

4-H YOUTH DEVELOPMENT LEADERS' GUIDE TO PROJECTS



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NOTES

This guide to project selection is intended for use by 4-H Club Organizational and Project Leaders involved in the 4-H Program and is designed to assist club members in the selection of suitable projects. Each 4-H Project offered in Otsego County is described. The leaders, members and parents are encouraged to plan together a program suited to the needs, interests and abilities of members. Members should be encouraged to select only those projects they can complete by the end of the club year.

*All projects are open to Traditional 4-H Members within Otsego County. See age requirements on page 20 of the Youth Development Program Offerings. 4-H CLOVERBUD projects are described in a separate section.

- There is a charge for each project guide. Please see project order form for prices. 4-H Leaders have the option of photocopying the additional project guides needed.

*When selecting a project the following should be considered:

1. What do the members like to do?
2. Is there an interested adult willing to take the leader training?
3. Does the 4-H Club have, or can it get the necessary equipment and supplies?
4. Are enough 4-H members interested in the subject to develop the necessary group interests for successful teaching and learning?
5. Are the parents interested enough to support the project?
6. How will the project be financed?
7. Can the projects be completed by the end of the current 4-H Year?

*Project leaders are responsible for certifying members' completion of projects by notifying the 4-H Club Organizational Leader.

*Workshops, conferences and other training meetings are scheduled for 4-H leaders throughout the year. **THE POWER OF YOUTH** newsletter will announce specific details and give leaders an opportunity to register for the trainings.

*Most 4-H projects have a record sheet or a generic project record sheet is available for use with those projects which do not have a record sheet. These are to be completed by the 4-H'ers and approved by the 4-H Project leader. Upon satisfactory completion, the record sheet is to be placed in the 4-H'ers Achievement/Record Book.

CITIZENSHIP AND CIVIC EDUCATION

Citizenship—Understanding of government and active participation in community life and community problem solving.

Public Adventures-AB01: Through Public Adventures youth will have the opportunity to improve the world around them. Youth will discover public issues that are important to them and to others. They will gain new skills to make things happen. Most importantly, they will put what they are learning into action. They will plan a project that will create, change or improve something that is valuable to many people. Then they are going to do it! This is what being an active citizen in a democracy is all about. Public Adventures isn't just about one project. Public Adventures is designed to engage youth in changing a piece of the public world, discovering the possibilities of democratic citizenship, and building a commitment to taking action in new and exciting ways. The Leader's Guide provides supplemental materials that help the leader facilitate activities.

Age Preference: youth 9-19 years old

Cultural Education—Passing on valued knowledge, skills and Tradition to succeeding generations; more than one culture, national origin, race or creed; reciprocal visits, and/or inbound or outbound delegate(s).

The Three Sisters: Exploring An Iroquois Garden-AC01: Native American Agriculture and culture are explored through growing what Iroquois legend called "The Three Sisters": corn, a vining squash and a pole bean on a raised hill. The science, storytelling and history of this system reflects an advanced agricultural society. This project teaches how to create and Iroquois garden, how to make a corn husk doll and how to enjoy these three basic foods of Native America.

Age Preference: youth 8-14 years old

The Great American Peanut-AC02: A project that explores George Washington Carver's contributions in a sociocultural aspect, examines the botany of the peanut and provides many scientific activities in which children explore seed storage, comparison of the peanut to other nuts and to the pea family, the nutrients found in a peanut as well as some recipes which include peanuts. The main purpose of this project is not to grow bushels of peanuts but rather to explore an interesting crop and the people who have grown it.

Age Preference: youth 14-19 years old

The Humble Potato...Underground Gold-AC03: The aim of this project is to help children explore a food crop from the perspective of science and socioculture. Specific goals of the project are for children to develop an interest in and enthusiasm for horticulture and nutritional science, appreciate the social influences of a food crop and enjoy the project experiences.

Potatoes! Throughout history they have been alternately rejected as poisonous and praised as a food fit for kings. They're covered with soil and humbles as can be, yet this often misunderstood vegetable has powered civilization, triggered mass population shifts, and is now one of the world's most important food crops. Potatoes grow in a wide range of conditions and climates and produce more food energy per acre than wheat, rice or corn.

We can thank Native Americans in the Andean highlands of South America for first cultivating the potato. As this plant traveled around the world, people of many different cultures have adopted the potato to bake, mash, boil, stuff, fry, and broil, all with delicious results. Learning more about this humble tuber can lead to explorations in science, nutrition, world cultures, and history.

Age Preference: youth age 9-12 years old

Rice-Grain of the Ancients– AC04: Can you imagine talking to a plant as you place it respectfully into your garden? Can you imagine going hungry if that plant were never to set seed? What if all your celebrations and ceremonies and all your meals revolved around that very same plant? Can you imagine having to be properly dressed when handling the plant, never spilling a single seed of it, treating it as your mother or your child, and dancing at it's harvest? This is the way many of the traditional peoples of Southeast Asia treat the rice plant.

Rice is the crop that supports the most densely populated regions of the world. Although more wheat is produced in the world each year than any other crop, more people eat rice. In fact, more than 50 percent of the world's people depend on rice as a staple food. The project *Rice– Grain of the Ancients* explores rice growing through the letters of an imaginary pen pal named Lanlan Chen in northern China. By reading her stories and the stories and poems of others and by doing the activities you will get to know more about rice and come to understand why it is so important to the people of Southeast Asia.

Age Preference: youth 9-12 years old

The Appealing Apple-AC05: Activities in this projects include making apple puppets, exploring apples in literature and playing historic games using apples. Learn what makes an apple and how apple trees grow, flower and produce their fruit. Taste tests, cider-making and career information are included as well as several easy and unusual recipes using apples.

Age Preference: youth 9-12 years old

New York Barns—AC06: Old Barns throughout New York State are important and threatened icons of our rural heritage. They are some of the most finely crafted buildings still in existence today. This project familiarizes readers to the history of barn construction and use, the different materials used in barn construction and how to conduct a historical survey which would be applicable to other fields.

Age Preference: youth 8-12 years old

Family Folklore-AC07: Genealogy usually refers to preparing a family tree or knowing the name of your ancestors and the dates during which they lived. Family folklore goes beyond this by looking at the stories and traditions of both new and old family members. Family folklore means looking beyond facts and dates to the effects family stories and traditions have on people today. Forms of family folklore: stories, expressions, photos, customs, keepsakes. Youth are guided to discover their family folklore by visiting with older family members, looking through family photos, discussing family traditions and looking at personal and family keepsakes and heirlooms.

Folkpatterns—AC08: Folk traditions are passed from one person to another and from one generation to the next, usually by word of mouth or by example. Included are customs, food traditions, stories, songs, games, art, dance, crafts, celebrations, and folk architecture.

This project goes beyond family traditions and includes the folklore of ethnic groups and of communities. Youth do interviews (may include tape recorded oral history), visit ethnic stores, talk about ethnic food traditions, and can study local histories through examining old buildings, cemeteries, local libraries and historical societies.

Foodways—AC09: Traditional activities, attitudes, beliefs and behaviors– customs of food production, preservation, preparation, presentation, gathering marketing and food folklore. This project has the 4-H member look at food customs in their family, how food was and is traditionally prepared, how food played a role in folklore, when food was used for things other than nutrition, i.e.; medicine, cleaning, cosmetics and art and the role food plays in family celebrations.

Intergenerational-Educational efforts to link youth to another generation in a common cause.

Project EASE—Exploring Aging Through Service Experiences—AE01: An intergenerational project designed to bring youth and elders together for meaningful, goal-oriented interaction. Together, youth and elders choose a community service from three model programs: joint service, adopt-an-agency or one-to-one match. They then plan and carry out the activity jointly. While working together on the community service, youth and elders are forming a relationship with each other. Overcoming the generation gap and more fully understanding each other. Several activities to encourage interaction are included.

Service Learning—Acquiring personal skills and knowledge in the process of performing service for others through an organized program followed by personal reflection.

Simple Gifts—AE: This project produces age-appropriate recreational items for persons with Alzheimer's Disease. These specially designed items are made by youth and are donated to individuals or residential nursing homes. The program encourages youth and adults to learn about the disease and to become more involved in intergenerational opportunities within their communities.

Age Preference: youth 8-19 years old

COMMUNICATIONS AND EXPRESSIVE ARTS

Performing Arts—Communication through action displaying special skills such as a public exhibition.

Theatre Arts Adventures BB31—Play the Role

BB32—Becoming the Puppeteer

BB33—Setting the Stage

Leader's Guide

Playing the Role is an introduction to the world of theater arts as the youth and leader learn together in the fascinating world of make believe. In *Becoming the Puppeteer* youth create sound effects, make puppets and prepare a puppet skit. Although acting is the primary subject matter, young people will practice life skills such as problem solving, managing feelings, decision making and communication. *Setting the Stage* has youth involved in improvisations, creating disguises and designing costumes. They learn how to express themselves clearly in the exaggerated manner that is seen on stage and screen. The leader's guide assists in the facilitation of the learning process and includes advice, group activities and helpful hints and more. Wouldn't it be fun to pretend, create sound effects, put on makeup, become a character and take a bow?

Age Preference: youth 8-19 years old

Visual Arts—Give form and meaning through creative processes involving line, color, form, pattern and texture in two or three dimensions.

Visual Arts Project - BC: The word art is derived from the Renaissance words arti and arte. Arti was the word for the craft groups of the 14th, 15th and 16th centuries. Arte means craftsmanship.

In the 4-H visual art project, emphasis is put on the creative process, the employment of design elements and principles, and workmanship. The creative process is defined as giving form and personal expression to an art object through exploration and experimentation with materials, tools and/or practical skills.

There are two segments to this project. One assists youth in learning more about art principles. It addresses the elements of design: color, texture, line, shape and space through sketching. The others discuss a variety of media including paper, fiber, clay, wood, drawing/painting, printing, glass, metal and leather. Suggestions are also given on making a portfolio and finishing (matting/framing) as well as marketing and evaluation.

Adventures With Your Camera A - BCD1: Presents the basics of photography in an informative, colorful and fun format. Includes information on getting to know your camera, saving and sharing photos, seeing the shot, and choosing good subjects. Also includes the latest in digital photography and digital file information.

Age Preference: youth 8-11 years old

Adventures With Your Camera B - BCD2: Presents a more detailed overview of basic photography concepts. Topics covered include photography basics, picture composition, flashes and film, concepts of lighting and focusing on careers. Also included is the latest in digital photography and digital files.

Age Preference: youth 12-14 years old

Photography Unit 1—Focus on Photography— Youth will focus on equipment basics, taking sharper pictures, the concept of lighting and flash, photo composition approaches, sequencing and evaluating photographs.

Photography Unit 2—Controlling the Image— Youth will explore depth of field, aperture and shutter speeds, hard and soft lighting, silhouettes and flash techniques. Youth will also learn to evaluate composition using the Rule of Thirds, the Golden Triangle and the Golden Rectangle, use different viewpoints, and understand positive and negative space. Additional topics include taking candid photos, adjusting shutter speeds, panning techniques and taking close ups and panoramas.

Photography Unit 3— Mastering Photography— In this third level book, youth will understand the use of wide-angle and telephoto lenses, filters and special film, light meters, shooting photos with different light sources and the use of natural and artificial lighting for effect. Youth will also learn to shoot reflections, using framing and viewpoints, still-life, formal & informal portraits, symmetry, patterns and texture, color composition, pictures with a purpose and much more.

CONSUMER AND FAMILY SCIENCE

Child Development, Child Care, Babysitting—

Child Development– Kids on the Grow– CA01: Growing on My Own

CA02: Growing With Others

CA 03: Growing in Communities

Leader's Guide

In *Growing on My Own* youth learn how they grow and develop; how to inspect toddler's toys and make their home hazard free. They learn more about their roles in life, how to handle their emotions and accept differences in others. Moving to the second unit youth will learn more about self care, rules, responsibility, and safety and are introduced to babysitting. They work with others and gain awareness of common dangers in their world. *Growing in Communities* allows youth to explore child development careers, gain experience as a teacher or coach, participate in a community service project and learn that children with different abilities have different needs. The Leader's Guide features nine enhanced group activities.

Age Preference: 8-19 years old

Clothing and Textiles— Adventures in clothing-CB03 *age preference 8-11 years old*

Challenges in Clothing– CB04 *age preference 12-15 years old*

Strategies in Clothing— CB05 *age preference 15 and older*

These three clothing projects are designed to be completed over a 12 year period. In each level, youth are to explore clothing from various aspects. The projects are all divided into eight main topics: Looking Good, Choosing Clothes, Learning About Fabric, Clothing Care, Safety and Clothing, Personal Pointers and You and Others. Plus a creative sewing unit. Members don't need to do every topic each year and may approach the project by focusing on the Clothes You Buy aspect or the Clothes You Make approach. Members learn to make wise clothing decisions based on how the clothing looks on them, its cost, the intended use, fabric, care and safety of the garment chosen. In the advanced levels the unique clothing needs of special people, cultural aspects of clothing worn around the world, and careers in the fashion/apparel industry are also discussed.

The Clothes Horse - CB06: This project introduces ways in which 4-H level I, II, & III clothing projects can relate to the 4-H horse project. It offers horse related textiles and activities for members. It also provides information to enable 4-H'ers to construct or select less expensive riding apparel.

ENVIRONMENTAL SCIENCE

Earth, Water, Air—Studies which address mostly physio-chemical aspects of the environment; the lithosphere (geology,minerals), the hydrosphere (water) and atmosphere (weather and climate).

Lasting Impressions—DBA13: A guide to understanding fossils in the Northeastern United States. This project contains natural history accounts of some of the fossils that are common to the northeastern United States as well as background information to help youth understand the processes and patterns that have shaped Earth's history. It shows how fossils can help scientists reconstruct past environments, even how understanding fossils can increase our understanding of global climate change and volcanism, glaciating, and other massive environmental change over geologically short periods of time (e.g., less than 1 million years). Rocks will never look the same to you again!

Age preference: youth 10-15 years old

Pond and Stream Safari: A Guide to the Ecology of Aquatic Invertebrates—DBD41: Explore the many insects that begin their lives in water. The young grow in water and when they are ready to become adults they change into the adult forms, such as dragonflies, black flies, mosquitoes, horse flies, and many beetles. Before they became these familiar adults, they were aquatic. They looked and acted much differently than they do now. This project explores how aquatic insects live in water and how they form a vital link in food chains. Without them, ponds and streams would be very different. Exploring aquatic ecology with you people provides a fascinating study in a readily available outdoor lab.

Age Preference: youth 8-19 years old

Water Worlds—DDC: This project is designed to provide young people with the opportunity to explore and observe aquatic environments. The leader is not expected to be an expert in aquatic science or to have prior knowledge of aquatic environments. Through participation in the activities described, both members and leaders will have the opportunities to learn together about the physical and biological features of the worlds of water. You'll examine a variety of aquatic environments or water worlds including ponds, streams, rivers, lakes, puddles, salt marshes, or an ocean. Even human-made aquatic environments such as fountains, dams and ditches are suitable to explore.

Age Preference: youth 9-12 years old

Forests and Wildlife—Studies of renewable natural resources, mostly on non-cultivated and non-urban lands.

Forests of Fun— DDA1: Unit 1—Follow the Path
DDA2: Unit 2— Reach for the Canopy
DDA3: Unit 3— Explore the Deep Woods
Leader's Guide

The Forests of Fun Curriculum opens the world of forests to youth. Unit 1 explores different types of trees and tree parts, characteristics of different forests, what forests need to grow and thrive and the different products people get from trees and forests. Youth take a closer look at the inner-workings of trees in Unit 2 as they investigate forest change, learn about forest health concerns and discover the health benefits trees have on people. In Unit 3 youth examine and distinguish different types of trees, look at forests on a global scale, learn to care for trees and explore how to conserve forests. The leader's guide provides useful forest information, group activities and tip for volunteers.

Age Preference: Youth 8-19 years old

Trees: Dead or Alive—DDA11: A fascinating project about trees. Units include the growing tree, tree homes, the future forests, activity records, field trips and glossary.

Age Preference: 9-12 years old

Know Your Trees-DDA13: This project imparts a greater appreciation of the value of trees to man. Tree identification is the basis of the project. A member's guide and record book consist of seven parts including directions for collecting and mounting leaves and twigs, suggestions for field trips, several identification quizzes and recording of progress.

Maple Syrup Production for Beginners—DDA14: A seasonal, short term, do-it-yourself, activity which provides fun education and possibly, even profit. A simple fact sheet contains all one needs to know to produce maple syrup from sugar maple trees. It is a relatively simple operation and can be a fascinating educational experience for young and old alike.

Age Preference: youth 8-19 years old

Fishing For Adventure—DDC01: Level 1—Take the Bait

DDC02: Level 2—Reel in the Fun

DDC03: Level 3—Cast Into the Future

Leader's Guide

Get ready for a journey that includes the old time favorites of developing angling skills and creating fishing tackle, to the timely concepts of aquatic education and the dynamics of people and fish.

Age Preference: youth 8-19 years old

Wildlife in Today's Landscape—DDC31: This project introduces some of the principles of wildlife biology and ecology and explains the latest research on the impact of urbanization on wildlife and suggests actions to benefit wildlife in urban and suburban communities, parks, and preserves.

Age Preference: youth 12-19 years old

Wildlife Habitat Enhancement—DDC32: Includes information about habitat and providing cover, food and water for wildlife. Also features wildlife inventory activities.

Age preference: youth 9-19 years old

Wildlife Discovery—DDC39: The aim of this project is to introduce children to the needs of wildlife and give children the opportunity to search for wildlife and their signs. It's assumed that neither 4-H members or leaders have any prior experience with wildlife. It's a great experience.

Age preference: youth 9-13 years old

Birds In Your Backyard—DDC38: Can't tell a Robin from a Sparrow? This project will introduce the pleasure of ornithology, the study of birds. 4-H'ers will develop an awareness of birds present in their locality, sharpen their observational skills and learn the anatomy and distinguishing features of birds. Great fun!

Age Preference: youth 9-12 years old

Bluebirds in New York State—DDC50: This project includes topics on Where Are All The Bluebirds?; Build A Bluebird Nest Box; Mounting Nest Boxes; Monitoring Nest Boxes; Bluebird Behavior; Are You a Bluebird Expert?; Help a Scientist.

Age Preference: youth 9-14 years old

Outdoor Education/ Adventure—Outdoor activities that challenge the human spirit and body such as hiking, primitive camping, survival training, orienteering and ropes courses.

Outdoor Adventure— **DEA01: Unit 1—Hiking Trails**
 DEA02: Unit 2— Camping Adventure
 DEA03: Unit 3— Backpacking Expeditions
 Leader’s Guide

The *Outdoor Adventure Curriculum* will challenge your mind, body and spirit. Unit 1 includes shelter selection, leave no trace camping skills; outdoor cooking and environmental awareness and appreciation. Youth are increasingly challenged as they focus on hiking for a day. They will learn about clothing needs; packing day packs; reading topographic maps and orienteering skills. In Unit 3 you focus on being pm the trail for extended periods of time. Learning how to set up a tent; using backcountry stoves; nutrition and menu planning; personal hygiene and first aid. The leader’s guide targets technical, organizational, problem solving, safety and communication skills.

Age Preference: youth 9-14 years old

Waste Management—Consideration of the waste stream from extraction or harvest of raw materials through enviro-shopping to disposal by land filling or incineration. Waste management includes waste reduction, composition, re-use, recycling, waste to energy, waste stabilization and disposal.

Composting: Waste to Resources—DFA: Learn about how to compost, be a compost investigator, troubleshooting, what suits your lifestyle, urban solutions and some less common words. Included are “plans to build zero cost composting bins or expensive and elaborate systems, two posters “ The Composting Recipe” and “Composting Organisms”.

Age Preference: youth 10-19 years old

Recycling: Mining Resources From Trash—DFB: Includes how to recycle, activities and investigations glossary, list of end products made of recycled materials and more.

Age Preference: youth 10-15 years old

Plants—Applied biological science, living vegetables, herbs, greenery or foliage, trees, shrubs

Gardens of Fabulous Flowers—GCB01: Includes ideas on experiments that young gardeners can do for hands-on learning. Useful to all gardeners wanting to get the most satisfaction from floral color in a garden or when arranging cut flower displays. The descriptions of popular annuals and perennials will help you select those to include. Information on sit, soil type, sun or shade, water needs, summer cultivation, growth and height is provided. Planning and planting, tools and materials needed and how to propagate by seed and division are covered.

Age Preference: youth 13-19 years old

Herb Gardening—GCB02: This project explores growing herbs, designing herb gardens, propagation, soil preparation, weed control, transplanting and pest control. It then discusses harvesting, preservation and ends with a large number of herbal crafts such as pomanders, catnip bags, potpourri, wreaths and edible treats.

Grow With The Flow—Hydroponic Gardening-GCC01: In this project, you will construct and set plants in a hydroponic unit, watch the plants grow, and harvest them. Although the primary focus is hands-on learning about plant science, sessions also deal with entomology, social studies, marketing, human nutrition and careers in horticulture.

Age Preference: youth 11-16 years old

Heirloom Vegetable Garden—GCC02: This project reviews gardening practices of the 1800's. It looks at early seed production and use and storage of harvested vegetables. It touches on early cooking methods and cookbooks. However, most of the project is devoted to heirloom vegetable varieties, what they are and how they differ from newly developed types. Each heirloom vegetable is accompanied by at least one recipe from the 1800's preparing that vegetable so that youth can understand how vegetable uses may have changed over the years. Seeds for growing varieties of heirloom vegetables may be obtained in the Spring of each year from the 4-H Office through a program sponsored in conjunction with the Farmer's Museum.

Age Preference: youth 9-16 years old

Junior Master Gardener: Level 1— GCC03: Make plantable greeting cards ... Discover the wonderful world of worms...use peanut butter, chocolate chips and cereal to learn about soil aggregates...find out how plants clean water...create an ethnic vegetable garden and more. The Junior Master Gardener project is a new and innovative gardening project. There is a Gardener Handbook which guides youth through various activities on Plant Growth and Development; soils and water; ecology and environmental horticulture; insects and diseases; landscape horticulture; fruits and nuts; vegetables and herbs; and Life Skills and Career Exploration. Youth can work their way through the handbook to become a Certified Junior Master Gardener.

Age Preference: Youth 8-16 years old

Gardening—GCC04: Unit1—See Them Sprout

GCC05: Unit 2—Let's Get Growing

GCC06: Unit 3—Take Your Pick

GCC07: Unit 4—Growing Profits

Leader's Guide

These guides feature exciting activities in six major categories: Garden planning, planting a garden, while you wait, garden care, harvesting and storage and careers. The leader's guide offers activities and ideas to help leaders with their challenging and exciting role.

Age Preference: youth 8-19 years old

HEALTHY LIFESTYLES

Food and Nutrition— Foodstuffs, their preparation and the act of being nourished by wholesome sustaining food substances.

Cooking Up Fun— A Pyramid of Snacks—EC01: This project features 16 recipes. Also included are related games, science experiments, food activities and information sheets. A video (which can be borrowed from the 4-H Office) features 4 of the recipes. Goals of the projects are to increase skills related to food preparation, model healthy food choices, promote New York State foods and develop an understanding of the science of cooking.

Cooking Up Fun—Muffins & More—EC02: A collection of recipes and food activities for children ages 8-12 focusing on the process of cooking. Recipes in this project are all non-yeast leavened (quick) breads. Making this type of bread is a good way to introduce baking skills to youth. Included are 12 recipes with a collection of games, experiments, storybooks and other activities that support cooking experiences.

Age Preference: youth 8-12 years old

Cooking Up Fun-Yeast Breads—EC04: This project helps youth acquire independent cooking skills. It features 20 yeast bread recipes. A sample 6-session teaching plan includes more food activities to explore cultural history, ways of making dough, science, grains, nutrition and creative fun.

Age Preference: youth 8-12 years old

Kitchen Science for Kids—EC06: Nutrition embraces many science concepts. Some relate to the nature of food; some to how food is handled in the body. In *Kitchen Science for Kids* children will explore the sensory, physical, and chemical properties of food as well as nutrients as chemical components of food that the body needs to function. There are five science experiments designed for child-centered learning along with additional information for adults to guide the learning process.

Age Preference: youth 8-13 years old

Fantastic Foods Series—EC07: Unit 1—Six Easy Bites

EC08: Unit 2— Tasty Tidbits

EC09: Unit 3—You're the Chef

EC10: Unit 4— Foodworks

Leader's Guide

Food, Fun and flavor are what this project is all about. Youth will have fun in the kitchen as they prepare different foods, do fun experiments and go on fact-finding missions. The activity guides are designed around six major categories: healthy food selection, food safety, smart food purchasing, food preservation, food preparation and careers. In addition to the printed guides, youth can go to the fun new website where they can download recipes from across the country and around the world.

Age Preference: youth 8-19 years old

Food Mysteries- EC31: This colorful, sophisticated project supports current efforts to involve youth in more science and technology activities. This series focuses on food experiments designed to teach youth about the science and mysteries of food. Each of the eight-page member booklets include two food experiments and focus on nutrition information and puzzles that reinforce the material in the experiments. The 36-page leader's guide provides additional information on the facts behind each experiment, tips for helping members with activities, and the answers to questions about nutrition or the experiments themselves. Additional suggestions for activities and experiments are also included.

Age Preference: Youth 8-14 years old

Microwave Magic—EC35: Unit 1—Bag of Tricks

EC36: Unit 2— Micro Magicians

EC37: Unit 3— Amazing Rays

EC38: Unit 4— Presto Meals

Leader's Guide

The *Microwave Magic Series* contains lots of exciting hands-on activities that focus on using the microwave to prepare everything from simple snacks to complete meals. Activities in Unit 1 focus on understanding how the microwave works, learning to use the microwave safely and preparing foods such as scrambled eggs, apples, popcorn treats, fudge and desserts. Unit 2 includes activities on understanding watts and preparing foods such as potatoes, vegetables, pudding bar cookies, beans, upside down cake and brownies. Unit 4 is the most advanced level and focuses on techniques such as adapting recipes for the microwave, blanching fruits and vegetables and stacking whole meals.

Age Preference: youth 8-19 years old

Healthy Heart Snack Choices—EC40: Explore a variety of recipes that have been specifically modified as heart healthy.

Age Preference: youth 8-14 years old

Rising to the Occasion—EC41: Teaches youth how to make bread and prepare for careers in the food industry.

Age Preference: youth 12-19 years old

S'Mores and More—Outdoor Cooking and Living—EC42: Ever since humans figured out how to make fire, they've been cooking food over a campfire. We continue to share that bond with our ancestors as we sit around the campfire or barbecue grill talking and planning as we wait patiently for our food to be ready to eat so we have more energy to do the things we've planned in the great outdoors. This project teaches nutrition and meal planning, food safety, fire building safety and environmental health, food preparation methods (picnic lunches, no bake meals, cooking it on a stick, grill and by solar heat), equipment, personal camp safety and first aid and camp manners. Participants learn the basics of cooking the way our ancestors did—in nature's kitchen.

Tricks for Treats—EC43: Introduces youth to the basics of food preparation, healthy diets and food safety. Uses the U.S.D.A. Food Guide Pyramid and hands-on involvement; participant may digest, discuss and apply information learned.

Age Preference: youth 8-10 years old

More Tricks for Treats—EC44: Teaches youth to read food labels, select foods for healthy living, use different cooking techniques, plan balanced meals, deal with food spoilage and understand food advertisements.

Age Preference: youth 10-12 years old

Whole Grains—EC45: What are whole grains and how will I like them? This is a question you may have on your mind as you start this project. Whole grains like wheat, corn, and rice are probably not unfamiliar to you. You have been eating them for years. Now you will be able to identify and taste several other whole grains during this project as well as learn to prepare them. In this project you will be introduced to new yeast bread materials; become familiar with more types of whole grain food cooking and learning about whole grain nutrition.

Age Preference: youth 12-14 years old

Physical Health—Related to the body’s well being and wholeness.

Keeping Fit and Healthy—ED01: Unit 1—First Aid in Action

ED02: Unit 2—Staying Healthy

ED03: Unit 3—Keeping Fit

First Aid in Action is a great way for youth to learn and practice first aid skills to treat cuts, scrapes, nosebleeds and bee stings. They learn to respond to someone who is choking or has a broken bone; and assemble a first aid kit. Youth will keep on the right track in Unit 2 as they design a personal fitness plan and track it using their own fitness file. Finally youth will enjoy using the self-assessment tool to identify personal talent areas “smarts”, explore hygiene, nutrition and physical activities.

Age Preference: youth 8-16 years old

Sports Nutrition—EC04: This project uses group activities to teach healthy lifestyles, nutrition and fitness. Youth explore fitness myths and understanding physical development and the structure and functions of the human body. They learn principles of nutrition and exercise. “Power Snack” recipes are given.

Age Preference: Youth 10-14 years old

PERSONAL DEVELOPMENT AND LEADERSHIP

Economics, Business and Marketing—Study of principles underlying commerce, merchandising and entrepreneurship.

Radishes To Riches—FC01: This is a good project for young people who would like to raise and market a fruit, vegetable or flower crop, or who have already completed a project in horticulture and would like a new challenge. This project is unique because it combines disciplines that influence both the grower and the markets, such as entomology, plant pathology, marketing, consumer economics, and business and money management. *Radishes to Riches* is a very flexible project and has great potential for the 4-H member interested in marketing produce.

Age Preference: youth 13-19 years old

Financial Champions— FC03: Money Fun-damentals
FC04: Money Moves

An introduction to personal finance, youth examine their own thoughts about money, they discover money motivators. Activities teach goal setting, the difference between needs and wants and how to budget. In the Money moves youth examine the drawbacks of credit, advertising influences, consumer decision making and how to select financial services.

Age preference: youth 12-19 years old

Hobbies and Collections—Leisure interest which intensely absorb the individual's attention over a long period of time, such as enjoyable avocations (making or doing) or the accumulation of objects gathered for study, comparison or exhibition.

Collectibles—The Art & Science of Collecting—FE: Once practiced by only the rich, the pleasure of creating a collection of value and enjoyment can be experienced by many today. This collectibles project is for everyone. Almost anything can be collected. The project guides the 4-H'er though selecting something to collect, how to go about obtaining pieces to include in the collection, where to find other collections, and how to display the collection. There are 6 collective samplers for project members to follow and get ideas from to utilize in their own collection presentation. The project also emphasizes a collection record and leadership/citizenship activities related to collecting. Please not that the project record and report of learning experiences sheets found in the project book will need to accompany the collection to the Fair.

Age Preference: youth 12-19 years old

Leadership Skill Development—Development of qualities necessary to work with others to accomplish goals.

Step Up to Leadership—FF01: Unit 1—My Leadership Workbook (Grades 3-5)
FF02: Unit 2—My Leadership Journal (Grades 6-8)
FF03: Unit 3—My Leadership Portfolio (Grades 9-12)
Leadership Guide (Grades 3-5)
Leadership Guide (Grades 6-12)

Youth of all ages will share in the fun as they learn the dynamic process of leadership. Mentor guides include background information, interactive activities and real life experiences in relationship building, communication, group process and planning and organizing. All activities offer a cross-cultural perspective. Young children and teens can lead in many ways—at home, in clubs, youth groups, school and the community. The fun continues with an interactive web site to enhance and support learning.

SCIENCE AND TECHNOLOGY

Animal Science—The discipline concerned with production and care of domestic animals.

Beef—Domesticated bovine developed primarily for the efficient production of red meat.

Beef Unit 1—Bite into Beef—GBB01: 4-H youth taking part in this project learn to identify the major breeds of beef and their origins, the parts of a beef animal and how to recognize a healthy animal. A discussion of beef by-products is followed by evaluating cooked beef and selecting and preparing retail cuts of beef. Caring for animals, preparing for calving, and good beef cattle nutrition is covered. How to show and evaluate beef animals is covered as well.

Beef Unit 2—Here's The Beef—GBB02: Understanding a cow's digestive system and good nutrition for the beef cattle is covered in this intermediate level. Understanding cattle behavior, animal health and common cattle diseases are presented. Different beef cuts, how to prepare them, the beef industry, marketing beef and addressing current beef issues is included. Beef judging and safety is covered.

Beef Unit 3—Leading the Charge— GBB03: This project is designed for the older more experienced 4-H member, making bull-buying decisions with performance data, how to select project steers and how to determine meat quality is presented. The beef industry as well as career options are explored. Promotion of beef and beef by-products, current beef issues and the impact of biotechnology on beef production is covered. A breeding program, beef genetics and various beef-breeding systems are presented.

Beef Series Leader's Guide—Provides supplemental materials that help the leader facilitate activities.

Birds & Poultry—Domesticated birds, chickens, pigeons, waterfowl and other warm blooded feathered animals.

Poultry Unit 1—Scratching the Surface—GBC01: In this project, 4-H youth are instructed in learning the parts of poultry, the bird's digestive system, identifying the breeds of poultry, learning the parts and functions of eggs, and how to cook an egg. Preparing for chicks, determining what breed (egg or meat) to raise, and correct poultry handling is covered. How to prepare a bird for the poultry show, and showing poultry is presented.

Poultry Unit 2— Testing Your Wings—GBC02: In this intermediate level, 4-H members are asked to observe healthy flock and to learn about the parts and functions of a bird's skeleton. Youth learn how an egg is formed, how to select and judge broilers and hens for good egg production. Poultry nutrition and feeding is covered as is poultry disease. Budgeting and income and expense ledgers are presented.

Poultry Unit 3—Flocking Together—GBC03: Written for the older more experienced 4-H youth, this project encourages the youth in leadership and re-teaching of knowledge to younger 4-H'ers. How to organize a judging clinic is covered. Managing a laying flock, from local ordinances, to obtaining the birds to selling the eggs is presented. Genetics is discussed as well as egg quality, safe handling of poultry products and processing chicken. The poultry industry as well as exploring poultry careers is also presented.

Cats

Cat Unit 1—Purr-fect pals!—GBD01: This project talks about the different breeds of cats, how to care for a cat, lifting, grooming, feeding, the litter box. It also discusses neutering, declawing, and how to cat proof the house.

Cat Unit 2—Climbing Up! —GBD02: In this second unit about cats, showmanship is dealt with. Also, cat health, nutrition, fleas, and caring for the elderly cat. The death of a cat and grieving for a pet are also talked about.

Cat Unit 3—Cat Connections—GBD03: Exploring careers, animal rights, genetics, and looking at animal parts, organs and systems are part of unit 3.

Cat Series Leader's Guide: Provides supplemental materials to help the leader facilitate activities.

Dogs

Dog Unit 1—Wiggles ‘n Waggles—GBE01: This beginning dog project talks about the responsibility of owning a dog, the breeds of dogs and their characteristics and about showing a dog.

Dog Unit 2—Canine Connection—GBE02: In this unit dog health and nutrition is discussed. Also different things that dogs are used for such as seeing-eye dogs and police dogs.

Dog Unit 3—Leading the Pack—GBE03: This final project talks about careers dealing with dogs, how to organize dog bowls, communicating with others about dog issues and dog organizations such as the American Kennel Club.

Dog Series Leader’s Guide: Provides supplemental materials that help the leader facilitate the activities.

Dairy Cattle—Bovine bred and developed chiefly for milk production

Dairy Unit 1—Dig Into Dairy/ Cowabunga—GBF01: This project guides the youth in learning to recognize different breeds of dairy cattle and what to look for when selecting a calf, to identify cow body parts and to identify and market dairy products and by-products. Members learn about the birth process and caring for a newborn calf. Animal showmanship and dairy cattle judging are discussed.

Dairy Unit 2—Mooving Ahead—GBF02: In this second unit, 4-H members are introduced to more of the business side of the dairy industry. 4-H youth are encouraged to make and keep a budget of expenses and incomes connected with their animal. Career options in the dairy industry are explored. So are different kinds of dairy farms and modern dairy farm technology. Animals’ needs, nutrition, housing, etc. are explored. The affects of the dairy industry on everyone worldwide is discussed.

Dairy Unit 3—Leading the Way—GBF03: Designed for the older 4-H youth, this project discusses cooperatives, how others perceive real and imitation dairy products, public perception of dairy farming and how public policy is set. The challenges of finding a career in the dairy industry is further explored. Emphasis is put on leadership especially in helping younger 4-H members learn about dairy cattle. Environmental concerns of responsible use of animal waste and protection of drinking water as well as land use is discussed.

Dairy Series Leader’s Guide: Provides supplemental materials that help the leader facilitate activities.

Goats—Milk, hair and/or meat producing.

Dairy Goat Unit 1—Getting Your Goat—GBG01: This project guides youth in making decisions about getting a goat and the different kinds of goats. A segment of this project deals with goats raised primarily for milk and those, such as angora goats, raised for their hair. Record keeping and showmanship are discussed.

Dairy Goat Unit 2—Stepping Out—GBG02: This unit discusses goat health and nutrition. It also talks about reproduction and getting involved in goat judging and goat products such as goat cheese and milk.

Dairy Goat Unit 3—Showing the Way—GBG03: This final unit in the goat project series deals with careers in the dairy goat industry, organizing goat field days, communicating with others about goats and goat organizations.

Dairy Goat Series Leader’s Guide: Provides supplemental materials that help the leader facilitate activities.

Meat Goats Unit 1—Just Browsing—GBG04: In this project the 4-H member will learn the parts of a meat goat, selection of animals, breed characteristics, meat quality, preparing for a show, good sportsmanship, and meat goat health and nutrition plus providing housing for the meat goat.

Meat Goats Unit 2—Get Growing with Meat Goats—GBG05: In Growing with Meat Goats participants will learn about major diseases of market kids, things to consider when choosing a vet, how to select breeding or production stock, poisonous plants and safe eating, meat goat predators, breeding and reproduction, record keeping, and fitting & showing the meat goat.

Meat Goats Unit 3—Meating the Future—GBG06: In this project youth learn about control of parasites in goats, biosecurity, judging meat goats and giving oral reasons, genetics, advanced nutrition and pasture management, livestock show ethics, and meat goat products such as meat, milk and cheese.

Meat Goats Leader’s Guide: Provides supplemental materials to help the leader facilitate activities.

Horse/Pony—Breeding, care, training for riding, pleasure or draft purposes.

Horses & Horsemanship—GBH01: This serves to introduce youth to horses. It provides an overview of the following topics: breeds of light horse; color and color markings; judging; gaits of horses; tack and equipment and its care; grooming and preparation for the show and showing horses at halter. In addition, this guide contains many definitions to words commonly used around horses.

Horse Science—GBH02: This project gives youth insight into the care and management of raising a horse. Topics covered include behavior of the horse; functional anatomy; unsoundness and blemishes; determining the age; reproduction; feed and nutrition; diseases; digestive system and parasites.

Horse—GBG03: Unit 1—Giddy Up & Go

GBG04—Unit 2—Head, Heart, and Hooves

GBG05—Unit 3—Stable Relationships

GBG06—Unit 4—Riding the Range

GBG07—Unit 5—Jumping to New Heights

Horse Series Leader's Guide: Provides supplemental materials to help facilitate activities.

Horse 1 is for youth who may or may not have a horse or pony of their own but want to learn about horses. Horse behavior, terms, breed, identification, body part, selection, grooming, saddling and bridling, safety and equipment are explored. In Horse 2 horsemanship, judging, oral reasons, selection, unsoundness, tack, training, showing, trail riding, riding skills, parasites and feeding activities and information are included. Experienced horsemen will enjoy the challenging activities in Horse 3 and exploring horse careers. Horse 4 features beginning riding skills and everything youth need to know before they get on a horse for the first time. Activities include round pen workout, bridle in a bucket, saddle up, where do you ride and basic riding. In Horse 5 youth discover the ins and outs of showing your horse are covered in this book. Activities include quarter system, showmanship, self-rating sheets, goal section and winning isn't everything.

Rabbits/Cavies—

Rabbit Unit 1—What's Hoppening?—GBI01: This beginning 4-H rabbit project covers teaching the youth the different breeds of rabbits, parts of a rabbit, the importance of quality rabbit care, good rabbit nutrition and the rules and regulations affecting rabbit ownership. Providing adequate housing and plans for a rabbit hutch are included. Learning to correctly handle a rabbit and rabbit showmanship are covered.

Rabbit Unit 2—Making Tracks—GBI02: In this intermediate rabbit project, members are shown how to make a mobile carrying case and a nest box for a rabbit. The need for tattooing and how the procedure is done is covered. Rabbit judging, how to show your rabbit at a rabbit show or fair, and rabbit nutrition is discussed as well as rabbit health.

Rabbit Unit 3—All Ears—GBI03: Designed for the older more experienced 4-H youth this is designed as a leadership guide. Youth taking part are encouraged to re-teach their knowledge of rabbits to others. How to conduct rabbit skill-a-thons, rabbit judging, and showmanship is covered. Record keeping and budgeting, genetics, rabbit breeding, promotion and use of rabbit products as well as career options is explored.

Rabbit Series Leader's Guide: Provides supplemental materials that help the leader facilitate activities.

Sheep—

Sheep Unit 1—Lambs, Rams and You—GBJ01: This beginning sheep project introduces 4-H members to the different breeds of sheep. It teaches the youth how to identify the body parts of sheep and about sheep behavior. The uses of wool and other sheep by-products, selection of a lamb, determining health and age, showing and judging sheep is presented.

Sheep Unit 2—Shear Delight—GBJ02: Sheep nutrition, reproduction, diseases and health problems are discussed. Sheep industry careers, budgeting for the lamb and record keeping is covered. Preparing and taste-testing cuts of lamb is presented.

Sheep Unit 3—Leading the Flock—GBJ03: Designed for the older more experienced 4-H member, this unit talks about sheep industry issues, marketing sheep products, the 4-H members sheep operation budget, reproduction and genetics and leading sheep related activities. A more in depth view of careers in the sheep industry is covered. Leadership and re-teaching of knowledge to younger members is encouraged.

Sheep Series Leader Guide: Provides supplemental materials that help the leader facilitate activities.

Small Animals—Includes all other small domesticated mammals raised and cared for but not listed under animals.

Pets Unit 1—Pet Pals—GBK01: In this project, youth discuss their favorite pets, safety, care, play time and leaving pets home alone is addressed. The cost of pets, nutrition and health are dealt with. Gerbils, cavies, hamsters and fish are highlighted.

Pets Unit 2—Scurrying Ahead—GBK02: Digestion, breeding, supplies, health and animal behavior is discussed. Specific animals focused on are caged birds, lizards and mice. Communicating about pets is presented.

Pets Unit 3—Scaling the Heights—GBK03: A youth leadership project, this unit discusses starting your own business, exploring pet products and the pet industry, classification of animals, genetics, health, animal welfare issues and teaching others. Hedgehogs, ferrets, hermit crabs, snakes and turtles are highlighted.

Pets Series Leader’s Guide—Provides supplemental materials that help the leader facilitate activities.

Swine—

Swine Unit 1—The Incredible Pig—GBL01: The beginning 4-H swine unit covers breeds of swine, swine body parts, how to raise and sell pigs and retail cuts of pork and swine by-products. A pig’s behavior and what a pig needs to be comfortable and well fed is covered as well as swine health, the role of the veterinarian and how to plan an animal budget. Showmanship, including training and grooming hints, is covered.

Swine Unit 2—Putting the Oink in Pig—GBL02: This project discusses the differences in preparing different cuts of pork meat. Exploring the “normal” pig, learning the symptoms of swine diseases and making a pig health care plan and good swine nutrition is covered. Careers in agriculture is explored as is the promotion of the pork industry. Judging swine and issues such as waste management, clean water, farm operation size and meat safety and quality are also explored.

Swine Unit 3—Going Whole Hog—GBL03: Designed for the older more experienced 4-H member, emphasis is placed on leadership with the youth encouraged to help with fitting and showmanship clinics, swine judging contests and swine quiz bowls as well as teaching younger 4-H members about swine. The future of the swine industry, career options, managing a breeding herd, learning about genetics and selecting swine housing are covered.

Swine Series Leader’s Guide: Provides supplemental materials that help the leader facilitate activities.

Science/ Technology Literacy—Ability to understand applied knowledge, expertise and disciplines attained through study of the physical world.

In Touch Science—HA01—Food & Fabric

HA02—Plants & Engineering

HA03—Chemistry & Environment

HA04—Fibers & Animals

This is a science program to help youth understand applied knowledge through the exploration of the physical world. Each unit includes ten experiments where children observe how similar science concepts relate to both foods and fabrics, plants and engineering, chemistry and the environment, or fibers and animals. The program emphasizes giving each child an opportunity to manipulate materials and equipment, test ideas, and explore what interests them in a relaxed learning environment. This works best with groups of 5-10 children. A ratio of one adult to six children is ideal.

The teaching style emphasizes the fun of manipulating supplies and engaging in the scientific process of discovery. Both adults and children are active participants. Together they will share “ I wonder...” statements that could lead to more science exploration. This program encourages children to think about their everyday encounters and to learn about the science of it all.

Age Preference: youth 8-12 years old

Entomology and Bees—The discipline of zoology that deals with insects

Learning About Butterflies—HBC01: Butterflies, because of their beauty and mystique, are our most visible insects. This project poses a number of questions about butterflies, and suggests specific activities or strategies for finding the answers. This project includes butterfly life cycle, habitats, ecology, behavior, and conservation.

Age Preference: Youth 13-19 years old

Entomology HBC02: Unit 1—Creepy Crawlies

HBC03: Unit 2— What's Bugging You

HBC04: Unit 3— Dragons, Houses and Flies

Leader's Guide

Explore the amazing world of insects and anthropod. Youth use hands-on activities to learn valuable life skills through insects found in the soil, on plants, in homes, on pets, and in other secret places.

Age Preference: youth 8-19 years old

Insects All Around Us—HBC05: In this project, youth learn about insects—their diversity, and their behavior through observation and exploration. Background information on insect life is provided so that leaders with little or no knowledge of insects can still guide youth. A fun insect trivia game is included to help you integrate what they are learning. Activities can be accomplished in less than an hour, but can be extended over a longer period of time.

Age Preference: Youth 9-12 years old

Veterinary Science—The discipline and art of prevention, cure or alleviation of disease and injury to animals

Veterinary Science— HBI01: Unit 1—From Airedales to Zebras

HBI02: Unit 2— All Systems Go

HBI03: Unit 3—On the Cutting Edge

Leader's Guide

This innovative series of three youth activity guides will lead youth through an exploration of the exciting world of veterinary science. Unit 1 introduces youth to the normal animal, basic anatomy and systems, elementary principles of disease and careers with animals. In Unit 2 youth will examine health and disease topics, normal and abnormal conditions and veterinary careers. Unit 3 involves youth in in-depth investigation of normal and abnormal systems, preparation for college and exploration of the diversity of the veterinary profession.

Age Preference: Youth 12-19 years old

Aerospace—Physical science that deals with flight, the earth’s atmosphere and space.

Fabric Flight Connection—HCA01: Boomerangs of cereal boxes, hot air balloons of brown paper bags, mini hang gliders and maple seed helicopters, fabric parachutes, and colorful kites are all made in this project.

Fabric has played a major roll in flight through all the years that man has yearned to fly. This project takes the scientific approach to studying the role of fabric and flight. 4-H’ers explore the principles of flight by making and testing various articles that fly. The garments needed for space flight and the properties (weight, strength, permeability, flammability) these garments need to be made from are further explored. From the fabric wings of early planes to the carbonized rayon used in NASA’s rocket launches, this project helps youth explore the connection of fabric and flight.

Age Preference: youth 8-19 years old

Soaring Above and Beyond: HCA02—Stage 1: Pre-flight

HCA03—Stage 2: Lift Off

HCA04—Stage 3: Reaching New Heights

HCA05—Stage 4: Pilot in Command

Leader’s Guide

The awesome experience of flying an airplane, launching a rocket, conquering space, and becoming an astronaut or pilot comes alive to youth in this series. Through fun and challenging learn-by-doing activities, youth discover the world of kites, hot-air balloons, gliders, remote control airplanes and space shuttles.

Age Preference: youth 8-19 years old

Bicycle

Bicycle Adventure—HCC01: Bicycle 1

HCC02: Bicycle 2

HCC03: Bicycle 3

Leader’s Guide

Youth can map their own route to the world of bicycling and gain the confidence to navigate whatever comes their way. Activities help youth learn safety, rules of the road, planning a ride, bike maintenance, and basic bike handling. Bicycling is the path to their independence— from the first ride and first tire patch to the time they organize their own ride or event.

Age Preference: youth 8-19 years old

Computer Technology—The applied science related to or concerned with programmable electronic devices that can store, retrieve and process data.

Computer Mysteries—HCD01: Unit 1—Bootng Up

HCD02: Unit 2—Adding On

HCD03:Unit 3— Reaching Beyond

Leader’s Guide

Exciting multimedia curriculum helps youth develop skills to confidently use their computers to design professional-looking printed materials, animated presentations, and interactive websites. Leader’s Guide offers additional information, internet safety and hints for working with youth.

Age Preference: youth 8-19 years old

Electric— Relating to, or operated by electricity

Electric Excitement—HCE01: Unit 1: Magic of Electricity

HCE02: Unit 2: Investigating Electricity

HCE03: Unit 3: Wired For Power

HCE04: Unit 4: Entering Electronics

Leader's Guide

Youth demystify the “magic” of electric circuits, magnetism, motors, and electronics. From making educated guesses (forming Hypotheses) and testing them, building burglar alarms and learning how to select really good stereo and other consumer items, this curriculum contains dozens of hands-on, useful and FUN projects for youth. Materials allow youth to experience technology firsthand. Activities are designed to promote technical and scientific literacy in youth while teaching communication and decision making life skills.

Age Preference: Youth 8-19 years old

Engines, Tractors, and Field Equipment—Apparatus used for agricultural production and/or lawn and garden applications

Machinery Care & Safety—HCG01: In this project 4-H'ers will learn about the care, operation and safe use of machinery used on the farm. 4-H'ers will learn how to adjust and take care of chains, belts, gears, clutches, etc. Planting and harvesting are also included in this project.

Age Preference: youth 15-19 years old

Start Your Engines—HCG02:Unit 1—Crank It Up!

HCG03: Unit 2—Warm It Up!

HCG04: Unit 3—Tune It Up!

Leader's Guide

From lawnmowers to snow blowers, personal water crafts, go carts, model airplanes, and ATV's—these are just a few of the literally hundreds of machines around us powered by small engines. With over 60 activities, these projects help youth understand how small engines work and how to keep them working.

Age Preference: youth 8-19 years old

Wood Science and Industrial Arts—The discipline associated with the processing and utilization of wood products; making and using technical plans; developing dexterity and familiarity with tools, machines and processes for construction and repair.

Woodworking Wonders—HCH01: Unit 1—Measuring Up

HCH02: Unit 2—Making the Cut

HCH03: Unit 3—Nailing It Together

HCH04: Unit 4—Finishing Up

Leader's Guide

Have you ever wanted to make something with wood? From the basics of a tape measure and hammer to advanced equipment like routers and table saws, there's something for everyone. Youth will develop life skills like decision making, planning, organization and problem solving while making fun and useful items.

Age Preference: You 8-19 years old

Astronomy— The science of celestial bodies and of their magnitudes, motions, and constitution

Astronomy: It's Out of This World—HDA01: Nine areas of interest are represented, most have accompanying activities, and some have more than one. They include: constellation matching, mythology, connecting the dippers, finding certain constellations, exploring the Summer Triangle, moon phases, understanding and making a sundial, and more. The author walks you through the solar system and use of the telescopes. His tips on how to make the most of night viewing will be useful to anyone. By using these easy, but very informative, hands-on ideas, students and adults will retain what they learn and have a better appreciation of astronomy.

Age Preference: Youth 8-13 years old