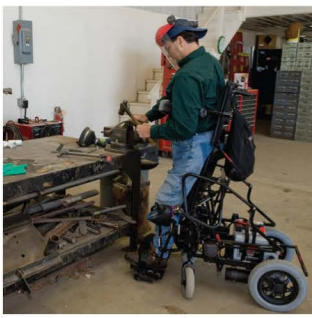
Assistive Technology For Rural Youth

A curriculum package for FFA chapters








AgrAbility
Cultivating Accessible Agriculture

Breaking New Ground
Resource Center, Purdue University

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Assistive Technology For Rural Youth

A curriculum package for FFA chapters

Breaking New Ground Resource Center

Purdue University

2009

Acknowledgements

Any effort of this scope requires the input of lots of individuals and organizations. Regardless of the size of their contribution, their input is greatly appreciated.

Special recognition goes to NEC Foundation of America for their generous financial support that not only allowed for the development of the educational materials, but also the reproduction of over 7,400 sets for distribution to every FFA Chapter in the U.S. Special thanks goes to the staff of the Breaking New Ground Resource Center located within the Department of Agricultural and Biological Engineering at Purdue University for their efforts to update the contents of *The Toolbox CD* and develop the lesson plans. This was an effort that was very time consuming and essential to ensure current information on the CD. The staffs of the National AgrAbility Project and the state and regional AgrAbility Projects are also acknowledged for standing behind this national distribution and being willing to follow-up on the potential contacts that they may receive. Special thanks to Purdue University's Agricultural Communications Department for their excellent work on the introductory videos for the PowerPoint lessons, and thanks to Purdue University's Department of Youth Development and Agricultural Education for their input on this project. In addition, timely and accurate distribution to all FFA Chapters could not have been possible except for the cooperation of the staff at the national FFA Organization offices in Indianapolis, Indiana. Very special thanks also go to Ed and Nellie Bell of Hagerstown, Indiana, for contributing their time and enthusiasm to the introductions of each lesson.

Finally, a hearty thank you goes to every FFA advisor (you) who has taken the time to review the contents of the Assistive Technology for Rural Youth Curriculum and considered incorporating it into their school year. It will only be through their commitment that this effort will produce a good harvest.

If you would like to drop a thank you note to NEC Foundation of America, they can be reached at foundation@necfoundation.org.

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Front cover photo credits:
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Introduction

What is the goal of the Assistive Technology for Rural Youth Curriculum?

This material is designed to raise the awareness of FFA members across the U.S. about the impact of disability on individuals, especially those engaged in agriculture-related occupations, and the potential benefits of assistive technology. It is hoped that through exposure to this material more individuals associated with FFA will be empowered to live and work more independently. It is also hoped that the Assistive Technology for Rural Youth Curriculum will encourage FFA Chapters nationwide to become involved in community service-learning activities that will result in hands-on projects designed to make rural communities more accessible and "friendly" to persons with disabilities. The materials consist of:[1]

- The Assistive Technology for Rural Youth Curriculum Leaders Guide
- *The Toolbox – Agricultural Tools, Equipment, Machinery, and Buildings for Farmers and Ranchers with Physical Disabilities, Sixth Edition*
- The Assistive Technology for Rural Youth classroom poster

What is included in the lesson plans?

The materials consist of three 50-60 minute lesson plans included in this guide and also incorporated onto *The Toolbox CD.* Each lesson provides ready-to-use content that includes an instructional overview of the lesson, suggested methods of presentation, easy to follow teaching notes, summary points, and ideas for additional activities. The presentation format of each lesson includes short video presentations, PowerPoint slides, talking points, and suggested opportunities for student participation.

Why was this effort undertaken?

It is estimated that 15-20 percent of all farmers and ranchers are hindered in their daily activities due to some form of disability caused by injury, diseases such as arthritis or multiple sclerosis, and developmental disabilities like cerebral palsy. You may have members in your chapter who are currently living with a disability or who have family members who are. In some cases you may have already made changes in activities or come up with assistive devices to accommodate a student in classroom and extra-curriculum activities. Hopefully, the *Assistive Technology for Rural Youth* resources will provide an effective way to make a difference in the lives of those in your classroom and community with disabilities.

[1] If you receive a packet missing any of these items, please call 1-800-825-4264.

How can I get more information?

There are several ways that you can obtain more information on disability-related issues and how assistive technology can be used to accommodate a disability. These include:

- Visiting the following websites:
  - www.agrability.org/youth
  - www.breakingnewground.info
  - www.abledata.org
  - www.jan.org
- Calling 1-800-825-4264
- Contacting a state AgrAbility Project if currently operating in your state. See the listing at the back of this guide.

How can my FFA chapter share its experiences with other chapters?

If you have a success story on how you have accommodated a student with a disability into your chapter activities or have completed a service learning project in your community, we would love to hear from you. We will be trying to develop a collection of examples that will be available on a future web link for other chapters to consider. You can share your experiences at www.agrability.org or mail them to:

National AgrAbility Project
Breaking New Ground Resource Center
Purdue University
225 S University Street
West Lafayette, IN 47907-2093

Users Guide

The **Assistive Technology for Rural Youth Curriculum** consists of both printed and electronic resources. The printed resources include:

- The curriculum Leader's Guide and lesson plans (the document you're reading)
- Classroom poster

The electronic resources include:

- *The Toolbox CD*, which contains
    - Electronic versions of the curriculum guide and lesson plans in PDF format
    - PowerPoint presentations for the three lesson plans
    - Video clips linked to the PowerPoint presentations
    - Descriptions, photos, and contact information for more than 750 assistive technology devices to assist farmers, ranchers, and other agricultural workers with disabilities
    - Case studies of disability in agriculture
    - Plowshares technical reports on topics of disability in agriculture

  Adobe® Reader® is necessary for accessing the files on *The Toolbox CD*. If you don't have Adobe Reader on your computer, version 9.1 is included on the CD in the Adobe Reader folder or see www.adobe.com.

  If *The Toolbox CD* does not open automatically when inserted into your computer (and for Mac users), open Adobe® Reader®, go to the File menu, choose Open, find *The Toolbox CD* on your CD drive, and open the welcome.pdf file. (Mac users should *not* use Mac Preview).

  You may initially get warning messages when opening certain documents on the CD, but you may disregard these.
- The www.agrability.org web site, which contains a section for youth-related resources at www.agrability.org/youth. The latter site also has links to the curriculum guide, lesson plans, PowerPoint presentations, and videos, including captioned versions of the videos for students or teachers with hearing impairments.

Lesson Plans

Each lesson plan includes:

- Introduction
- Methods/Content
- Summary
- Ideas for Additional Activities
- Learning Objectives

It is recommended that the instructor review the lessons plans carefully. Some lessons call for extra materials to be used in demonstrations, such as simple hand tools, and one of the lessons has a handout that should be duplicated for the class members. The instructor may choose to

modify the lessons to accommodate the needs and time restrictions of their class. Prior to teaching the lessons, make sure the technical aspects of the lesson work smoothly, such as the PowerPoint presentation and the video clips.

Lesson Plan Icons

Indicates suggested comments that the teacher can direct to the students

Indicates the PowerPoint slide related to the content on the lesson plan

PowerPoint Presentations

The PowerPoint presentations, along with the other electronic versions of the curriculum materials, are found on *The Toolbox CD*. To use the CD, simply insert it into your computer's CD drive – it is designed to open automatically on most PCs. If it does not open automatically, or if you are using an Apple computer, insert the disk and open the CD drive on your computer. Then open the **welcome.pdf** file in Adobe Acrobat (not in Mac Preview for Mac users).

There is a link to the curriculum materials on the CD's Welcome page. You may also access the curriculum materials by going to the folder named **curriculum** on *The Toolbox CD*. Each lesson plan, PowerPoint presentation, and related video clips are found in individual folders for each lesson. **If you copy files from the CD to your computer, make sure to keep the files for each lesson in the same folder. The video clips are linked to the PowerPoint presentations, and they may not play correctly if they are not stored in the same folder.**

Windows Media Player is required for playing videos on *The Toolbox CD* and the Assistive Technology for Rural Youth Curriculum. To download a free version of Windows Media Player, visit www.microsoft.com/windows/windowsmedia/player/default.aspx .

If you have any difficulties playing the video clips, or if you use an Apple computer, the lesson plan clips are also available in streaming video format at www.agrability.org/youth. Since the clips include sound, you will need working speakers with your computer.

Each PowerPoint presentation begins with a video introduction by our curriculum hosts, Ed and Nellie Bell of Hagerstown, Indiana. The video clip gives an overview of the lesson's content and shows examples of assistive technologies.

The video clips will only play in Slide Show mode, not in Preparation mode.

Check for curriculum updates at www.agrability.org/youth.

Assistive Technology for Rural Youth

Breaking New Ground Resource Center, Purdue University — National AgrAbility Project

Lesson 1

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Tools, Technologies, and Innovative Work Practices in Agriculture

Introduction

Methods/Content

Summary

Ideas for Additional Activities

Learning Objectives

As a result of this lesson, the learner will be able to:

1. Explain the role of tools, technology, and innovative work practices in making farmers and ranchers more productive.
2. Identify the ways that tools, technologies, and innovative work practices can benefit farmers and ranchers with disabilities.
3. Explain how a person's disability and the use of some assistive technologies can present special safety issues to those working in production agriculture.

Introduction (for the Instructor)

"Give me a place to stand and I will move the earth"
Archimedes

Archimedes understood that given the right tool (the lever), and a place to use it, he could accomplish some mighty big jobs. Every good agriculture student knows that it sometimes takes a longer ratchet, bigger crowbar, larger hammer, or some other special tool to get a job done. In agriculture, especially, tools are essential! Without the right tools, technologies, and innovative work practices, agricultural production would absorb most of the population as laborers, be a source of much drudgery, and result in greater loss of human life due to workplace hazards and the inability to produce enough food.

The purpose of Lesson 1 is to introduce the students to the important role that tools, technologies, and innovative work practices play in making farm and ranch worksites more accessible to persons with a variety of disabling conditions. It accomplishes this mission by reinforcing the importance of these "tools" in making American farmers and ranchers the most productive of the world's agricultural producers. Next, it reminds students that each of them uses tools, technologies, and innovative work practices to accomplish tasks that exceed their strength, endurance, or speed, or other physical abilities. In other words, even the strongest person without the right tools would be "disabled" or unable to perform certain tasks. Students are then introduced to the need that some individuals have for tools, technologies, or innovative work practices, due to physical limitations, such as those caused by injury, disease, or aging. Finally, the lesson addresses safety issues that can arise when accommodations are made to enable a person with a disability to perform farm and ranch-related tasks.

Lesson 1 builds the foundation for Lessons 2 and 3 and should be covered first. You are encouraged to read over all three lessons and view the PowerPoint presentations before presenting the material to the class.

Tools, Equipment, and Supplies

- ✓ Computer
- ✓ Screen
- ✓ LCD projector
- ✓ PowerPoint presentation – Lesson 1: "**Tools, Technologies, and Innovative Work Practices in Agriculture**"
- ✓ Toolbox containing common carpentry or mechanic tools
- ✓ Black, dry erase, smartboard

References

Breaking New Ground Resource Center, Purdue University, (2009). *The Toolbox CD: Agricultural Tools, Equipment, Machinery and Buildings for Farmers and Ranchers with Physical Disabilities.* 6th Ed. (Educator's Edition).

www.dictionary.com

Methods/Content

(**NOTE:** The locations of each slide on the PowerPoint presentation are shown by the PowerPoint icon on the side. In addition, instructors are encouraged to use black, dry erase, or smart boards to record students' responses to discussion questions.)

Objective 1

Explain the role of tools, technology, and innovative work practices in making farmers and ranchers more productive.

Today we are going to talk about the creative ways that farmers and ranchers have made their work easier to perform.

Can you imagine trying to raise crops using nothing but your body? Have you ever tried tilling the ground with just your hands or feet? How about removing weeds, insects, or diseased plants…using only your hands? If you did, then harvesting would require you to break off or tear loose the crops, remove the seed, grain, fruit, or juice…one plant at a time…using just your hands.

No one would dream of trying to complete these jobs this way. How have these tasks been made easier?

- Make note of the tools listed by the students on the black, dry erase, or smart board. Try to avoid using the term "tools" – just let the student supply the responses.

How about building a fence? Would there be things you could use or methods to speed the project up and make it an easier job?

- Once again make note of what the students say on the black, white, dry erase, or smart board. Perhaps show tools from a toolbox as examples. Remember, you are looking for both tools and work practices.

In general, what do we call these things you have identified to make work easier and, in some cases, possible? What is the term often used to describe all of these? (point to lists on the board)

- "Tools", "technologies", and "innovative work practices" are all appropriate responses. To simplify things in this and the remaining lessons, the term "tools" will be used.

Even the most primitive farmers in the world have developed tools to reduce drudgery and increase productivity. Can you imagine a world without tools?

On the following video, we are going to hear from a couple people who are going to talk a little about some specialized tools you might not have seen or heard of.

- Start the Lesson 1: "Tools, Technologies, and Innovative Work Practices in Agriculture" PowerPoint presentation.

- Play introductory video clip.

Now that Ed and Nellie Bell have shown us some of the tools used by people with and without disabilities, perhaps we should formally define what he was referring to.

- Read the definitions for "tool."

Definitions

1. A device, such as a saw, used to perform or facilitate manual or mechanical work.
2. Something regarded as necessary to the carrying out of one's occupation or profession.

Tools are also sometimes called "technologies" and may include work practices such as chemical weed control versus hand weeding or using an impact wrench versus a manual socket ratchet.

We have tools because the human body has limitations. For instance, you can't sufficiently loosen or re-tighten the lug nuts on the wheels of your vehicle. You would need a lug wrench, impact wrench, or similar tool to accomplish the task. Think of the simplest tool, such as a hammer, and imagine living without one, especially if you were a farmer. (Show one or two different sizes of hammers.)
Different bodies have different limitations. The largest person in the class is more likely to be able to lift a heavy object than the smallest person in the class. People with disabilities simply have different limitations than people without disabilities. Therefore their requirements to perform a task might be different from people without a disability.

Just like the smallest person in the class could easily use a hydraulic system to overcome their strength difference with the largest person in the class, so also can people with disabilities use tools to perform tasks done by those without disabilities. As noted earlier, each of us is "disabled" without access to tools. Think of the last time you were working in a field and needed a simple ½" wrench to make a repair, but didn't have one. What did you do…improvise or head back to the shop?

Objective 2

Identify the ways that tools, technologies, and innovative work practices can benefit farmers and ranchers with disabilities.

Recognizing the unique needs of farmers and ranchers with disabilities, efforts have been made to identify special tools, technologies, and innovative work practices that could be used to enable these individuals to perform desired tasks.

"The Toolbox CD" (hold up the case) is a resource with more than 750 ideas or tools to assist farmers and ranchers in getting farm and ranch related jobs done. The tools shown in it can help farmers with disabilities as well as those without. Here are the different categories of products in The Toolbox.

- Toolbox product categories 1-5

- Toolbox product categories 6-10

Now we're going to test your knowledge – and your imagination – about some products from The Toolbox.

- The following slides will show a Toolbox product with its name. Ask the students first to brainstorm about the general purpose of the device, and then click the mouse again to reveal the purpose. Next, ask the students to identify the specific benefit of the product to people with disabilities (PWD), and then click the mouse again to reveal the special benefit for PWD.

- *Product:* Nail Starter Hammer
- *Purpose:* Starts nails with only one hand
- *Special Benefit for PWD:* Allows a person with only one hand to start nails easily

- *Product:* DR Powerwagon
- *Purpose:* Heavy-duty power wheelbarrow
- *Special Benefit for PWD:* Allows those with limited strength or arthritis to transport heavy materials

- *Product:* Attachmatic Hitch
- *Purpose:* Automatically hitches a wagon tongue to the tractor drawbar
- *Special Benefit for PWD:* Allows people with mobility impairments to hitch/unhitch without leaving tractor

- *Product:* Tractor Hand Control
- *Purpose:* Engages brake by hand instead of foot
- *Special Benefit for PWD:* Allows people who can't use their legs to engage brake or clutch

- *Product:* Air Stream Helmet
- *Purpose:* Provides filtered air to wearer
- *Special Benefit for PWD:* Allows people with respiratory impairments to work in dusty environments

- *Product:* Yak Trax
- *Purpose:* Increases foot stability on slick surfaces
- *Special Benefit for PWD:* Allows people with mobility impairments and arthritis to walk more safely on slick surfaces

- *Product:* Hydroponic Towers
- *Purpose:* Allows for growing gardens on vertical surfaces
- *Special Benefit for PWD:* Enables wheelchair users to reach garden plants easily

- *Product:* MobilVision Video Camera
- *Purpose:* Provides remote views around the tractor
- *Special Benefit for PWD:* Allows people with impairments to see views that normally require climbing or turning

- *Product:* Cushioned Parlor Mats
- *Purpose:* Provides softer surface for dairy farmers who must stand for long periods
- *Special Benefit for PWD:* Reduces stress and pain for farmers with arthritis and other impairments

- *Product:* Deck Chair
- *Purpose:* Restrains sheep and goats
- *Special Benefit for PWD:* Allows people with strength or mobility impairments to administer health care to animals

- *Product:* LevAlert
- *Purpose:* When installed on side of a grain bin at different heights, shows level of grain within the bin
- *Special Benefit for PWD:* Allows people with disabilities to check grain level without climbing

- *Product:* Click Rule
- *Purpose:* This ruler has raised markings and clicks every 1/16th inches when expanded
- *Special Benefit for PWD:* Allows users with visual impairments to measure accurately

- *Product:* Kawasaki Mule
- *Purpose:* All-purpose Utility Vehicle
- *Special Benefit for PWD:* Allows farmers and ranchers with mobility impairments to travel distances and over rough ground easily

Next we're going to watch two video clips of farmers who have experienced a disability but have decided to continue farming. On a piece of paper, identify as many tools as you can that each farmer is using to accommodate his disability. Try to categorize the devices as either specialized tools used only for people with disabilities or those used by any farmer. We will discuss your lists following the video.

- Show the video clips:
  - Arlan Bookwalter

  - Dale Baerg

- When finished, write answers to student responses on board.

What sort of tools did you notice Arlan Bookwalter using?

- Motorized wheelchair (specialized)
- Combination wrench (common)
- Soil penetrometer (common)
- Low welding table (specialized)
- Concrete floor (common)
- Tractor seat lift (specialized)
- Harness around legs (specialized)
- Welder (common)
- Low pegboard for tools (specialized)

What tools did you notice Dale Baerg using?

- Motorized wheelchair (specialized)
- Sprayer trailer (common)
- Modified tractor controls (specialized)
- Two-way radio (common) but with modified control and mounting (specialized)
- Vehicle wheelchair lift (specialized)
- Tractor seat lift (specialized)
- Tri-pin steering device (specialized)

Objective 3

Explain why some assistive tools can present special hazards to farmers and ranchers with disabilities.

Farmers and ranchers are resourceful and innovative. It's sometimes said that there's nothing they can't fix with just some duck tape and baling wire.

Farmers with disabilities have also come up with ingenious solutions to overcome their barriers to farming. Let's look at some examples.

Here are a couple of tools that farmers have come up with to help them overcome a disability. Can you identify any potential hazards that could cause injury to the farmer?

- Sling lift for tractor

- Truck ramp

- List hazards identified by students.

Every tool and type of technology, if it uses any form of energy (electricity, hydraulic, compressed air, etc.) has the potential of causing injury.

Just because a farmer has already experienced a disability does not mean that he or she is immune from additional injuries.

When using a tool, technology, or innovative work practice to accommodate for a disability, safety is an important consideration.

How could the hazards we have listed be corrected or minimized?

- Have students suggest ideas for eliminating or guarding the hazards identified.

Summary

Everyone needs tools to perform tasks that they can't do with just their bodies alone. People with disabilities face challenges in completing tasks often taken for granted by people without disabilities. These challenges are especially evident when people with disabilities are involved in

agriculture. However, just like everyone else, they want to continue in their life's work, and this sometimes requires specialized "tools of the trade." These tools may be designed specifically for a person with a disability to perform a task, they may be technologies that are designed for the general public but have special value to people with disabilities, or they may be innovative work practices that change the way a task is performed. In many cases farmers and ranchers have used their ingenuity to make their own assistive technologies, and in those cases, it is essential to ensure that they are safe.

Ideas for Additional Activities

- Using *The Toolbox CD*, ask your students to find products that would help the following farmers with disabilities:

  - A cattle rancher who lost his right arm below the elbow
  - A farmer with paraplegia (paralyzed from the waist down) who has a custom hay operation
  - A hog farmer with severe arthritis in her knees and hips
  - A poultry farmer with severe visual impairments

Assistive Technology for Rural Youth

Breaking New Ground Resource Center, Purdue University National AgrAbility Project

Lesson 2

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Principles of Assistive Technology

Introduction

Methods/Content

Summary

Ideas for Additional Activities

Learning Objectives

As a result of this lesson, the learner will be able to:

1. Explain the term “assistive technology.”
2. Identify the importance of assistive technology through hands-on exercises.
3. Identify basic categories of assistive technology and identify product examples in each category.

Introduction (for the Instructor)

Many types of tools, technologies, and innovative work practices have been used to enable farmers or ranchers with disabilities to remain productively engaged in agriculture. These approaches include both commercially available products and "homemade" items.

The purpose of this lesson is to introduce students to the concept of "assistive technology" and the role that this form of technology plays in the lives of people with disabilities. First, the concept is defined, and then students will have an opportunity to experience using some simple forms of assistive technology. The basic categories of assistive technology are described, and then specific examples are applied to individual disability types. It is hoped that students will gain a greater appreciation for the use of assistive technology in the lives of their family members, friends, and neighbors.

Tools, Equipment, and Supplies Needed to Teach the Lesson

- ✓ Computer
- ✓ Screen
- ✓ LCD projector
- ✓ PowerPoint presentation – Lesson 2: "Principles of Assistive Technology"
- ✓ Black, dry erase, smartboard
- ✓ Spark plug and wire or feeler gauge
- ✓ Magnifying glass
- ✓ Hammer, nails and short length of 2x4 lumber
- ✓ Ladder or stool

References

The Toolbox CD by Breaking New Ground Resource Center, Purdue University, 6th Edition

Assistive Technology Act of 1998, as cited on http://www.section508.gov/docs/at1998.html#3

AbleData Assistive Technology Database www.abledata.info

Methods/Content

(**NOTE:** The location of each point on the PowerPoint slide presentation is shown by the PowerPoint icon on the side. In addition, instructors are encouraged to use black, dry erase, or smart boards to record students' responses to discussion questions.)

Objective 1

Explain the term of "assistive technology."

- Start the "Principles of Assistive Technology" PowerPoint presentation

- Play introductory video clip from Ed and Nellie Bell

Ed and Nellie used the term "assistive technology" when talking about today's lesson. How do we distinguish assistive technology from other tools and technologies? What makes these tools different than the tools that you use every day?

- Read the definition of assistive technology.

Definition

The term "assistive technology device" means any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.

- Assistive Technology Act of 1998

Can someone put this definition in terms that are perhaps easier to understand?

- Any product used to make life easier or more productive for a person with a disability.
- Something to enhance capabilities and remove barriers to performance for a person with a disability.

As we said in Lesson 1, we use tools because we can't do everything with just our bodies. Assistive technologies are tools to help make up for what disability has taken away. We also sometimes call assistive technology "AT" for short.

Ed and Nellie also said that assistive technology can be high-tech or low-tech, store bought or homemade, and AT can be made specifically for people with disabilities or made for anyone yet have special benefit for people with disabilities.

Can you think of some examples of AT that are used by people you know that enable them to do tasks that would otherwise be difficult for them?

- List the students' AT examples on the board.

Objective 2

Experience the importance of assistive technology through hands-on exercises.

Now let's do a few activities that demonstrate the importance of assistive technology. We'll let you try some common tasks as if you had a disability. Then we'll give you an assistive technology so that you can see how AT can be important in someone's life. (Time may only allow for only one task or for one student to attempt each task.)

- Have students attempt to set the gap on a standard spark plug with a wire or feeler gauge using only one hand. Then support the gauge in a vice and try it again. How else could a person with only one hand adjust the gap on a spark plug?
- Have students examine the parts of an insect or read the fine print on the side of the can of spray paint with the naked eye. Then have them use a magnifying glass which allows them to see greater detail.
- Have a student try to start a nail into a block of wood using only one hand. Use a magnet alongside the nail to hold it and then have the student try again.
- Have a shorter student attempt to reach an item on an upper shelf in the classroom. Provide a step ladder or stool and have the student try again.

Objective 3

Identify the basic categories of assistive technology and identify product examples, in each category.

Many of the assistive technology examples we've seen so far have related to agriculture. However, people with disabilities need AT for all types of activities and lifestyles. There is no single set of categories for all the different types of AT devices being used, but here are some of the most common types.

1. Aids to daily living
2. Augmentative and alternative communication
3. Computer access
4. Environmental control units
5. Home or worksite modifications
6. Job accommodation

7. Seating and positioning aids
8. Vision and hearing aids
9. Wheeled mobility aids
10. Vehicle modification
11. Recreational aids
12. Prosthetics and orthotics

So what do these categories actually mean? Let's take a look at some definitions and a few examples…

[Note: It is important to expose the students to a wide range of AT examples, but because of the large number of examples, not much time can be spent on any single example.]

1. Aids to Daily Living: Devices and adaptations to increase participation or independence in activities such as eating and grooming, as well as routine tasks such as getting out of bed and cooking dinner.

- Button Hook and Bath Lift

- Phone Holder and Wheelchair Poncho

2. Augmentative and alternative communication: These include equipment and services that enhance face-to-face communication and telecommunication. Writing aids are also included in this group. Those with communication difficulties can communicate when traditional speaking and writing are not effective.

- Speech Amplifier and Communication Card

3. Computer access: This type of assistive technology improves access to computers by facilitating input or enhancing output.

- Braille Printer and Eye-access Computer

4. Environmental control units: These units make regulating heat/cold, lights, etc., easier. This would include pre-programmed lighting or heating thermostats.

- Light Switch Extender and Computer Activated Environmental Control Module

5. Home or worksite modifications: These include products that make a home or worksite environment more accessible. Included would be devices to make it easier to enter a building, to use the spaces inside (including lighting), or to move between floors.

- Stair Lift and Lever Handle for Door Knobs

6. Job accommodations: These include environmental changes, assistive technologies, and techniques or work practices that improve the ability of a person with a disability to access their work environment and/or complete their work.

- Extra Tool Handle and Electronic Task Prompter/Reminder

- Accessible Computer Stand and Talking Calculator

7. Seating and positioning aids: These products help people with disabilities sit comfortably and safely.

- Wheelchair Head Support and Adjustable Children's Chair

8. Vision and hearing aids: This is a broad category that includes all types of sensory aids to help people who are blind, low vision, deaf, or hard of hearing. There are also devices to help those with multiple sensory disabilities, such as the deaf-blind.

- Closed Circuit TV Magnifier and Vibrating/Audible Obstacle Detector

- Vibrating Alarm Watch and Cochlear Implant

9. Personal mobility aids: These help people with mobility limitations move more freely indoors and outdoors. They include devices such as wheelchairs, walkers, and canes.

- Forearm Crutch and Wheeled Walker

- Sports Wheelchair and Wheelchair Carrying Vehicle

10. Vehicle modification: Products in this category help people with disabilities drive or ride in cars, vans, trucks, or buses.

- Van Ramp and Vehicle Hand Control

11. Recreational aids: These help people with disabilities enjoy a wide variety of leisure and athletic activities.

- Beach Wheelchair and Switch-operated Toys

- Adapted Paintbrush and Wheelchair Gun Mount

Prosthetics and orthotics: Prosthetics are generally devices to help amputees, and orthotics are braces or other products to support joints or limbs.

- Myoelectric Hand and Prosthetic Leg

- Argo ReWalk

Summary

Any tool that helps people with disabilities live more independently can be called "assistive technology." These devices can relate to a wide range of life activities, from basic life tasks, to work, to recreation.

As the population continues to age there will be an increasing demand for all forms of assistive technology, especially for specialized applications such as operating vehicles and machines. Along with this increasing demand will be the need for more trained technicians who have the ability to assess the needs of a person with a disability and prescribe appropriate solutions. These are well-paid positions and require a good understanding of how things work. They also require a passion to help others live more independently.

Ideas for Additional Activities

1. Consider inviting in a local prosthetist to describe his work, especially with farmers who have lost limbs, or have a durable medical equipment provider share about mobility products or daily living aids.
2. Use the AbleData web site to find products that would help the following people at home, at school, and at play. The teacher could show the AbleData site on the screen, and the students could tell him/her what categories to explore.
    - A blind student at their school
    - A parent with a spinal cord injury who works in the parts department of an equipment dealership
    - A fellow FFA member with a lower leg amputation

Assistive Technology for Rural Youth

Breaking New Ground Resource Center, Purdue University National AgrAbility Project

Lesson 3

Sponsor
NEC
NEC Foundation of America

Disability Awareness

Introduction

Methods/Content

Summary

Ideas for Additional Activities

Learning Objectives

As a result of this lesson, the learner will be able to:

1. Explain the definition of disability and basic categories of disabilities.
2. Know the overall prevalence rate of disability in society and in the agricultural workforce.
3. Identify societal attitudes and students attitudes about disabilities that may create barriers for people with disabilities.
4. Explain ways that FFA Chapters could help empower people with disabilities to become more included in their communities.

Introduction (for the Instructor)

Many youth are uncomfortable around people with visible disabilities, especially if they have been raised in an environment where they have not been exposed to people with disabilities. This lack of comfort may be caused by fear, embarrassment, and uncertainty about how to act or speak, or they may only be reflecting the negative attitudes of their uninformed peers, parents, and others who have shaped their values. Youth, because of their limited life experiences, need to be encouraged not to rely upon their feelings or the attitudes of others as indicators of what gives value to a person or what a person with a disability has to contribute. Learning to respect others is an important part of becoming a mature adult.

In Lesson 3, students will gain a better understanding of the nature of disabilities, their prevalence, and their impact. Students will be encouraged to reassess their definition of "normal," consider that the sum of a person is more than their disability, and realize that "disabled" does not mean "second class." Students will examine how some unproductive attitudes can create significant barriers to full participation on the part of people with disabilities. Suggestions will be offered on how individuals and organizations such as FFA can become more accommodating or friendly to persons with disabilities and contribute to making communities more accessible.

Tools, Equipment, and Supplies Needed to Teach the Lesson

- ✓ Computer
- ✓ Screen
- ✓ LCD projector
- ✓ Black, dry erase, smartboard
- ✓ PowerPoint presentation – Lesson 3: "Disability Awareness"

References

The Toolbox CD: Agricultural Tools, Equipment, Machinery and Buildings for Farmers and Ranchers with Physical Disabilities. 6th Ed. Breaking New Ground Resource Center, Purdue University.

Americans with Disabilities Act of 1990 as sited at
http://www.ada.gov/pubs/adastatute08.htm

Disabled World web site
http://www.disabled-world.com/artman/publish/article_0060.shtml

Methods/Content

(**NOTE:** The location of each point on the PowerPoint slide presentation is shown by the PowerPoint icon on the side. In addition, instructors are encouraged to use black, dry erase, or smart boards to record students' responses to discussion questions.)

Objective 1

Explain the definition of disability and basic categories of disabilities.

- Start the “Disability Awareness” PowerPoint presentation

- Play introductory video clip from Ed and Nellie Bell

Ed and Nellie said that there are many types of disabilities and that some are visible while others are invisible. Can you name 5 visible disabilities and 5 invisible ones?

- Record student responses on the board

Nellie also reminded us that we all have disabilities, in a sense, because there are some things that all of us are not able to do. But she also said that normally when we use the term “disability,” we’re referring to the inability to do particular things. Let’s look at a common disability definition from an important law: The Americans with Disabilities Act, often called the ADA.

- Read the following definition of disability as defined by the ADA.

The term "disability" means, with respect to an individual:

- a physical or mental impairment that substantially limits one or more major life activities of such individual;
- a record of such an impairment; or
- being regarded as having such an impairment

What does this definition mean in plain English? What do you think they mean by a “major life activity?”

- Record student responses on the board. (Remember, there are no wrong answers.)

Let’s see what the ADA says about “major life activities.”

Major life activities include, but are not limited to, caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working.

- Do you know anyone who has difficulty performing any major life activities?

There are many different ways to categorize disabilities. Now we'll look at some of the main categories and types.

- Each PowerPoint slide begins with a basic disability category. Ask the students to give examples of disabilities in that category, then click the mouse again to reveal specific examples. Emphasize that the disabilities listed are simply examples, ***not an exhaustive list***.

- Physical Disabilities
  - Paralysis
  - Amputations
  - Severe arthritis

- Sensory Disabilities
  - Deafness
  - Blindness
  - Communication disabilities

- Cognitive/Intellectual Disabilities
  - Learning disabilities
  - Autism
  - Mental retardation

- Psychological Disabilities
  - Schizophrenia
  - Major depression
  - Bipolar disorder
  - Anxiety disorders

- Chronic Diseases
  - Diabetes
  - Multiple sclerosis
  - Muscular dystrophy

- Developmental Disabilities
  - Developmental disabilities are life-long physical and/or mental disabilities that occur before the age of 18. They include:
    - Cerebral palsy
    - Down syndrome
    - Autism
    - and many others

Objective 2

Know the overall prevalence rate of disability in society and in the agricultural workforce.

There are currently more than 304 million people in the United States. Can you guess how many have disabilities?

- Record student responses on the board

Since there are many ways to categorize disabilities, as we said before, it's difficult to get one single number. However, here is a good estimate.

According to the U.S. Census Bureau, in 2006, 15.1 percent of the civilian non-institutionalized population 5 years and over in the United States, or about 41.3 million people, reported a disability.

The percentage of the agricultural population who report disabilities is slightly higher. It is estimated that 15-20 percent of this population cannot perform essential work-related tasks due to a disability.

Can you explain why farmers and ranchers might experience more disabling conditions than the rest of the population?

- Record answers, such as:
  - Higher average age of workers (The average age of farm operators is 57).
  - Higher frequency of disabling injuries. (Agricultural production is one of the top three most hazardous occupations.)

Objective 3

Identify societal attitudes, and their own attitudes, about disabilities that may create barriers for persons with disabilities.

As Ed and Nellie said in the introduction, some people aren't comfortable around people with disabilities. How about you? Did you feel different about Ed before and after you knew he used a wheelchair? Have you ever gotten to know someone with a disability and find out that he or she is very much like you?

What are some of the common reactions toward people who have disabilities?

- Record student responses on the board. Possible answers include:

Negative	Positive
Fear	Support
Pity	Inclusion
Discrimination	Acceptance

Segregation Understanding
Embarrassment
Indifference

We all have hopes, dreams, frustrations, and the desire to be loved and accepted. People with disabilities don't want pity or to be considered heroes. They want to be respected and accepted for who they are.

We often label people by their most obvious characteristics, such as "tall," "short," "pretty," or "smart." We tend to do the same thing with people with disabilities – "That guy in the wheelchair," or "The blind girl." However, it is important to recognize that people with disabilities are more than their disabilities.

Therefore, in talking about disabilities, it is better to put the person before the disability, and it is important to avoid certain terms. For example:

Use	Don't Use
Person with a disability	Handicapped or crippled person
She uses a wheelchair	She is confined to a wheelchair
He is a little person	He is a dwarf/midget
Accessible parking or restrooms	Handicapped parking or restrooms
She has an intellectual disability	She is retarded

- Student activity

There are many famous people with disabilities – some with disabilities you can't see. Take a few minutes to see if you can match some famous people with their disabilities.

- Print off and hand out the worksheet "Famous People with Disabilities," and allow 5 minutes for students to complete it. Allow another 5 minutes to go over the answer key.

Objective 4

Explain ways that FFA Chapters could help empower persons with disabilities to become more included in their communities.

One of the lines in the FFA motto is "Living to Serve." What are some projects that our FFA chapter might do to serve people with disabilities in our community?

- Record student responses on the board.
- For additional ideas, see www.agrability.org/youth

- The National FFA Organization provides project funds through their **Living to Serve/Rural Youth Development** program. Chapters may apply for funds up to $3,000 depending on the scope of the project. Download more information and an application form at www.agrability.org/youth.

Summary

Assistive Technology for Rural Youth has provided a very brief overview of how disabilities impact the lives of everyone. Every family, school community, and organization, such as FFA, should welcome all individuals who desire both respect and inclusion. No one enjoys being left out or overlooked, especially when they have something significant to offer – their lives and their experiences.

It is hoped that the information presented will open the door for meaningful discussions on how FFA Chapters can become more inclusive and how they can be of service in helping make their communities better places for EVERYONE to live, work, attend school, and grow.

Thank you for being participants in this special effort. Now, let's move beyond the teaching stage into implementation with some of the ideas presented. It's time to make a difference through "LIVING TO SERVE."

Ideas for Additional Activities

1. Check to see if your state has an AgrAbility Project (see the listing of AgrAbility Projects after this lesson plan). If so, contact the AgrAbility Project and see if there are ways for your chapter to get involved.
2. Organize a disability awareness campaign during disability awareness month (March) or Disability Employment Awareness Month (October).
3. Contact APRIL (www.april-rural.org) to see if you have a Center for Independent Living in your community. Have a representative share in your class about their activities.

Famous People with Disabilities

Directions: Match the name of each celebrity with the disability that they are challenged by. Some disabilities may be used more than once, some not at all.

Famous Person	Answer	Disability
1. Tom Cruise		A. Blindness
2. Franklin Roosevelt		B. Attention deficit disorder
3. Helen Keller		C. Amputation
4. Christopher Reeve		D. Spina bifida
5. Rush Limbaugh		E. Alzheimer's disease
6. Michael J. Fox		F. Hearing impairment
7. Jewel		G. Parkinson’s disease
8. Clay Walker		H. Speech disorder
9. Mel Tillis		I. Polio/paralysis
10. Ronald Reagan		J. Autism
11. Ludwig Van Beethoven		K. Multiple sclerosis
12. John Mellencamp		L. Learning disability
13. Ray Charles		M. Epilepsy
14. Julius Caesar		N. Deaf/blind
15. Heather Mills		O. Paralysis (quadriplegia)

Famous People with Disabilities

KEY

Famous Person	Answer	Disability
1. Tom Cruise	L	A. Blindness
2. Franklin Roosevelt	I	B. Attention deficit disorder
3. Helen Keller	N	C. Amputation
4. Christopher Reeve	O	D. Spina bifida
5. Rush Limbaugh	F	E. Alzheimer's disease
6. Michael J. Fox	G	F. Hearing impairment
7. Jewel	L	G. Parkinson’s disease
8. Clay Walker	K	H. Speech disorder
9. Mel Tillis	H	I. Polio/paralysis
10. Ronald Reagan	E	J. Autism
11. Ludwig Van Beethoven	F	K. Multiple sclerosis
12. John Mellencamp	D	L. Learning disability
13. Ray Charles	A	M. Epilepsy
14. Julius Caesar	M	N. Deaf/blind
15. Heather Mills	C	O. Paralysis (quadriplegia)

AgrAbility
Cultivating Accessible Agriculture

Participating AgrAbility Projects-2009

National Project

Breaking New Ground Resource Center
Purdue University
800-825-4264
www.agrability.org
bng@ecn.purdue.edu

State & Regional Projects

California AgrAbility Project
800-477-6129
http://calagrability.ucdavis.edu
calagra@ucdavis.edu

Colorado AgrAbility
303-937-7713 ext224
www.agrability.cahs.colostate.edu
jsump@eastersealscolorado.org

Delaware/Maryland AgrAbility Project
302-856-7303
www.de-mdagrability.com
rcjester@udel.edu

AgrAbility in Georgia
877-524-6264
www.agrabilityinga.com
andyc@ihdd.uga.edu

Idaho AgrAbility Project
888-289-3259
www.idahoagrability.org
info@idahoagrability.org

Illinois-AgrAbility Unlimited (Affiliate)
217-333-5035
http://www.agrabilityunlimited.org/
repetrea@illinois.edu

Indiana AgrAbility/Breaking New Ground
800-825-4264
www.breakingnewground.info
bng@ecn.purdue.edu

Iowa (Affiliate)
515-309-2371
www.eastersealsia.org
tkeninger@eastersealsia.org

Kansas AgrAbility Project
800-526-3648
http://www.oznet.ksu.edu/agrability/
kebert@k-state.edu

Michigan AgrAbility Project
800-956-4106
www.michiganagrability.org
ewaltkel@msu.edu

Minnesota AgrAbility Project
800-669-6719 ext. 5601
http://safety.cfans.umn.edu/map/
djswart@goodwilleasterseals.org

Mississippi AgrAbility Project
601-736-8251
http://msucares.com/safety/agrability
emilyk@ext.msstate.edu

Missouri AgrAbility Project
800-995-8503
www.agrability.missouri.edu
agrability@missouri.edu

Nebraska AgrAbility
800-471-6425
http://agrability.unl.edu/
neagrability@ne.easterseals.com

Ohio AgrAbility Project
614-292-6008
jepsen.4@osu.edu

Oklahoma AgrAbility Project
888-885-5588
www.agrability.okstate.edu
ability@okstate.edu

AgrAbility for Pennsylvanians
814-863-7490
http://agexted.cas.psu.edu/agrab
lmf8@psu.edu

Tennessee/Kentucky AgrAbility Project
866-248-1747
www.tnagrability.org
jwhite@eastersealstn.com

Texas AgrAbility Project
979-845-3727
http://txagrability.tamu.edu

AgrAbility of Utah
877-225-1860
www.agrabilityofutah.org
agrability@usu.edu

Vermont AgrAbility
866-260-5603
www.uvm.edu/extension
george.cook@uvm.edu

AgrAbility Virginia
800-365-1656 (Inside Virginia)
540-777-7325 (Outside Virginia)
http://www.agrability.ext.vt.edu/
kballin@va.easterseals.com

West Virginia AgrAbility Project
877-724-8244
www.cedwvu.org/programs/agrability
agrability@hsc.wvu.edu

AgrAbility of Wisconsin
608-262-9336
www.bse.wisc.edu/agrability
aaw@mailplus.wisc.edu

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866-395-4986
http://uwadmnweb.uwyo.edu/agrability/
agrability@uwyo.edu