



Project Idea Starters



Computers

Bob Horton and Todd Fox,
Ohio State University

www.ag.ohio-state.edu/~idea

Use this two-page publication as the starting place for your 4-H Self-Determined project. You may choose to do a little, or a lot, depending on your level of interest in this topic. Use this in conjunction with our 4-H 365 Self-Determined Project Guide, available through your county Ohio State University Extension office or by visiting our web page at www.ag.ohio-state.edu/~idea. Be sure to register your Self-Determined Project with your county OSU Extension office.

Background

Look at the screen of any computer. On it are facts, figures, drawings, and even games. We take computers for granted, even though they have only been in everyday use for a few years. In fact, people are still learning so much about making better computers that new models replace old ones every few months. By definition, a computer is a highly sophisticated device that performs tasks. Computers have become an important part of our lives, allowing many complicated tasks to be done very quickly. From just a few instructions, computers are able to carry out a whole range of tasks, from sending out a letter to flying an aircraft.

Computers are made of many parts, called components, that when fitted together provide the power to work quickly and reliably. But the machine itself, called hardware, cannot operate without instructions, called software. And so, while computer makers have been busy developing faster and faster parts, computer programmers have been equally busy using the latest techniques for finding shortcuts that will make the machines perform ever more complex tasks. Computers cannot follow instructions without a programming language. There are several languages in existence; programmers choose the one that best meets their needs. Computer users rarely program their own computers. Most people buy a programming language software package from a store.

Today's computers come in many sizes, ranging from the tiny embedded microprocessors of a digital watch to the huge mainframes used by engineers. One thing all computers have in common is the way they work. Their operation can be divided into three steps — entering data, processing data, and producing output. Once a user puts information into a computer, the information goes to a Central Processing Unit (CPU) where it is translated into binary code. Much of the information fed into a computer is stored in its memory. There are two basic types of memory — ROM and RAM. Read Only Memory (ROM) is like a music CD. It can only be played back but not changed. Random Access Memory (RAM) is the space where games, word processing, and graphic-type programs are booted up to operate. When the computer is turned off, anything that is not saved while working in this space disappears. Typically, operating programs and saved data are stored on the computer's memory disk known as the hard drive.

Many people have become used to working with personal computers, known as PCs, which they keep at home or use in their offices. These computers are used to create letters, send e-mail, surf the Internet, chat with friends, manage data, produce graphics, edit music and video files. During the early stages of computer development, scientists recognized the importance of connecting computers together using protocols. The creation of these protocols was an important precursor to the development of the Internet and eventually the World Wide Web. Because the Internet allows us to link computer-to-computer worldwide, one can quickly see why it has become the fastest and easiest way to access and share information. It is impossible to predict what computers of the future will be able to do. One thing is for certain, they will be smaller, faster, and more powerful.



Project Idea Starters



Planning Your Self-Determined Project

Every Self-Determined Project can be broken down into areas of interest. These are the specific things that members wish to address during their project adventure. From the list on the next page, identify at least three areas of interest with at least three activities per area to explore. Record this information in your 4-H 365 Self-Determined Project Guide. If the activities listed don't interest you, make up your own and record them in your Self-Determined Project Guide.

Areas of Interest & Things to Do

Computers in Our Lives and Communities

- Make a list of how computers are used in the home, school, or your community.
- Describe how your parents use computers on the job.
- Identify how microprocessors are a part of your everyday life.
- Use your computer to arrange historical events on a timeline.
- Investigate the future uses of computer technology in the home.

Computer Hardware

- Using your computer keyboard, create and send an e-mail letter.
- Demonstrate your ability to use the mouse through the game of computer solitaire.
- Clean your computer's hard drive.
- Take apart an old computer to understand how it works.
- Open up a floppy disk to understand how it works.
- Identify the parts inside a computer.
- Explain the difference between RAM and ROM.
- Experience plugging in different peripherals to the application port on your computer.
- Build your own computer system.
- Detect a computer problem and solve it.
- Explain how a computer works.
- Explain screen resolution and how it compares to TV sets and HDTV.

Computer Software

- Evaluate a piece of software based on usability and price.
- Use word-processing software to produce a letter.

- Use a database like Excel to organize and process information.
- Explore file structures and practice moving and copying files.
- Locate and delete duplicate files on your system.
- Understand file extensions and explain what they mean.
- Use a graphics program to design images.
- Use a spreadsheet to make graphs and charts.
- Design an animated GIF.
- Create your own computer program.
- Run a virus check program.

Using the Internet

- Develop an "Online Safety Guide" with your family.
- Conduct a search on the Internet.
- Use AOL Instant Messenger to chat with your friends
- Review Internet safety rules and netiquette.
- Develop a checklist for evaluating Web sites on accuracy, currency, and objectivity.
- Design a Web site using a Web editor or HTML.
- Identify and correct HTML problems.
- Identify and correct Web page problems.

Organize, Analyze, and Create

- Create two birthday signs.
- Use word-processing software to create a story.
- Use desktop publishing to create and print a newspaper or magazine.
- Learn the basics of the ASCII Code.
- Compare features of similar software.
- Design a multimedia presentation.
- Use technology skills in community service.
- Use a digital camera to create a slide show.

Related References and Web Pages

- 4-H Computer Mysteries Web Site
<http://w30.four-h.purdue.edu/adec/map.html>
- Computer User High Tech Dictionary
<http://www.computeruser.com/resources/dictionary/index.html>
- Computer History Museum Center
<http://www.computerhistory.org/>
- Smithsonian Computer History
<http://americanhistory.si.edu/csr/comphist/>