th grade) during each session offered.

Includes:

- Rocket building supplies
- Aerodynamic experiments
- Teaching materials - an educator's guide contains complete lesson plans.

Programs: Mental Health

Superhero You

Help students explore the things that help define who they are - their characteristics, their family, their friends, and their thoughts and feelings about the future. Superhero you helps students better understand their self identify through leader guided self discovery activities.

Concepts

- Taking a look at the students skills and abilities. Seeing how they can contribute to their community.
- Understanding how they can positively relate to others like family and friends.
- Visualizing their future self and thinking about who they want to be, what career they want to have, and goals they have for themselves
- Activities that promote self exploration and self discovery

Includes:

- Five lessons, each one hour
- Topics include:
  - Superhero On My Own
  - Superhero with My Family
  - Being a Super Friend
  - Exploring the Super Future
  - The Superhero You Are

Geology: Can you dig it?

Learn about the Earth's history through exploring rocks and minerals. Students will complete hands-on experiments with rock samples to better understand earth events and how they impact humans.

Concepts:

- Explore the science that deals with the earth's physical structure and substance, its history, and the processes that act on it.
- Learn about fossils, rock layers, and the Earths materials
- Explore the history of the Earth's physical makeup and Pangea
- Discover more about the three rock types, minerals, and how they interact with one another
- Perform experiments utilizing rock samples collected by your students

Includes:

- Seven Lessons, each unit taught in 60-minute intervals
- Unit Lessons: Digging In, Parts of a Whole, Rock and Roll, Minerals in Everyday Life, Collect Them All, Step into the Past, and Walk with the Ancients.

Programs: STEM

Clovers CODE

Clovers CODE (Creating Opportunities Designed for Everyone),is a part of a Community Education Initiative, Apple provided the Ohio 4-H Youth Development Program with devices, programmable robots, and professional learning and support.

Concepts:

What happens when you combine kids, iPads, and 4-H? The result is Clovers CODE, a statewide program from Ohio 4-H that introduces problem-solving, computer literacy and coding through hands-on activities.

With Sphero's educational tools, you gain hands-on coding experience through play-based learning. Experience the best of both worlds by combining virtual lessons with physical activities.

These ready-to-code robots have interactive iPad applications where participants will learn basics in coding and practice these new found skills through activities designed with kids in mind.

Includes:

Collaborate with the OSU Extension staff to bring these robots to life. Inquire about our Sphero BOLT Robots and iPads to support learning in the classroom. Interested in learning more about Sphero? Visit their website here: https://sphero.com/

Good Nutrition is Our Mission

This five-part series is designed to help participants better understand their food choices, arming them with knowledge and science related to staying fit and healthy. These interactive lessons help students to learn about their current food consumption and activity levels.

Concepts:

- Identify the major food groups and serving sizes
- Demonstrate understanding of basic food needs and how food fuels your body
- Determine their daily activity level and its impact on fitness and health
- Explain how food choice impacts overall wellness
- Discover healthier and budget friendly shopping at the grocery store
- Develop basic cooking skills in the kitchen

Includes:

- Session 1: Food Groups and You
- Session 2: Fitness for Life
- Session 3: Supermarket Sweep
- Session 4: Kitchen Basics
- Session 5: Top Chef meets Fruit Ninja

Programs: Gardening & Plant Science

Growing Together

Teaching garden-based science to kids using interactive materials. Students gain better knowledge regarding horticulture while utilizing skills in teamwork and natural resources. This guidebook is designed for teaching garden-based science to kids.

Concepts

- 4-H and master gardener volunteers, parents, and teachers find fun, interactive activities to include in their indoor or outdoor horticulture education efforts.
- Provide guidance for volunteers and educators interested in teaching horticulture to youth
- Describing hands on gardening activities for youth
- Connecting references and resources to horticulture

Includes:

- Examples of subjects include
  - Pollination
  - Soils
  - Insects
  - Trees
  - Decomposition
  - and more!

Weather Together

Engages learners in the exploration of weather through classroom and self-guided activities. Students are encouraged to actively use science skills, creative, and critical thinking skills while exploring the influence of sunlight, gravity moisture on the atmosphere and more.

Concepts:

- Explore the interactions and movement of air masses of different temperatures
- Participate in group critiques of investigative results of weather exploration
- Use graphs, tables, weather forecasts, maps, magazine articles, and mass media to make decisions about issues related to weather
- Choose methods and devices to measure weather conditions and collect data for temperature, humidity, wind speed and prescription such as rain gauge, thermometer and barometer

Includes:

- Five weeks, five lesson unit taught in 60-minute intervals
- Read and Do worksheets

Programs: Agriculture Education

Acres of Adventure

Introducing youth to agriculture and life science through hands on learning, Acres of Adventure provides samples of today's agriculture while also shaping the farmer and consumer dialogue with accurate information.

Concepts:

- Introduce youth to the various ways agriculture interacts with daily life
- 10 hands on activities in each book with a different web of integration
- Learning the interdependence of agriculture and recycling
- Creating and using natural dyes from cultivated crops

Includes:

- Examples
  - All About Agriculture
  - Fast Food Agriculture
  - Mystery Agriculture
  - Plant Detectives
  - Agriculture Gone Wild
  - Farm Physics
  - Frontier Living
  - Insect Invasion

Let's Start Cooking

A course designed for those who are new to cooking and baking. Let's Start Cooking covers all the basics that will get participants to feel more confident and independent in the kitchen. In addition to cooking, participants will explore healthy lifestyle guidelines set forth by the USDA's My Plate.

Concepts:

- A course for participants who have little to no cooking experience
- Designed to help participants cook and bake their way through learning about kitchen equipment, food prep, reading recipes, and learning to cook with hear all with safety in mind
- Explores good nutrition and healthy lifestyle habits

Includes:

- Eight Lessons, each unit taught in 60-minute intervals
- Unit Lessons: How Does Your Plate Rate, Safety First, Equipment Check, Decoding Recipes, Measuring Mastery, Slicing and Dicing Practice, Microwave Know How, Stove Top and Oven Use 101

Programs: Workforce

Here, There, Ag Careers Everywhere

What kinds of jobs do you think of when you hear the word "agriculture"? Chances are, whatever you envision is about food production: a farmer, a meat inspector, a salesperson for a feed company, for example. Agriculture is that and so much more.

Concepts:

- Exploring all the areas of Agriculture Careers including Food Production, Environmental Science, Forestry, Plant Health Management, and Agribusiness Communication.
- Providing students the opportunity to assess their personality type.
- Providing students opportunities to development life skills like speaking with an agriculture professional and knowing the value of a mentor.

Includes:

- Eight lessons, each one hour
- Topics include:
  - What is Agriculture
  - Career Field Map
  - Check Your Skills
  - Personality Plus
  - Is it Really a Match?
  - Informational Interview
  - Make it a Deep Dive
  - Value of a Mentor

Programs: Mental Health

Mental Health Matters

What does mental health really mean? How many people are affected by mental health issues such as anxiety and depression? Be part of the solution by learning the answers to those questions and more. Learn more about mental health, why it is important to overall well-being, and steps that promote understanding and action.

Concepts:

Mental health is a hot topic for youth development professionals, and for good reason. According to the National Council for Behavioral Health, 1 in every 4 American adolescents has been diagnosed with a mental health disorder.

Our youth need more education about mental health—how to recognize signs and symptoms, how and who to ask for help, and how to apply self-help strategies to improve mental health. Your Thoughts Matter: Navigating Mental Health is a 4-H project book that addresses that need. The project, designed for teens, has four project areas: What Is Mental Health, Mental Health Behaviors and Disorders, Stigma, and Self-Help and Resources.

In each of the project areas, youth complete hands-on activities that encourage understanding, empathy, and connection to other people. Youth create anti-stigma campaigns, interview adults about perceptions of mental health, and identify self-help strategies that build resilience.

Insect Adventures

Insect Adventures is for youth who are just beginning to learn about all the different kinds of insects that live on the Earth. Students will collect insects and gain a basic knowledge of insects and how they are connected to the world around us.

Concepts:

- Entomology is the study of insects and their relationship to humans, the environment, and other organisms.
- Participants will identify what insect bodies look like including mouthpart diversity
- Identifying insect orders and other entomology basics
- Collect and dissect a grasshopper
- Begin to understand the relationship between insects and how human activity affects them

Includes:

- Seven Lessons, each unit taught in 60-minute intervals
- Unit Lessons: Body Building, Family Trees, Bug Buffet, Pits and Pans, Decomposers, Count on Karner Blues, and Insect Collection

Programs: STEM

Junk Drawer Robotics

These resources will help you make science, engineering and technology engaging and meaningful in the lives of young people. The activities encourage youth to use the processes and approaches of science; the planning and conceptual design of engineering; and the application of technology in each module.

Concepts:

Junk Drawer Robotics shows youth how they can be a scientist with just the everyday items and tools in your home. The curriculum is divided into three levels, each around a central theme related to robotics design, use, construction, and control. Each level starts out with background information on working with youth, curriculum elements, and a focus of the concepts to be addressed.

- Level 1: robotic arms, hands, and grippers.
- Level 2: moving, power transfer, and locomotion.
- Level 3: the connection between mechanical and electronic elements.

Includes:

Activities can be grouped into delivery times from 20-minute sessions, to 50 minute classes, to 2 or more hour workshops or camps with pre-assembled educational kits. Each activity is one of three types:

- To Learn - activities help youth explore fundamental science concepts and gain knowledge to apply in other activities.
- To Do - activities are thinking, brainstorming, and design activities to highlight engineering processes.
- To Make - activities challenge youth to build/construct their designs.

Magic of Electricity

From building burglar alarms to learning how to select stereo equipment, this curriculum contains dozens of hands-on, useful, and fun projects. In each one of these activities participants learn something about electricity!

Programs: STEM

Concepts:

- These projects can be used in a variety of settings such as the classroom, with special interest clubs, after school groups, community clubs and more!
- Explores all things electricity and provides opportunities to practice a life skill that can be used everyday.
- Learn more about science process skills and gain confidence with success indicators like experiment repetition.

Includes:

- Instructions on how to perform electricity experiments.
- Teaching materials - an educator's guide contains complete lesson plans.

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