My ATACP

My Bookmark

Current Exercises

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5. Format of Online Course
There are 6 online modules (including 6 case studies) for you to complete in preparation for the in-class portion of the 100-hour ATACP. Each module will contain:

- A topic list
- Learner objectives
- Written content or case studies to read
- Examples and "Technology Points" (where appropriate)
- Re-emphasis of the "Fundamental Assessment Process" (where appropriate)
- Additional resources, including Supplemental Materials, suggested readings, and World Wide Web Pages of Interest
  (**We have endeavored to locate accessible websites for the Supplemental Materials and WWW Pages of Interest, however some websites may not be available in accessible format.)
- Application Exercises to be completed at the end of each Module and each Case Study. **There are a total of 12 application exercises to be completed for full credit.** You are to choose one of the following exercises from each Module and each Case Study. (Answer a Question, report back on Assistive Technology Research conducted, report back on a "Field Trip" experience or complete a "Tech Quest") make responses via electronic message using Hypernews

You will read information regarding each topic in Modules 1-4, and then in Module 5 you will be introduced to 6 different characters in case study format. Throughout the case studies, you will learn more about the Fundamental Assessment Process (FAP), and the possible assistive technology applications. In Module 6 you will wrap up your online experience by gathering information related to the live training, and sharing your impressions of the online course with the class.

Definition: Fundamental Assessment Process (***FAP***),

5b. Module Outline
Although the time it takes you to complete each Module will vary depending upon the person, the format and **estimated** time expectancy for each instructional module is as follows (minus 1 hour for the "Welcome to the ATACP" pre-module):
Module 1: Introduction to Assistive Technologies - 3 hours
Module 2: Guiding the Process and the Fundamental Assessment Process (FAP) - 7 hours
Module 3: Leadership Challenges - 12 hours
Module 4: Funding and Policy - 8 hours
Module 5: AT Applications and Case Studies - 21 hours
Module 6: Wrap Up Module and Travel Information for the live training
Total online hours: 52

 ***Word of Caution***
Since this course is based on adult learning principles, we have given you enough supplemental information (suggested readings, supplemental material, and WWW pages of interest) to **exceed beyond the 52 required hours**, so be warned up front… exercise some restraint in reviewing the supplemental information being provided! As you may know, when you start to do research or just go exploring on the Internet, time suddenly

disappears. You should not wait until the "last minute" to start your online experience. The earlier you start your online portion of the training, the more information you'll obtain. At the end of the live training session you will have access to the ATACP graduate website. This website will give you (as an ATACP graduate) access to all the online information even after the class ends (web resources, articles, supplemental materials, etc.)
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Module 1 **Introduction to Assistive Technologies.** You should plan to spend approximately **4 hours** on this Module, including the time spent reviewing the resources provided at the end of the Module.

Assistive Technology has come of age. Legislation, attitudes, technologies and the way services are delivered have changed. This Module provides an in-depth study of current technologies, environments for service, partnerships for appropriate and successful matching of devices and individuals who need them, the funding streams that pay for them and the changing face of technology.

1. Learner Objectives

Current trends in the service delivery of Assistve Technology and a concentration on networking with fellow students will be covered. Informational resources will be also be discussed.

Upon completion of this estimated 3 hour online Intro Module, participants will have obtained information regarding:

- Basic definitions of Assistive Technology
- Current AT service delivery trends.
- Consumer driven services and empowerment.
- The necessity of developing outcomes.
- "Disability Etiquette" and ways to provide quality service to customers with disabilities.

2. Who, What, When, Where and Why of Assistive Technology
Who uses Assistive Technology? - Persons with disabilities comprise the single largest minority group ever defined, eclipsing the elderly and black population (about 26 million and 28 million, respectively). Furthermore, the population is extremely heterogeneous. The definition and estimation of its size has been based on demographics research by census and survey that shows variation both in severity of disability and in identification of persons as having a disability, whether by self-assessment or assessment by others. The World Health Organization has developed definitions to describe the following:

Impairment - Any loss or abnormality of psychological, physical or anatomical structure or function

Disability - Results when an impairment leads to an inability to "perform an activity in a manner or within the range considered normal for a human being"

Handicap - Results when an individual with a disability is unable to fulfill his or her normal roles. A handicap is not a characteristic of a person; it is a description of the relationship between the person and the environment

What is Assistive Technology*?* - Assistive Technology can mean a device or service that can be used as a tool by a person with a disability to achieve or maintain function. However, you must keep in consideration that Assistive Technology does not only mean a "device" but ALSO a "service." Let's look at the federal definitions

of the term "Assistive Technology." The following definitions are from Public Law, 100-407,(the Technology-related Assistance for Individual's with Disabilities Act, 1988)

Assistive Technology Device - Is defined as "any item, piece of equipment, or product system whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities."

Assistive Technology Service - Means any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device.

This may include:

- the evaluation of the needs of an individual with a disability, including a functional evaluation of the individual in the individual's customary environment (evaluating their needs in their usual surroundings)

- purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by individuals with disabilities
  (purchasing, selecting, or borrowing AT devices)

- selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices

- coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs

- training or technical assistance for an individual with a disability, or where appropriate, the family of an individual with a disability

- training or technical assistance for professionals (including individuals providing education and rehabilitation services), employers, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of individuals with disabilities.

To further clarify the meaning of assistive technology, some researchers make a distinction between "high technology" and "low (sometimes called 'soft') technology." High technology usually refers to complex, electrical and electronic devices such as computers, augmentative communication boards and environmental control systems. Low technology generally refers to simpler interventions such as custom designed hand tools, workstation modifications and simple, easier to use, less expensive devices. Often, low technology involves the application of "ergonomics" or human factors in which the workplace or home is designed to fit the person instead of making the person fit into a fixed design. Often times when addressing the issue of technology, people tend to think of talking computers, robots, laser optics, and spy satellites; but not door levers, canes, telephone headsets, or job sharing. It is often assumed that bigger, newer, and more sophisticated means better. W! ! ! e tend to look to high technology solutions for every situation. However, low technology alternatives can be just as effective and more easily integrated into a person's lifestyle. Many times we, as professionals, have produced or recommended high tech equipment that can be totally useless for our consumers.

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2003 ATACP FastTrax On-line Curriculum

Module 1: Introduction to Assistive Technologies

START HERE! Please continue with Module 1: Introduction to Assistive Technologies. You should plan to spend an estimated 3 hours on this Module, including the time spent reviewing the resources provided at the end of the Module.

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Content Topics:

Supplementals:

Application Exercise:

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To better illustrate this point, we would like to share the story of "George".

George is a 21-year old man who had acquired a disability two years ago with the loss of both his arms. One day George went to a team of "Rehabilitation Engineers" to see how they could help him with his main goal -- to independently have a beer with his buddies at the local bar. The rehabilitation engineering team got together and designed two bio-mechanical arms for George. After all the customization, fabrication, funding, insurance, fitting, etc., the rehabilitation engineers strapped the new arms onto George and out they went to the local pub. George awkwardly lifted a pint using his "new arms," spilling most of the beer on the floor, on the guy next to him, and down his own shirt. Finally the glass reached his lips and he took a sip and

toasted his "high-tech" arms with his friends.

After a week, George realized that his new arms became more of a bother than help. He had to remember to recharge the batteries, have someone clean the exposed joints of the arm system, and in addition, he felt that the arms were too heavy, his shoulders hurt after a while and they really didn't fit right. He also realized that he had compensated for many things that he use to do with his arms through his own abilities. He decided not to use the arms after all this. However, he was still in the same predicament that he was a year ago he still wanted to independently go out to the local pub and have a beer with his friends. So then he went to an "assistive technology specialist." The AT specialist listened to his need, scratched her head, opened a drawer and pulled out a bendable straw. "Will this work?", she questioned. George grabbed the straw with his teeth and happily walked down to the local pub to meet his friends.

When and Where Assistive Technology is Used - Assistive technology is used wherever and whenever it is needed, at home, at school, in the community, at work, at play. For some individuals one or two low-tech devices such as reachers or large button telephones are all that is required to help a person be independent. For others, assistive technology is a life long need, such as an individual using a ventilator, a wheelchair or a hearing aid.

Why Assistive Technology is Useful - Although most of us use assistive technology without realizing it, people who have a physical impairment such as spinal cord injury; a sensory impairment such as blindness; or a cognitive impairment such as mental retardation or brain injury may be unable to accomplish everyday tasks such as bathing, dressing, driving, working, and enjoying recreational pursuits independently without using an appropriate assistive technology device.

Assistive technology devices are valuable because they may assist a person to do a task independently, such as access a computer by voice; feel safe and secure in the home by being able to press an emergency alert button to summon help; adapted hand controls, enabling a person with mobility impairments to drive; augmentative communication devices enabling a person without speech to communicate.

Common Myths and Misconceptions about AT
- Please go to GPH2 (gph2_2001.html) for an article on common misconceptions about assistive technology.
U*se the **"Back"** button on your Internet browser to return you to this section.*

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3. Current Trends in AT

It is important that we understand the changing nature of service delivery in all human service agencies, especially assistive technology. The way services are provided is influenced by legislation, funding streams, managed care and a changing philosophy and approach to serving individuals with disabilities.

There are significant trends or changes in the way assistive technology devices and services have been delivered over the past ten years. These changes include a shift in attitude,

legislative changes and the growth of the independent living movement, leading to greater access to equal employment opportunities and other goods and services.

Shift from Medical Model to Social Model - This has been identified as a paradigm shift from an individual defect paradigm (the patient, failure to perform, individual malfunction) to a technology/ecology paradigm (the fragmented system of resources, lack of access, lack of fit).

Service Settings (*'Employment'*) **http://www.csun.edu/codtraining/atacp/supplements/gph3_2001.html**

Assistive technology devices and services may be available through many different agencies and in many different settings. As previously discussed eligibility requirements may determine where and when services are provided. Listed below are descriptions of the various settings where assistive technology services may be found.

Rehabilitation Setting
Assistive technology services are part of a comprehensive rehabilitation program; may be part of one of the therapy departments or its own department.
Primary purpose is to support the other services of the rehabilitation setting; therefore, there is usually multidisciplinary team involvement.
Typical populations served are spinal cord injuries, head injuries, cerebral vascular accidents, and amputees.
Services are usually billed to third-party health insurance payers.

University Based
Programs in this setting have largely evolved from a research component and may provide direct consumer services as well as education and training.
Staff usually consists of personnel capable of performing clinical, research, and educational duties. The professionals involved in the team will depend upon the functional areas addressed by the setting.
Those settings conducting research provide a national service. The direct consumer service component is usually regionally oriented.
Funding is largely grant and contract related (particularly for the research component), although portions of the direct consumer services may be billed the third party payers.

State Agency Program Based
State agency-based programs are usually a part of vocational rehabilitation departments or special education departments.
Those programs based in vocational rehabilitation departments are statewide programs developed for the purpose of providing assistive technology services to individuals who need it for attaining or sustaining employment.
The purpose of programs under special education departments is to facilitate the education of school age children. In some instances, school districts have their own multidisciplinary team. In other cases, there may be a team that covers the entire state.
Administration of these programs varies and may be statewide or on a local level.
Funding is usually mandated at a state or federal level and designated for these agencies.

Private Practice
A small number of assistive technology providers have gone into private practice. They may provide consultation to state agencies or rehabilitation centers.

The population and functional service area varies and depends upon the professional backgrounds of those involved in the business.
Operated as a for-profit, small business venture with fees for service charged. Usually based in one local area.

Durable Medical Equipment (DME) Supplier
Usually a for-profit agency that addresses a range of equipment needs. Typically, they provide walking aids, bathing and toileting aids, wheelchairs, and seating systems. Some suppliers may provide communication and environmental control equipment.
Reimbursed by third-party payers.
The DME supplier is known for its technical resources and ability to provide repair and maintenance services.
There are some DME suppliers who operate on a nation-wide basis; others are local operations.

Veterans' Administration (VA)

Assistive technology services are provided at many Veterans Administration hospitals. There is usually a multidisciplinary team approach. Research in the field of assistive technology is a large component of the services provided by the Veterans administration and significant contributions have been made in this area. Population served is restricted to veterans with service related disabilities, and further restricted on the basis of availability. **Veterans with spinal cord injury have been a major group served by the VA**.

Local Affiliate of a National Nonprofit Disability Organization
National organizations; such as United Cerebral Palsy Association (UCPA), Easter Seals Society, Muscular Dystrophy Association (MDA), The ARC (formally known as the Association for Retarded Citizens), and the American Foundation for the Blind; provide assistive technology services through their local affiliates.
The purpose of each of these organizations is often to serve individuals with a particular disability; therefore, the populations served and the functional areas are geared primarily toward that disability group.
Programs of the local chapters are usually administered at the local level and assistive technology services vary among affiliates. Some local chapters may have a complete assistive technology team to provide services, whereas other chapters may only loan equipment.
Funding for these agencies is through grants, contracts, donations, and fundraising events.

Volunteer Programs
Volunteer organizations in the United States that provide assistive technology services include groups such as the Telephone Pioneers of America, the Volunteers for Medical Engineering, and Rehabilitation Volunteer Network.
Most of these groups have developed out of private industry and have as their purpose the provision of a philanthropic service.
These groups usually provide services on a local or regional basis.
The functional areas served depends upon the expertise of the volunteers involved.
Smith 1987 and Hobson and Shaw (1987) in Assistive Technologies: Principles and Practice. Cook & Hussey (1994).

Paradigm Shift: Individual Defect Paradigm

a chart developed by D. Susan Daniels

Focus of the Paradigm

The patient, the client, the student, the individual with the disability.

Nature of the Problem

Failure of individuals to perform major life activities, such as walking, seeing, working, learning, self-care.

Source of the Problem

A physical, mental, or emotional malfunction of an individual

Evidence that a Problem Exists

The indisputable observation of impairments in individuals and the confirmation by medical diagnosis; dependency on welfare, medical support or other services.

Consequences of the Problem for the Individual

Internalization of deviance role and acceptance of a lesser status.

Solutions Sought

Restoration of function, if possible, or adaptation to defects, e.g. using crutches or an artificial limb.

Strategies Employed

Medical evaluation and treatment, rehabilitation, special education, rehabilitation technology; services designed for and used exclusively by people with disabilities.

Consequences of the Strategies

Individual gains in functional abilities (e.g. ability to walk, acquired trade skill), acceptance of and reliance on service systems, internalization of the role behaviors associated with being a "patient" or "client."

Desired Outcomes

Improved functional capacity, return to work, improved personal adjustment, less use of support services.

Technology/Ecology Paradigm

Focus of the Paradigm

The system of resources for AT: information, financing, availability, and developments of AT.

Nature of the Problem

Lack of access to appropriate resources: tools, information, and training.

Source of the Problem

Lack of fit between a person's goals, capabilities, and environmental resources, the "medicalization" of resource problems.

Evidence that a Problem Exists

Consistent, widespread reports of failure to acquire appropriate AT from people with disabilities; extensive levels of poverty, unemployment, and segregation among people with disabilities; meager gains in ameliorating the problem even after enormous expenditures of resources.

Consequences of the Problem for the Individual

Internalization of "consumer / customer" role status and externalization of action to acquire resources.

Solutions Sought

Access to AT that supports achievement of economic, social, educational, and community goals.

Strategies Employed

Development of technology and integrated service delivery systems that are responsive to consumer expectation and need; a market driven system.

Consequences of the Strategies

The removal of systemic and structural barriers; regarding oneself and being regarded as an equally capable person; greater reliance on the economic, environmental, legal, and social tools used and valued by mainstream America.

Desired Outcomes

Equal opportunity, freedom of choice, achievement of personal goals.

Key Word: **advocacy**

There are 10 steps that facilitate the process of systems change. While most of these will apply to your situation, some may not. However, think about all of them carefully as you consider your options for bringing about systems change.

1. Identify problems.
2. Define each problem correctly.
3. Decide what might be done to solve each problem.
4. Decide who must or should be involved to solve the problem.
5. Develop strategies and problem-solve as a group.
6. Assign responsibilities and develop timelines.
7. Regularly evaluate progress.
8. Strategize alternative ways to overcome new barriers.
9. Support and encourage the involvement of persons with disabilities.
10. Publicize successes and acknowledge the contributions of key people and agencies.

In their bestseller, In Search of Excellence: Lessons from America's Best-Run Companies, Peters and Waterman identified eight distinguishing characteristics of excellent organizations in the United States. A strong customer orientation was one of these key attributes. These companies--like Disney, McDonald's, and IBM--have a very strong commitment to service, quality, and reliability. They use the following strategies to meet this commitment:

1. Strive for 100% customer satisfaction.
2. Acknowledge that every individual perceives service in his or her own terms.
3. Listen to customers and assess satisfaction regularly.
4. Use customer feedback to drive the business.
5. Provide high-quality, reliable services.
6. Design products to meet customer needs as simply, friendly, and inexpensively as possible.
7. When there is a problem, respond quickly and fully.

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5. Disability Etiquette - Providing Quality Services to Customers with Disabilities

Use Common Sense - "Do Unto Others with Disabilities as You Would Do Unto Others"

When we discuss providing quality services to consumers with disabilities, it is important to treat these consumers the same way we would treat other able bodied people we encounter throughout the day. Often, people become uncomfortable in situations they are not familiar with and it is at this point that some of our actions may be seen as inappropriate or disrespectful to the person with a disability.

The lists below describe some good common sense suggestions when interacting with individuals with various disabilities. It is important to remember that these suggestions are offered as a guide, not a "rule book". The situations described below may not offend all, so remember to ASK the person you are serving about their personal preferences. You will find many consumers will be more than happy to share their personal preference with you and it shows the person the respect that we are all entitled to.

Serving Customers who are Blind or Visually Impaired:

- Speak to the customer when you approach her or him.
- Say your name; speak in a normal tone (most people with visual impairments have normal hearing).
- Never touch or distract a service dog while it is working.
- Do not attempt to lead a customer without asking; allow the customer to hold your arm.
- Give the customer verbal information that is obvious to persons who can see; be very descriptive.
- When offering a seat, place the customer's hand on the back of the chair and let the person sit down by himself or herself.
- When dealing with money transactions, tell the customer the denominations of money being exchanged.
- Ask if the customer needs assistance signing forms; offer to guide the person to the appropriate location.
- Offer assistance if the customer appears to be having difficulty locating an area.

Serving Customers who are Deaf or Hard of Hearing:

- Gain the customer's attention before starting a conversation; identify who you are.
- Look directly at the customer, speak clearly, and keep your hands away from your face.
- Ask the customer if he/she would like to communicate by writing or by using a computer.
- If the customer uses an interpreter, speak directly to the customer, not the interpreter.
- If calling a person who is hard of hearing on the telephone, let the phone ring longer, speak clearly and be prepared to repeat parts of the conversation.
- Use the state Telecommunications Relay Service to telephone a customer who is deaf.
- Discuss personal matters in a private room.

Serving Customers with Mobility Impairments:

- Put yourself at the wheelchair user's eye level; sit next to the customer when speaking.
- Do not lean on a wheelchair or any other assistive technology device; respect personal space.
- Do not assume the customer wants to be pushed--ask first.
- Provide a writing surface if counters or reception areas are too high; come around to the customer side of the counter during your interaction.
- Offer assistance if the customer appears to be having accessibility problems.
- Make sure there is a clear path of travel.
- If a person uses crutches, a walker, or other assistive devices, offer assistance with personal belongings (coats, bags, etc.)
- Offer a chair if the person will be standing for extended periods of time.
- If you call a customer on the phone, allow extra time for the customer to reach the phone.

Serving Customers with Speech Impairments:

- If you do not understand something do not pretend that you do; ask the customer to repeat what they have said; be patient.
- Try to ask questions that require only short answers.
- Concentrate on what the customer is saying.
- Avoid barriers like glass partitions and distractions, such as noisy areas.
- Do not speak for the customer or try to finish their sentences.
- If you are having difficulties communicating, ask the customer if there is an alternative way of communicating (writing).
- If no solution to the communication problem can be worked out, ask the customer if there is someone else who could interpret on their behalf.
- Discuss personal matters in a private area.

Serving Customers with Cognitive Disabilities:

- Be prepared to provide an explanation more than once.
- Offer assistance with and/or extra time for completion of forms, understanding written directions, or decision making; wait for the customer to accept the assistance; do not over assist or be patronizing.
- Be patient, flexible, and supportive; take time to understand the customer and make sure the customer understands you.
- Move to a quiet or private location, if in a public place with many distractions.

Important things to remember:

- Provide access to facilities and services.
- Relax and listen to the customer.
- Maintain eye contact without staring.

- Make the customer feel comfortable.
- Treat the customer with dignity, respect, and courtesy.
- Offer assistance, but do not insist.
- Deal with unfamiliar situations in a calm, professional manner.
- Ask the customer what to do...they will know best.

**This information was taken from Opening Doors to Ability, President's Committee on Employment of People with Disabilities.*

Disability Etiquette - Terminology

We must remember that the words we use when describing a consumer we are working with are as important as the actions taken, which were described above. We have all seen instances where a person with a disability may be described as "a handicapped man who suffers from Cerebral Palsy" This type of description is inappropriate and not necessarily accurate. Many people with Cerebral Palsy are not suffering, just the opposite, they are living very independent, fulfilling lives. We need to remember to put the **person first, not the disability.** An affirmative phrase for the man described above would be " a man with cerebral palsy".

Another thing to remember is that **people are not conditions, so don't label them with the name of their condition.** A person shouldn't be referred to as, "the blind". Instead they should be referred to as, " the person who is blind". Again, this puts the person first, not the disability.

It is important to remember when working with consumers **that some people may have hidden disabilities** that may not be apparent when you meet them. Some examples of hidden disabilities include heart disease and AIDS.

The list below provides some examples of affirmative phrases used to describe a person with a disability and the negative phrases they replace. It must be stressed that these affirmative phrases are a guideline and, just as above, you should talk to the consumer to learn their personal preferences.

Affirmative Phrases vs. Negative Phrases:

- person with mental retardation vs. retarded; mentally defective
- person who is blind, visually impaired vs. the blind
- person with a disability vs. the disabled, handicapped
- person who is deaf, hard of hearing vs. suffers a hearing loss; the deaf
- person who uses a wheelchair vs. wheelchair bound; confined to a wheelchair
- physically disabled vs. crippled, lame, deformed
- person without a disability vs. normal person
- unable to speak vs. dumb, mute
- seizure vs. fit
- person with a psychiatric disability vs. crazy, nuts
- person who no longer lives in an institution vs. deinstitutionalized
- person with cerebral palsy vs. cerebral palsied

6. Information Resources

With the advent of computers, e-mail, and the Internet we are swamped with easy access to information. Identifying good, usable, current information is still a challenge. It behooves us all to

develop our resources, especially in the community where we work, as well as understand the advantages and limitations of national computerized resources.

What questions do we ask? - Information is only as good as the questions we ask. The following list of questions will provide a framework for acquiring the information that will be beneficial to you.

- What information is needed?
- Who needs the information and why?
- Where do we get the information?
- How reliable is the source of the information?
- Is the information current and timely?
- Is this information appropriate for our needs?

Physical disabilities can be grouped into three major categories that relate to function:

1. Gross Motor Impairments: Illness or trauma can cause trauma to the large muscles of the legs, shoulders, and arms: or damage to the nervous system resulting in limitations in strength, coordination, and joint range of motion.
2. Fine Motor Impairments: The precise movements of the wrist and fingers relate to fine motor performance.
3. Mobility impairments: Injury or disease affecting the musculoskeletal or nervous system of the lower extremities may affect a person's ability to walk.

Multiple Disabilities

National Health Interview Survey of 1990. The survey shows that in 1990 more than 13.1 million Americans, about 5.3 percent of the population, were using assistive technology devices. 7.1 million people, nearly 3 percent of the population lived in homes that were adapted to accommodate impairments. Between 1980 and 1990, the number of persons using anatomical or mobility assistive technology devices increased at a more rapid rate than did the general population.

More people use assistive technology devices to compensate for mobility impairments than any other general type of impairment: 6.4 million use some kind of mobility technology, and 4.4 million use a cane or walking stick, the single most used assistive technology devices. Other prevalent assistive technologies are hearing aids (3.8 million), walkers (1.7 million), wheelchairs (1.4 million), and back braces (1.2 million).

Of the 7.1 million people living in homes that have special equipment, the most common adaptation is hand rails (3.4 million), ramps (2.1 million), extra wide doors (1.7 million), and raised toilets (1.3 million).

Among persons who use any assistive devices, the majority are over 65, reflecting the higher prevalence of impairments in that population. However, for some specific assistive technologies, a significant proportion of users are under age 25: foot braces (38%), artificial arms or hands (35%), adapted typewriters or computers (25%), and leg braces (24%).

The Americans with Disabilities Act of 1990 has provided a definition of disability:

a. A physical or mental impairment that substantially limits one or more of the major life activities of such individual
b. A record of such an impairment
c. Being regarded as having such an impairment

According to the NHIS Survey of the total non-institutionalized population in the United States, 34.2 million (14.1%) were limited in activity due to a chronic health condition in 1989. Of people limited in activity due to a chronic health condition, 10.1 million were unable to perform their major activity, 13.2 million were limited in amount or kind of the major activity they could perform, and 10.9 million were limited in non-major activity. Limitation in activity increases with age. Of the population aged 70 and over, 7.5 million (39%) were limited in activity. Of children under 18 years of age, 3.4 million (5.3%) were limited in activity.

According to Franklin, consumers want the four Big Cs:

- Convenience
- Choice
- Courteous and prompt service delivery
- Continuity and reliability

Unfortunately, these features are not often found in typical assistive technology services.

Module 2 *The focus of intervention is all too often on limitations overlooking the fact that persons with disabilities have a diverse range of functional abilities. Combining these diverse abilities with the capabilities of technological tools - assistive devices - to optimize human task performance is a challenge beyond the expertise of any particular person or any one profession. Assessing the functional abilities of people and helping to evaluate device capabilities are essential first steps in providing assistive technology services. Selecting and delivering an appropriate device within an individual's social and environmental context is a "team" process, requiring input from members of multiple professions.*
Mann, Lane, 1996

1. Learner Objectives

Upon completion of this 9 hour online Guiding the Process Module, participants will be able to:

- Understand the "Fundamental Assessment Process" (FAP) model.
- Identify the main steps in an assessment.
- Establish a FAP and use it in practice.
- Identify the importance of using a team approach to assessment and the benefits of collaboration.
- Develop their team building skills.
- Identify team members and their roles and responsibilities in developing IEP's, IFSP's and IWRP's.

2. Introduction

This Module will help you to develop appropriate assistive technology solutions through a collaborative team approach between consumers of technology, family members, rehabilitation

professionals, educators, etc. Building a good working team is imperative to a successful technology outcome. Guiding the process will also investigate how best to incorporate appropriate technology into the individualized family service plan (IFSP), individualized educational plan (IEP), or the individualized written rehabilitation plan (IWRP). Through technology intervention across age spans, participants will gain an understanding of how technology needs are different, similar, and how intervention is perceived.

The steps included in the Fundamental Assessment Process (FAP) are:

- Step 1: Intake / Referral
- Step 2: Identification of Needs
- Step 3: Identification of Desired Outcomes
- Step 4: Develop and Nurture Team Members
  - This step is on going throughout the process
- Step 5: Skills Assessment
- Step 6: Device Trials
- Step 7: Revisit Desired Outcomes
  - If outcomes are met, go to Step 8
  - If outcomes are not met, go back to Step 3
- Step 8: Procurement of Device
- Step 9: Technology Implementation
- Step 10: Follow Up / Follow Along
  - If the technology is not meeting needs, go back to Step 2.

Module 3: Case Study 2~

"Federal legislation during the last quarter of the twentieth century has made a difference to kids like Sam. Public schools are required to develop an individual education plan (IEP) to provide a free, appropriate education in the least restrictive environment to children with learning disabilities."

Legislation

Legislation (Education of the Handicapped Amendments of 1986, PL 99-47 and PL 94-142) requires that an Individualized Education Plan (IEP) be written for each child with a disability ages 3-21 years who can benefit from special education services.

IEPs must be drawn up by the educational team for the exceptional child and must include the following: [the following is a bulleted list] The student's present levels of academic performance. Annual goals for the student. Short- term instructional objectives related to the annual goals. The special education and related services that will be and the extent to which the child will participate in regular education programs. Plans for starting the services and the anticipated duration of services. Appropriate plans for evaluating, at least annually, whether the goals and objectives are being achieved. Transition planning for older students.

(Hallahan, Daniel P. & Kauffman, James M. Exceptional Child. Boston: Allyn and Bacon.1994.)

Changes in the IEP and Placement Processes

Currently, through the reauthorization of the Individuals with Disabilities Education Act of 1997, assistive technology needs to be addressed directly for all children with an IEP. GPH4 (http://www.csun.edu/~hfdss003/atacp/supplements/gph4.html)*Use the **"Back"** button on your Internet browser to return you to this section.*

The IEP and placement processes-what type of information the IEP must contain, who is a member of the team developing the IEP, and how the IEP is developed, reviewed, and, as appropriate, revised-remains much the same under the IDEA 97. Among the specific changes made are:

- the IEP Team now includes the regular education teacher;
- student involvement in the general curriculum is now greatly emphasized;
- the IEP Team now must consider "special factors" (such as the behavior and communication needs of the student, as well as the language needs of a student with limited English proficiency, and must address "assistive technology needs") when writing the student's IEP;
- transition planning must now begin at age 14, with transition services beginning by age 16 (as before);
- schools must now report student progress (or lack of progress) to parents, at least as often as they report to parents of children without disabilities;
- and parents must now be included in the group that makes the decision regarding their child's educational placement.

In addition...

Special Education and Related Services

Given the areas of need the child or youth has, and the annual goals that have been established, what special education and related services does he or she require in order to attain those goals and address those needs? The IEP Team must consider- and specify in writing- what supplementary aids and services are necessary to enable the student to be involved in the general curriculum, to participate in extracurricular activities, and to be educated and participate with other children (those with disabilities and those without).

Start here ~

Application Exercises

http://www.csun.edu/codtraining/atacp/fastrax/indexa.htm

** Remember, in order to learn about your classmates and their experiences, we encourage you to check back regularly and read your classmate's responses. To properly give you credit for your answer, please select the corresponding live training session to post your response.

Welcome Module

For this "Welcome to the ATACP module" application exercise, we are asking you to introduce yourself to the other participants in your class. This way you will begin to know each participant in your class before you meet them at the live session! Please answer the following in your Hypernews response:
Your name,
title and
organization,
your AT experience
why you are attending this course
and finally your favorite movie or book.

Hello to everyone~

My name is Dave Colburn and I am a computer technician at the Wayne Central School District in Ontario, New York. For the past four years I have been installing and servicing computers and network services in our local school district and supporting the staff and students in their using technology. Recently I was requested to consider taking on a more direct involvement in the development of individualized education plans for special needs students, particularly in relation to the use of assistive technology and that is the reason I have enrolled in the ATACP. This is a great opportunity for me because I really enjoy seeing technology put to good practical use in helping people.

I have been married for thirty-one years, have four sons (two teens still at home), and I love the outdoors (especially boating). My favorite movie is “Message In a Bottle” (I’m a Kevin Costner fan, a hopeless romantic, & I love the water~ ;) and my favorite book is either Undaunted Courage -- by Stephen E. Ambrose or Timeline by Michael Crichton, although Sphere by Crichton was good too; but then The Last Hostage by John J. Nance was exciting and as I think of it Net Force by Tom Clancy was really engaging . . . (Yea, It is hard to pick a favorite isn't it~~ ;)

See y'all in LA!

~~Dave

Module 1 Application Exercise: Module 1, Question 1

What do you see as trends in the future delivery of Assistive Technology Services, both postive and negative?

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Trends in Assitive Technology: Positive, Negative, Positive:

I'll draw my answer for this question from both my initial research in assistive
technology as well as well as my experience with the prescription and use of assistive
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technology in my place of employment, the Wayne Central School District in Ontario, New York.

It has become apparent to me as I have watched the prescription, purchase and use of assistive technology within our own public school system that it is a constantly growing trend. I believe this is a positive direction because it demonstrates a number of good developments in the area of AT.

First, I think it indicates a much improved awareness on the part of the public as to the needs of so many people with disabilities. It seems that a variety of efforts in the area of advocacy, communications, etc. have finally succeeded in getting the point across and the awareness and sensitivity of people in general has matured to a level that is now effectively producing positive change in our ability to become informed, address, and provide solutions and support for the people of society that live with disabilities. My own change in responsibilities and enrollment in this program is a good example of this growing trend (I'll elaborate on this more in my final point).

Negatively I think the current trends in assistive technology might be regarded as the difficulty in meeting the assistive technology needs in the area of finances. I think the emphasis on the concept of consumerism in Module 1 of this program in contrast to the former perspective on assistive technology as being a medical model may be the result of the competition for the financial resources that are available to meet these special needs. There are at least two contributing factors to this area of difficulty. As the awareness, sensitivity, and desire of our society to address these needs increases so does the price of this increased interest. Secondly, as the power of today's available technology has increased and our ability to provide high tech solutions to more sophisticated needs has improved, so has the cost of assistive technology.

The negative trend mentioned above, that of greater competition for the funds made available for assistive technology will eventually lead to a net improvement for both the consumer, those who purchase assistive technology, and those who provide it. I believe the current competition in the marketplace for the available AT funds will foster improvement in the quality of assistive technology solutions and its power or ability to meet even more demanding special needs. Additionally the competition is currently generating greater accountability in the decision making process involved with the provision and purchase of these technologies and services. This improved accountability will spin-off a marked improvement in the whole process of developing the technology, accessing the needs for making application of the available technologies, and providing the best products and services for the most people.

A good illustration of the trends mentioned above would be my own entry into the assistive technology field. Previously our school system has depended on third party services for the assessment and prescription of specific assistive technologies for our students with special needs. Although this worked for a time and even provided a better service than the school district was probably capable of providing in-house, this approach began to develop some limitations and difficulties. The cost of bringing in the outside support has risen while at the same time the need for more thorough support from the outside source has increased, making this approach to the district's assistive technology needs inadequate.

Therefore, the decision has been made to expand the skill level of our own technology people in the area of assistive technology to keep the costs manageable but at the same time maintain or even improve our ability to meet the needs of our student population with specials needs. And so even the negative aspects of the current assistive technology environment will influence favorable adjustments leading to a net long-term benefit. The trend is win win!

Module 1 Application Exercise: Module 1, Question 2b

B) Assistive Technology Research:
Develop a list of AT resources and/or services that would benefit consumers of AT services in your

community. Report back and post the resources that you have found. Describe the techniques that you used to locate these resources.

This assignment is a perfect fit for me and the assistive technology needs of my community and our local public school system. Over the last two years I have had the opportunity to become more familiar with publishing information to the World Wide Web and seeing it grow as a communication tool within our relatively small community. The website for the school district, along with the newly improved website for the Town of Ontario, New York, is probably the best candidate for the most important website within our community. Recently the two websites have placed links to each other's websites on their own web pages and with that development, coupled with the rapidly increasing use of broadband Internet access I believe the World Wide Web will become a tremendously effective communications tool on the local level.

With that in mind as I began my assistive technology program it occurred to me that I could create a website for assistive technology to be hosted on the local school district's website where I could collect the various resources that I find in the course of my study in AT. Now I realize that I wouldn't be the first website dedicated to information about assistive technology nor, in view of my significant inexperience and lack of knowledge in this field, would this website be anywhere near the last word on the subject. As was pointed out in Module 1 the greater problem these days is filtering down to the quality information to gain what is helpful and useful. And that is the advantage to posting a locally prominent website. I can assemble what I hope will be useful resources for the community and place them in a well known website (locally).

The current website, which can be found at: http://wayne.k12.ny.us/dcolburn/at/default.htm , is in a fairly rough format. Once the time was given to creating the basic website then adding material to it is really quite quick and easy. Additionally, it has been a nice addition to the e-study format that the ATACP is built around. I am fortunate to have broadband Internet access through cable modem at my house and a full-time Internet access on a four year old 10/100 megabit to the desktop Ethernet network at our school. Because of security concerns we have not yet provided true remote access to the users' internal network storage but we have made available network storage through a service provided by the area Board of Cooperative Educational Services (BOCES) called DocuShare, a product developed and marketed by the Xerox Corporation. Using DocuShare and these Internet resources I can do my ACATP study completely online from any place with Internet access as well as update my assistive Technology website.

So, if you were to go to the above URL you would find a fledgling information resource for assistive technology that I hope will become increasingly useful and relevant at the local level. Right now the site contains most large resources such as Microsoft and The Center for Universal Design. Because of my newness to this field I am very hopeful that I can draw from the rest of the group in this ATACP class and I would very much Welcome your input and assistance in developing this website as a resource for my community.

Interestingly, as I browsed our regional BOCES website just a few minutes ago I was unable to find any mention of assistive technology on their site~ hmmmmmmmmmmm~ ;) Looks like there might just be a place for a tool like this in our communities. The resources that I have listed have come from a variety of sources. One of my fellow technicians had a floppy diskette of resources that she had been given so she turned it over to me when she learned of my new area of responsibility so I have posted that information. Other links came from using the basic search engines and of course some of the information has come from the material for this course. The real goal is to localize the information on this site and that will take dome time and continued attention. I believe there is a loan closet service that is operated by the local volunteer ambulance that I will have to track down. Also I

will continue to try and locate local/regional resources by using the Internet. It will be interesting to see how much of this can be done on the web and how much requires the telephone and footwork.

I look forward to your input and attention in continuing to help me develop this project.
Thanks! ~~Dave

Module 2

Question 1. As we discussed in Step 3 of the FAP, there is increased interest in outcomes measurement in the assistive technology field. What are some tools you use in your AT service setting to collect outcomes on consumers you serve?

Because I am just beginning to get involved with the Pupil Personnel Services Department (PPS) in our school district and was not familiar with the various assessment practices or any of the tools used, I decided to request assistance from two of the key people in this department. Unfortunately I have received no response as of yet (four weeks later) and so my answer to this question still has to be given in the 'investigative' format. It's not my intention to criticize the department or its practices but the lack of response or communication leads me to draw some preliminary conclusions about the tools used by our organization; and the fact that this module is about the FAP makes me address that point first.

It would seem that the process used within our school district may not in fact be all that 'fundamental.' By that I mean we seem to work very reactively to the needs of the students. Being a public school in the State of New York we employ the use of the IEP (which I am also just getting to learn about). Additionally, the school system has been employing the services of the BOCES (Board of Cooperative Educational Services) and at that, the one from the next county over. In my very brief involvement with the PPS department I've already found a copy of the teacher's IEP for a student that had no information on it about AT that had been prescribed for the student and was being installed and the student instructed in using within the next twenty-four hours. Much more could be said about the deficiencies of this arrangement but in the interest of time it's probably sufficient to simply conclude that the primary problem is actually the lack of a truly fundamental assessment process. The current approach is neither fundamental nor a process (meaning it lacks organization). The collaboration factor is obviously lacking (referring to my failure to receive responses to my requests for information).

The good news is that my increasing involvement with the process will give me the opportunity to help structure the process and employ the tools that I have learned from my ATACP instruction. I see that the SETT framework which was presented in the live training will be a great asset for our organization to start using in the organization of a truly fundamental assessment process within our school district.

Additionally, I see a need to organize the information gained during the assessment process into an accessible database. One difficulty I see with the current approach is that it is difficult to review the progress (or lack of it) that a student experiences after receiving an assistive technology Our students in this district are located in five different buildings spread across two different townships (actually a fairly typical Upstate New York rural community using a centralized school system between more than one township). The different school buildings are serviced by a centralized special education department (PPS). This design tends to produce a gap in communication and information accessibility between the students' teachers in the classrooms and the administration.

Fortunately our school district has an excellent tool already in place that could (and should) be put to use to streamline communications and improve our ability to keep our assessments (IEP's) more

current and to facilitate regular review of the information and the students' changing needs. This tool is called DocuShare. It is a electronic document storage system created by the Xerox Corporation and has been provided to our school as one of the Board of Co-operational Education Services. It provides a secure way to store and share information. Within our district technology department this resource has been placed under my care and leadership so I am well positioned to bring it to bear on our assistive technology growth and improvement. I have already had the opportunity to provide training to the administrators and I have a web site running (http://www.wayne.k12.ny.us/docushare/) to facilitate the use of DocuShare within the school district.

DocuShare, similarly to HyperNews, has the ability to host forums or threaded discussions but additionally provides the ability to post digital documents that can be accessed by the various users, post web links (url's), and post calendars. All of this is done on the web so all the material can be accessed from anywhere that Internet access is available. All this information can be made completely private, completely public, or restricted to a specific group of users for a team type collaboration. It is a Really cool tool and I believe it can be used to organize our assessment data and then provide secure access to that data for the people who need to remain engaged and informed throughout the assessment process.

~~Dave

Question 2.

B) Assistive Technology Research:
Find resources that would be beneficial for you to increase professional collaboration and share your results with the group. These could be Listservs, Bulletin Boards, Web Sites, local community groups, etc.

I have to say I've found our own Listserv at ftca03-l@csun.edu to be my best resource yet, so I'm going to focus my answer to this question on listservs and bulletin boards because I think the communication tools that are available to us to be used as we develop a network of contacts and resources are going to turn out to be even more important than the endless search for specific software and hardware details. Also, before I forget, I've noticed that a common occurrence with the bulletin boards is the problem of pop ups. There are a number of programs that can be installed that will block pop-ups. One (a free one) that my son put me onto that has worked very well for us is Pop-Up Stopper from Panicware http://www.panicware.com/

Secondly, a secondary problem that results from the pop-ups is the installation (unknown to the user) of software programs that run in the background and progressively degrade the performance of the user's computer. This can progress to the point that a computer will nearly come to a stop, which leads to my recommendation of a second (free) program called, "Ad-aware" from Lavasoft http://www.lavasoft.de/ This is a Tremendous program and should be run at least once a week on every computer, especially on computers that are constantly hooked to the Internet such as networked computers with full-time Internet and computers on broadband Internet such as cable modem or DSL. The use of this program has become my most common computer service activity.

Now for the resources:

Bulletin Boards & Chat Rooms:

http://www.abilityhub.com/general/forums.htm

http://www.ldonline.org/bulletin_boards/index.html

http://www.specialednews.com/forums/

http://e-bility.com/arata/resources_bbs.shtml

http://e-bility.com/arata/resources_list.shtml

http://www.ican.com/channels/resource_links.cfm/Crumb/6,76/

http://www.geocities.com/HotSprings/Spa/6889/dishotlist.htm

http://www.arcofkingcounty.org/guide/services/online/chat/

http://www.esmerel.org/forums/forum.htm

http://www.lookingglass.org/phorums/

http://www.westmark.pvt.k12.ca.us/add_adhd.html#Newsgroup

http://www.parentsplace.com/messageboards/ At The ParentsPlace.com

http://chronus.waisman.wisc.edu/fv/chat/enter.asp Family Village Chat Rooms

http://www.familyvillage.wisc.edu/discussion.html Family Village Discussion Board (bulletin board)

http://groups.yahoo.com/search?query=disabilities The main link to the Yahoo Groups related to disabilities

http://groups.yahoo.com/group/PeopleWithDisabilities/ Yahoo! Groups People With Disabilities

http://groups.yahoo.com/group/ChallengedLiving/ Yahoo! Groups ~ Challenged Living

http://clubs.yahoo.com/clubs/disabledjobseekers Yahoo! Clubs disabled jobseekers

http://groups.yahoo.com/group/TrachyVentList Yahoo! Groups : Trachy Vent List

http://groups.yahoo.com/group/parentsofventdependentandspecialneedskid
Yahoo! Groups : parentsofventdependentandspecialneedskid

http://www.makoa.org/chat/index.html Disability Chat Links

The Worldwide Virtual Community of the Disabled

http://neuro-mancer.mgh.harvard.edu/cgi-bin/Ultimate.cgi

Listservs and Mailing Lists:

http://www.disabilityresources.org/DRMreg.html A list of resources Indexed by state

http://www.familyvillage.wisc.edu/lists/index.html Family Village listservs

http://www.inform.umd.edu/EdRes/Topic/Diversity/Specific/Disability/Listservs/

http://www.state.oh.us/olrs/Listserv.htm

http://www.inform.umd.edu/EdRes/Topic/Diversity/Specific/Disability/Listservs/dadvocat

http://www.nas.com/downsyn/dslistserv.html Down Syndrome Listserv

Other AT Links:

http://www.familyvillage.wisc.edu/index.htmlx Family Village: An absolutely Astounding site!!

http://www.makoa.org/general.htm A very good all around information source

http://forums.weta.org/ldonline/phorum/list.php?f=6&collapse=1

http://wayne.k12.ny.us/at/ My own site at Wayne Central School District, Ontario, New York 14519

The presence of the information cited above does not constitute an endorsement of the content, accuracy, nor ease of use of the listed resources. These links have been been tested to assure that they are currently active links. I would appreciate feedback concerning their value (or lack thereof).

The resources from this exercise will be compiled, along with other information, into a database (probably an Excel spreadsheet) at the end of this course as part of my course project; and made available to interested users.

~~Dave

Module 3

Current Exercise~~

Case Study 1

If you were a member of Aiden's team, what words or phrases would you like to see represented on his communication board to ensure that his wants and needs were communicated?

A) Field Trip: Visit establishments in your community and evaluate / report back on accommodations available for persons with various mobility impairments.

B) Assistive Technology Research:
Develop a list of resources that provide information to parents of young children who are recently diagnosed with a disability. (support groups, etc.) Share your results with the group.

C) Tech Quest:
Using the documents provided above, in the Supplemental Materials section entitled "How to Adapt a Battery Operated Toy", fabricate a solderless switch and/or a battery interrupter. Report back on your successes.

Case Study 2

Module 3

Case Study 1 ~ Aiden

Tech Point 1

Identification of Needs and Goals

Individualized Family Service Plan (IFSP) is a plan that is developed with the family and early intervention team and how they will address these goals. This plan is implemented to identify goals and objectives and to support the child in their developmental stages where they lag behind. The IFSP, along with the **Individualized Education Plan (IEP)**, the **Individualized Written Rehabilitation Plan (IWRP)** and the **Individualized Transition Plan (ITP)**, are plans that will address technology interventions in order to obtain the desired goal(s). These plans will be discussed in later case studies.

Tech Point 2

Seating, Positioning; Mobility Devices

With the completion of this course, you are not expected to perform a comprehensive seating and positioning evaluation, however you are expected to;

1. Identify potential outcomes of appropriate seating and positioning;
2. Identify needs for seating technology intervention;
3. Describe fundamental bio-mechanical principles related to seating and positioning for assessment;
4. Identify the need for technology intervention as it relates to the development of secondary disabilities and pressure sores;
5. Understand the concept of functional mobility;
6. Identify primary considerations when selecting a mobility/positioning system and
7. Describe the major categories of mobility systems and their characteristics.

Tech Point 3

Tech Point 4

Switches enable individuals with disabilities to reach their potential by allowing access to technologies and environments they would be unable to experience without the device.

What is a Switch?

A switch is a mechanical device that closes a circuit to turn a device on or off. A real world analogy of an electrical circuit would be water flowing through a pipe. When the valve is turned on, water flows through the pipe. When the valve is turned off, the water stops. A switch is like that valve, in that, electricity will only flow when the switch is on.

Single Switch

These connect to a device with a mono plug and will enable the user to control a single function device or one function of a multi-function device.

This category of switches seems the largest and has the widest variety of styles, shapes, colors, etc. Some examples of single switches are shown

Dual Switch

This is a device that is in essence two single switches in one enclosure. These types of switches connect with a **stereo plug**. This enables the user to control either two separate single function devices, or one dual function device.

Multiple Switch

These are devices that consist of five or more single switches in one device. These switches are used to control multi-function devices and are most commonly used with a computer, augmentative communication device, or a mobility device.

Tech Point 5

The principle of toy access for infant and toddlers is to help them become more aware of their surroundings, and interact with their surrounding. Just like when some of us were children, we would go into our rooms and turn off and on the switch that made the ceiling light go on and off. This is the same concept for children with disabilities, however, they may not have the ability to reach that switch. So we bring the switch to them. Through the use of a switch and a switch adapted toy, children with disabilities are now learning a basic concept of "cause and effect." This basic concept travels with us through life in general and can be adapted in many life situations.

Switch Adapted Toys

Tech Point 6

Tech Point 7

Products for communication are referred to as communication aids, communication devices, VOCAs (Voice Output Communication Aids), and electronic communication systems. These communication systems can be categorized in several ways:

1. non-electronic or electronic.
2. No tech, low tech or high tech.
3. Aided or non-aided.

4. Dedicated or non-dedicated.
5. Static or dynamic.
6. Encoded or branching.

Tech Point 8

Many consumer's communication needs can be met by any one of the small commercially available communication devices that utilizes digitized speech. These devices work like high tech tape recorders, they can "record" words, phrases, music, different languages, sound effects, etc. These devices can be as simple as one location, with one stored word or phrase, or as complex as devices with 32 + locations.

Tech Point 9

Tech Point 10

Tech Point 11

Device mounting is a crucial part of the device implementation stage and it is something that must be addressed with the entire team before purchase of a device. Any given device may be great during the evaluation but if the goal is to connect it through the wheelchair, the team must make sure this is feasible. In addition to mounting, the team must examine the interconnectivity of the two devices, wheelchair and AAC device, for potential problems.

Wheelchair mounts for AAC devices are an excellent way to provide access to communication throughout the day for an individual in a wheelchair. Even though most of these devices are customized to the wheelchair frame and AAC device, they will still require many adjustments to ensure proper placement for access.

Case Study 2: Keisha

Learner Objectives

1. Examine most common types of learning disabilities
2. Explore possible accommodations for persons with learning disabilities
3. Examine the importance of training and follow-up
4. Identify technology interventions for persons with learning disabilities

Areas Covered in this Case Study:

Assistive Technology Applications
• Individualized Education Plan (IEP)
• Overview of Learning Disabilities
• Current Technologies used to accommodate for Learning Disabilities

Tech Point 1

Legislation

Legislation (Education of the Handicapped Amendments of 1986, PL 99-47 and PL 94-142) requires that an Individualized Education Plan (IEP) be written for each child with a disability ages 3-21 years who can benefit from special education services.

IEPs must be drawn up by the educational team for the exceptional child and must include the following: [the following is a bulleted list] The student's present levels of academic performance. Annual goals for the student. Short- term instructional objectives related to the annual goals. The special education and related services that will be and the extent to which the child will participate in regular education programs. Plans for starting the services and the anticipated duration of services. Appropriate plans for evaluating, at least annually, whether the goals and objectives are being achieved. Transition planning for older students.

(Hallahan, Daniel P. & Kauffman, James M. Exceptional Child. Boston: Allyn and Bacon.1994.)

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Currently, through the reauthorization of the Individuals with Disabilities Education Act of 1997, assistive technology needs to be addressed directly for all

children with an IEP. GPH4 (http://www.csun.edu/~hfdss003/atacp/supplements/gph4.html) *Use the **"Back"** button on your Internet browser to return you to this section.*

The IEP and placement processes-what type of information the IEP must contain, who is a member of the team developing the IEP, and how the IEP is developed, reviewed, and, as appropriate, revised-remains much the same under the IDEA 97. Among the specific changes made are:

• the IEP Team now includes the regular education teacher;

• student involvement in the general curriculum is now greatly emphasized;

• the IEP Team now must consider "special factors" (such as the behavior and communication needs of the student, as well as the language needs of a student with limited English proficiency, and must address "assistive technology needs") when writing the student's IEP;

• transition planning must now begin at age 14, with transition services beginning by age 16 (as before);

• schools must now report student progress (or lack of progress) to parents, at least as often as they report to parents of children without disabilities;

• and parents must now be included in the group that makes the decision regarding their child's educational placement.

In addition...

Special Education and Related Services

Given the areas of need the child or youth has, and the annual goals that have been established, what special education and related services does he or she require in order to attain those goals and address those needs? The IEP Team must consider- and specify in writing- what supplementary aids and services are necessary to enable the student to be involved in the general curriculum, to participate in extracurricular activities, and to be educated and participate with other children (those with disabilities and those without).

The Definition of "Supplementary Aids and Services"

"Supplementary aids and services. - The term 'supplementary aids and services' means aids, services, and other supports that are provided in regular education classes or other education-related settings to enable children with disabilities to be educated with non-disabled children to the maximum extent appropriate in accordance with section 612(a)(5)." (IDEA 97 's provision on least restrictive environment)

Additionally, the IEP Team must consider- and specify in writing- "any program modifications or support for school personnel" that will be provided for the child.

These will assist school personnel in helping the child progress in the general curriculum.

(LD online, 1999) Note: This information is adapted from a training package on the IDEA Amendments of 1997 developed by the Office of Special Education Programs at the U.S. Department of Education, the National Information Center for Children and Youth with Disabilities (NICHCY), and the Federal Resource Center for Special Education (FRC).

Facts about Assistive Technology and the IEP

Here are some quick facts to remember when addressing AT into the IEP. (LD online, 1999)

1. Assistive technology needs must be considered along with the child's other educational needs.

2. Needs for technology must be identified on an individual basis.

3. Identification of technology needs must involve family members and a multidisciplinary team.

4. Parents or IEP members can ask for additional evaluation or an independent evaluation to determine assistive technology needs.

5. When an evaluation is being conducted, consider: fine-motor skills, communication, and alternatives to traditional learning approaches.

6. Lack of availability of equipment or cost alone cannot be used as an excuse for denying an assistive technology service.

7. If included in the IEP, assistive technology services and devices must be provided at no cost to the family and, if so indicated, devices must be allowed to go home with the student.

8. Parents always have the right to appeal if assistive technology services are denied.

Advances in technology have created ways and means for persons with learning disabilities to become far more successful in both educational and work environments. Ranging from highlighters to simulated computer instruction, technology has provided reasonable accommodations that enable persons with LD to compete. It has also greatly increased the ways in which people with LD can acquire and use information. Know that the opportunities possible through

the use of technology for those with LD are unlimited. Literally, all we have to do as AT providers is explore these limitless possibilities. However, unless persons with LD acquire both access and training in these technologies it’s possible that the very tools used to help them move up the economic ladder could become the very same tools that push them further down.

Tech Point 2

What is a Learning Disability (LD)?

LD is a disorder that affects people's ability to either interpret what they see and hear or to link information from different parts of the brain. These limitations can show up in many ways: as specific difficulties with spoken and written language, coordination, self-control, or attention. Such difficulties extend to schoolwork and can impede learning to read, write, or do math. (National Institutes of Health, 1993)

What are the types of learning disabilities? LD is a broad term that covers a pool of possible causes, symptoms, treatments, and outcomes. Because of this it is difficult to diagnose or to pinpoint the causes. Learning Disabilities can be divided up into three broad categories.

1. Developmental Speech and Language Disorders

Speech and language problems are often the earliest indicators of a learning disability. People with developmental speech and language disorders have difficulty producing speech sounds, using spoken language to communicate, or understanding what other people say. Depending on the problem, the specific diagnosis may be Developmental articulation disorder, Developmental expressive language disorder, and Developmental receptive language disorder.

• **Developmental Articulation Disorder** Children with this disorder may have trouble controlling their rate of speech. Or they may lag behind playmates in learning to make speech sounds. Developmental articulation disorders are common. They appear in at least 10 percent of children younger than age 8. Fortunately, articulation

disorders are often outgrown or successfully treated with speech therapy.

• **Developmental Expressive Language Disorder** Some children with language impairments have problems expressing them selves in speech. Their disorder is called, therefore, a developmental expressive language disorder. This disorder can take many forms. For example, a 4-year-old who speaks only in two-word phrases and a 6-year-old who can't answer simple questions have an expressive language disorder.

• **Developmental Receptive Language Disorder** Some people have trouble understanding certain aspects of speech. There's a toddler who doesn't respond to his name, a preschooler who hands you a bell when you asked for a ball, or a worker who consistently can't follow simple directions. Their hearing is fine, but they can't make sense of certain sounds, words, or sentences they hear. They may even seem inattentive. These people have a receptive language disorder. Because using and understanding speech are strongly related, many people with receptive language disorders also have an expressive language disability.

2. Academic Skills Disorders

Students with academic skills disorders are often years behind their classmates in developing reading, writing, or arithmetic skills. The diagnoses in this category include Developmental reading disorder, Developmental writing disorder, and Developmental arithmetic disorder.

Developmental Reading Disorder This type of disorder, also known as dyslexia is quite widespread. In fact, reading disabilities affect 2 to 8 percent of elementary school children. When you think of what is involved in the "three R's" -reading, 'riting, and 'rithmetic- it's astounding that most of us do learn them. Consider that to read, you must simultaneously:

- Focus attention on the printed marks and control eye movements across the page
- Recognize the sounds associated with letters
- Understand words and grammar
- Build ideas and images
- Compare new ideas to what you already know
- Store ideas in memory

A person can have problems in any of the tasks involved in reading. However, scientists found that a significant number of people with dyslexia share an inability to distinguish or separate the sounds in spoken words. Some children have problems sounding out words, while others have trouble with rhyming

games, such as rhyming "cat" with "bat." Yet, scientists have found these skills fundamental to learning to read. Fortunately, remedial reading specialists have developed techniques that can help many children with dyslexia acquire these skills.

However, there is more to reading than recognizing words. If the brain is unable to form images or relate new ideas to those stored in memory, the reader can't understand or remember the new concepts. So other types of reading disabilities can appear in the upper grades when the focus of reading shifts from word identification to comprehension.

Developmental Writing Disorder Writing too, involves several brain areas and functions. The brain networks for vocabulary, grammar, hand movement, and memory must all be in good working order. So, a developmental writing disorder may result from problems in any of these areas. For example, a child with a writing disability, particularly an expressive language disorder, might be unable to compose complete, grammatical sentences.

Developmental Arithmetic Disorder Arithmetic involves recognizing numbers and symbols, memorizing facts, aligning numbers, and understanding abstract concepts like place value and fractions. Any of these may be difficult for children with developmental arithmetic disorders, also called dyscalculia, problems with number or basic concepts are likely to show up early. Disabilities that appear in the later grades are more often tied to problems in reasoning.

Many aspects of speaking, listening, reading, writing, and arithmetic overlap and build on the same brain capabilities. So, it's not surprising that people can be diagnosed as having more than one area of learning disability. For example, the ability to understand language underlies learning to speak. Therefore, any disorder that hinders the ability to understand language will also interfere with the development of speech, which in turn hinders learning to read and write. A single gap in the brain's operation can disrupt many types of activity.

3. Other Learning Differences

There are also other categories, such as "motor skills disorders" and "specific developmental disorders not otherwise specified." These diagnoses include delays in acquiring language, academic, and motor skills that can affect the ability to learn, but do not meet the criteria for a specific learning disability. Also included are coordination disorders that can lead to poor penmanship, as well as certain spelling and memory disorder. (National Institutes of Health, 1993.)

What causes learning disabilities? No one knows what causes learning disabilities as of now. There are too many possibilities to pin down the cause of the disability with certainty. A leading theory among scientists is that learning disabilities stem from subtle disturbances in the brain structures and functions. It is more important, however, that families not dwell on the causes but rather move forward in finding ways to get the right help.

What is attention deficit disorder? Attention Deficit Disorder (ADD) and Attention Deficit/Hyperactivity Disorder (ADHD) are diagnoses applied to children and adults who consistently display certain characteristic behaviors over a period of time. The most common behaviors fall into three categories: inattention, hyperactivity, and impulsivity. People who are inattentive have a hard time keeping their mind on any one thing and may get bored with a task after only a few minutes. People who are hyperactive always seem to be in motion. They can't sit still and may feel constantly restless. People who

are overly impulsive seem unable to curb their immediate reactions or think before they act. (LD online, 1999)

Keisha should be given the opportunity to try out different types of technology that could help specifically with her reading, writing and math skills. Accommodations ranging from simple technologies like books on tape to more advanced computerized speech output devices as well as speech input devices could be used to aid in both learning and comprehension. Since Keisha has difficultly with attention to task, limited customized educational programs could be used to first grab attention and then engage her in small chunks of the topic areas in which she struggles.

Tech Point 3

Some of the accommodations used to help persons with learning disabilities are listed below:

Reading Partners – A very low-tech accommodation could be the use of a person proficient in reading that reads along with a less proficient partner.

Notetakers -- Usually a person who takes real-time notes on NCR (No Carbon Required) paper or using a portable word processing device. Currently, there are many standalone portable devices available on the market to choose from, ranging from full-featured word processing devices to simple one line display text devices.

Analog/Digital Recorder -- Analog tape recorders are useful for a variety of tasks in the Learning Disability community; recording reminders or notes, recording lectures, and capturing spoken information before actually trying to write it. Full-size tape recorders have the advantage of being cheaper, but have the disadvantage of being bigger and a little bulkier to handle. Micro-cassette recorders are much more compact and still permits you about the same amount of record time available on the larger format.

A digital (tapeless) recorder uses an integrated circuit to record and hold sound instead of metallic tape. This allows for random access to the stored information as opposed to sequential access on tape-based systems. Digital systems allow the user to access stored information much easier and a lot faster. They are generally more expensive than tape recorders. One disadvantage to average digital recorder in relation to the average analog tape systems is available record time. Generally, the digital recorder can only record for about 1/3 of the time of standard analog devices. Fortunately, this will not always be the case as digital systems capable of recording twice as long and the analog systems are beginning to emerge.

Books on Tape -- Available from two sources, text and pleasure reading on tape for people with difficulty reading.

Spellers/Thesaurus -- Software or stand-alone, pocket-sized devices that allow the user to look up a word or meaning with or without speech feedback. The only prerequisite is that the user must be able to "type" in the word.

Memory Aids Devices -- Devices that assist the user in cueing short-term memory. These aids are particularly necessary for user who cannot write legibly or spell well enough to recognize the word.

Word Processors with Auditory feedback -- By combining a word processor software package with a software package that reads information on the screen, the user becomes independently capable of editing and correcting their work. There are several word processing applications showing up on the market with integrated text-to-speak capability.

Word Prediction -- Software that assists a person with selecting the correctly spelled word. Can be used with speech. Stores words most commonly used.

[This is an example of word prediction software. The first letter "t" brings up a dictionary of the most commonly used words that start with the letter "t." In this case, the next word to be typed is "today", which is choice number 2. To choose the word "today" the user stypes in the number 2 and the rest of the word is placed automatically into the sentence being constructed.] imply

Screen Reader -- Special software designed specifically for the blind and low visions populations but found very useful for persons with Learning Disabilities as well. Screen reading software literally read aloud information contained on a computer using synthesized speech. When a screen reader is running, this synthesized speech is used to give a user screen orientation by reading aloud any onscreen text. Screen readers eliminate the need to use a mouse or any other pointing device; all system commands can be carried out by using the keyboard. **Speech Recognition/Dictate Systems** – Software or systems that allows a person to use their voice to dictate verbal information into a computer, which is then automatically converted to text. This can be an extremely useful tool for individuals who have writing difficulty because of spelling. An advantage to speech recognition packages is that they only recognize proper words when interpreting the user, so therefore; only correctly spelled words are posted to the program. Obviously, there are other issues surrounding making sure the program correctly recognizes what the user says, but putting that aside for now, we will assume that the user has properly trained their voice and is comfortable with how speech recognition works. Based on this assumption, you should quickly be able

to see how this could be an extremely powerful tool to help with word recognition for individuals with cognitive disabilities.

Pictures -- Can be drawn by the user or selected by the user from an array available.

Case Study 3: Sarah

Areas Covered in this Case Study:

• AT Applications

• Transportation

• Environmental Access

• Electronic Aids to Daily Living (EADL)

• Vocational Exploration

Tech Point 1

Tech Point 2

It was necessary to fabricate custom fixtures for Sarah because commercially available products were not available to meet her needs. When completing job accommodations, the following should be used as a guideline to the types of accommodations provided:

• Find an alternative way to perform the task. This can include job re-structuring and task modification.

• Utilize commercially available products.

• Use commercially available products in creative ways. In addition to searching disability-related products, check other catalogs not marketed towards the "disability market". These could be catalogs like "Damark" or other electronic catalogs. There are one of a kind products there that may have cross over use for customers with disabilities.

• Combine technologies not typically used together.

• Modify existing commercial devices.

• Design and fabricate custom devices. While this is sometimes the only option for certain situations, it is also the most expensive option.

Tech Point 3

There are several pre-driving assessments that are completed before a person can get behind the wheel of a vehicle. These include a **visual assessment**, a

perceptual assessment, a **cognitive assessment**, and a **physical assessment**.

A **visual assessment** includes tests for near and distance acuity; peripheral vision, scanning skills (this skill is needed to identify objects in the environment such as cars, signs, etc.); tracking skills (this is necessary in order to stay in lane while driving); accommodation skills (these are necessary to enable the driver to look down from the road to the vehicle controls and then back up to the road without becoming disoriented); rapid eye movement is needed to check constantly various things in the environment, such as speedometer, the road, hand controls; alignment of the eyes is checked to ensure that the eyes are working together.

A **perceptual assessment** is required to determine the ability of the brain to understand what the eyes are seeing. The areas that are focused on include: spatial relations; figure ground (this enables the consumer to differentiate objects in a crowded environment); visual closure will enable the driver to perceive the entire environment; visual memory allows the driver to remember objects they have seen before (traffic signs, etc.); depth perception assists with spacing between the driver and other cars, also needed for parking; and color perception helps distinguish objects in the driving environment.

The **cognitive assessment** looks to ensure that the candidate has good attention skills, decision making skills and good judgement skills. Evaluators also look at behavior patterns.

The **physical assessment** focuses on strength, range of motion, coordination, sensation, endurance and hearing.

Tech Point 4

There are several styles of vehicles that are modified most often. These include two door sedans, mini vans, full size vans, pickup trucks and Sport Utility Vehicles (SUVs). The type of vehicle a person chooses depends on the needs of the consumer. For an individual who will be transferring out of a manual wheelchair into the driver's seat, a two-door sedan may be most desirable.

Another option for someone transferring into the seat is a seat lift that enables a person to utilize a truck or SUV. Most times a truck would be too high to transfer into. This lift below is available from Bruno. It is operated electrically and lifts the consumer level with the seat. Then the consumer slides across to get in position to drive. The lift folds up so the door can close and also lifts out to enable other family members to drive the vehicle.

Tech Point 5

Primary controls are used to STOP (brakes), GO (accelerator) and STEER. Hand controls come in various configurations to meet the needs of the individual.

Tech Point 6

Lifts for vehicles come in many styles and shapes depending on the needs of the individual, the mobility device they are using and the environment the vehicle will be used in. The following are examples of the different styles of lifts.

Tech Point 7

Tech Point 8

There are modifications that can be made to a home with stairs to enable access to a family member with a disability. These interventions include a stair glide or even a small residential elevator.

Tech Point 9

Electronic aids to daily living are any devices used to control aspects of the environment for a person with a disability. This can be as simple as a large button remote control for a television or can be as complicated as a voice activated computer system that controls an entire environment, from security cameras to lights to audio visual equipment to the appliances in a home.

Electronic aids to daily living are somewhat misunderstood devices within the field of A.T., especially with some funding sources. For many years, these devices were categorized under the heading of Environmental Control Units. This caused much confusion with potential funding sources, many of whom were medically based. They would argue that controlling the environment was not "medically necessary" for individuals. This caused individuals to approach alternative funding sources for these devices. Vocational rehabilitation, Workers Compensation, and some private insurance companies were all possible sources for funding; as well as organizations such as the Elks, Rotary Club, etc.

The new name for these devices (EADL) is more descriptive of the functions of these devices, so professionals are hopeful for increased

Tech Point 10

Ceiling Mounted Track Lifts

Tech Point 11

Tech Point 12

As with any other accessibility modification, these types of modifications are very specific to the individual and the home environment.

Kitchen Modifications

Tech Point 13

Ramps are one option to provide access to homes or businesses. While some people think laying a piece of plywood over the steps constitutes a ramp, there are many considerations and guidelines that should be followed to ensure proper access.

While this 1:12 slope is in the ADA Accessibility Guidelines as a standard of a minimum slope, it is important to point out that these guidelines apply to public buildings and does not normally apply to private homes. While it is not applicable to private homes, these guidelines will ensure that the ramp is safe for use.

Other important guidelines for access to a ramp include:

• A ramp must be 36 inches in width.
• A ramp must have landings at the top and bottom that must be at least as wide as the ramp and at least 60 inches in length. If the ramp changes direction, the landing must be at least 60 inches by 60 inches.
• Railings must be continuous on both sides of the ramps and extend one foot past the end of ramp. There must be 1 1/2 inches clear space between the railing and the wall.

These are only some of the guidelines that apply to ramps, and it is important to check with local building authorities for codes that may apply in your community. For example, the New Jersey Barrier Free Sub Code states that a ramp must have a landing after each 15 feet of run, while the ADA Accessibility Guidelines (Federal Guidelines) state that the ramp must have a landing after 30 feet of

run. Ramps in New Jersey must meet the New Jersey Guidelines over the ADA Accessibility Guidelines.

Case Study 4: John

Areas Covered in this Case Study:
• AT Applications
o Description of Blindness and Visual Impairments
o Public Transportation
o AT for People with Visual Impairments and Job Accommodations
o Job Accommodations

Tech Point 1

In the United States alone there are 15 million blind and visually impaired people (Research to Prevent Blindness). Although the term "blind" evokes the image of someone with no sight, people who are "legally blind" often have some residual sight. A person who is considered "legally blind" if their central vision acuity in their better eye is 20/200 with corrective lenses or if their peripheral field is restricted to a diameter of 20 degrees or less, with central vision acuity of 20/200 or greater. An informal test for legal blindness is if the person cannot read the largest letters on an eye chart with corrective lenses.

The World Health Organization (WHO) defines impaired vision in five categories:

Low vision 1 is a best corrected visual acuity of 20/70.

Low vision 2 starts at 20/200.

Blindness 3 is below 20/400.

Blindness 4 is worse than 5/300

Blindness 5 is no light perception at all

A visual field between 5° and 10° (compared with a normal visual field of about 120°) goes into category 3; less than 5° into category 4, even if the tiny spot of central vision is perfect.

Color blindness is the reduced ability to perceive certain colors, usually red and green. It is a hereditary defect and affects very few tasks.

Contrast sensitivity describes the ability to distinguish one object from another. A person with reduced contrast sensitivity may have problems seeing things in the fog because of the decrease in contrast between the object and the fog.

According to the WHO there are over forty million people worldwide whose vision is category 3 or worse, 80% of whom live in developing countries.

Half of the blind population in the United States is over 65 years of age.

Tech Point 2

John uses several assistive devices to aid with orientation and mobility. John is part of only 2 % of legally blind individuals that use a guide dog for mobility.

A cane is an example of an **orientation and mobility (O&M)** product used by individuals with visual impairments. Only 35% of legally blind people use a white cane for mobility. An advanced version of the white cane is the laser cane. This device may appear to be the same, but it is extremely high tech. The user moves the cane in front of them, similar to a standard cane, and it emits infrared beams, which detect obstructions and drop offs. When something is detected, small pins under the users fingers project and vibrate to warn the user of the obstacle.

Other examples of O&M products include Braille maps, global positioning devices, Braille or talking compasses, as well as electronic navigation aids. A Braille map looks like a standard map but has raised areas to provide tactile feedback to someone without sight. These areas can have different textures to stand for different things (water can be a raised wave, walls would be solid lines, doorways would be dotted lines, etc.). Global positioning devices relay information to the user about where they are currently located and directional information of desired locations with great accuracy. These devices, which were very expensive, have come down considerably in price making them affordable for many people.

Tech Point 3

Transportation

Tech Point 4

Reasonable accommodations for an employee with a disability may include:

• Modifications or adjustments to a JOB APPLICATION PROCESS that enable a qualified applicant with a disability to be considered for the position such qualified applicant desires, or

• Modifications to the WORK ENVIRONMENT, or to the manner or circumstances under which the position held or desired is customarily performed, that enable a qualified individual with a disability to perform the essential functions of that position, or

• Modifications or adjustments that enable a covered entity's employee with a disability to enjoy EQUAL BENEFITS AND PRIVILEDGES of employment as are enjoyed by its other similarly situated employees without disabilities

Tech Point 5

Some other examples of reasonable accommodations include:

• Job restructuring

• Part time or modified work hours

• Reassignment to a vacant position

• Acquisition or modification of equipment or devices

• Adjustments or modifications to examinations, training materials or policies

• The provision of qualified readers or interpreters

• Making existing facilities used by employees readily accessible to and usable by individuals with disabilities

• Other similar accommodations for individuals with disabilities

The computer modifications he had included a braille keyboard and a screen reader program. These modifications, along with his adapted workstation, enabled John to complete his job at the same level as his fellow

Tech Point 6

Many employees require workstation modifications to enable better physical access. People who use mobility devices often need work stations raised to allow access.

Tech Point 7

An employer does not have to make the accommodations if they feel that this would be an "undue hardship". This is defined as any modification that will cause significant difficulty and/or expense. There are several criteria used to determine undue hardship.

• Nature and net cost of the accommodation

• Overall financial resources of the site or sites involved, number of persons employed, and the effect on expenses and resources of the site.

• Impact of the accommodation on the operation of the entity making the accommodation.

This can get to be a very complicated process to determine which accommodation is an undue hardship but the most important thing to remember is that the EMPLOYER must prove that the accommodation would be an undue hardship, not the employee proving why the accommodation is needed.

If an employee feels that an employer should make an accommodation but they refuse, the employee can file a claim with the Department of Justice, EEOC.

Many employers think all job accommodations will be expensive modifications. That is not normally true, as is evident in these statistics from the Job Accommodation Network :

• 19% of accommodations cost over $1000

• 81% of accommodations cost under $1000; of these….

• 31% of accommodations have no cost

• 19% of accommodations cost between $1 - $50

• 19% of accommodations cost between $51 - $500

• 31% of accommodations cost between $501 - $1000

Of the accommodations provided, the following is the breakdown of the types of accommodations provided:

• Training / Transfer - 14%

• Special equipment - 15%

• Accessibility - 21%

• Task modifications - 23%

• Co-worker orientation - 27%

Tech Point 8

When providing job accommodations for employees, the most cost effective accommodations are those that can be accomplished with off the shelf commercially available products or materials that are already on site.

The following is a list of accommodation strategies, from the simplest to the most complex.

• Find an alternative way to perform the task. This can include job re-structuring and task modification.

• Utilize commercially available products.

• Use commercially available products in creative ways. In addition to searching disability-related products, check other catalogs not marketed towards the "disability market". These could be catalogs

like "Damark" or other electronic catalogs. There are one of a kind products there that may have cross over use for customers with disabilities.

• Combine technologies not typically used together.

• Modify existing commercial devices.

• Design and fabricate custom devices. While this is sometimes the only option for certain situations, it is also the most expensive option.

Tech Point 9

An **IWRP (Individual Written Rehabilitation Program)** is a document that is written between the VR counselor and the individual to determine what devices and services are needed to ensure success for the individual at a job. Once his IWRP was completed and John agreed to it, the next step was to begin the assessment process to culminate with the acquisition of the assistive technology John will need to meet his job responsibilities. Click here to go to John's IWRP.

Tech Point 10

Division of Vocational Rehabilitation Individualized Written Rehabilitation Program

Client Information

Client Name: John Social Security #: ***-**-**** Date of Birth: Address:

Diagnosis: Blind, since birth Secondary Diagnosis: n/a

Certification of Eligibility

• Vocational Rehabilitation Services: Eligibility has been established for vocational rehabilitation services on the basis of a disability which results in a substantial handicap to employment and the expectation that the rehabilitation services will improve employability.
• Extended Evaluation Services: Eligibility has been established for extended evaluation services on the basis of a disability which results in a substantial handicap to employment and a trial period of vocational rehabilitation services is needed to determine employability.

Type of Program Being Reported

• Initial Program

• Major Program Revision

Vocational Goal and Expected Completion Date

Technology Support Person, Dept. of Governmental Affairs Has already been hired; waiting for assistive technology recommendations

Intermediate Objectives

• Participate in assessment to determine assistive technology interventions

• Acquire assistive technology devices

• Ensure all employment-related resources are in an accessible format.

• Modify any barriers in the work environment.

John's Technology Assessment using the FAP Process

This assessment followed the outline shown in the Fundamental Assessment Process. At any point in this case study, you can click on the header for each section of the FAP, and be brought back to the corresponding explanation we previously discussed in Module 2.

Tech Point 11

A Job Analysis is completed to enable the team to match a potential employee to an appropriate job by determining the qualifications an employee must posses to complete the essential functions of that job.

The essential functions of the job are the tasks and / or activities that actually constitute the job. It is important to determine if these tasks are really necessary to the completion of the job.

A job analysis is broken down into the following areas:

This information was taken in part from a fact sheet titled "Job Analysis - An Important Employment Tool" by the President's Committee on Employment of People with Disabilities, October 1994

What does an employee do? - This information will come from the job description or job profile provided by the employer. This will list the functions of the job and expectations of the employer. Although a job may not seem like a good match from looking at a job description, it is important to go through the remainder of the job analysis because it may show that some areas listed on the job description are not essential to the job and may be able to be shared or switched with other employees.

How does the employee perform this work? - This section is used to determine the tools available to enable the employees to complete their tasks. A good suggestion during this stage is to follow another employee through the stages of the same or a similar job.

Why is the work done? - By this we mean, how does this job relate to the overall objective of the organization. It is important to see how the employer feels

about this job and its relation to the product or service provided. This is always a fun question to ask employers because it catches many off guard. Sometimes an employer may answer this question by saying, "Because we have always done this." Or "I don't know - it was done this way before I got here." These types of answers may indicate that an employer needs to re-evaluate the job and its' importance to the organization.

How often is this work done? and **How much time is spent doing the tasks?** - This is important to consider for employees who may take more time performing various tasks. It is important to determine the pace of the work and whether there is a match between this factor and the abilities of the employee. Find out from the employer what happens if the task is not completed on time. If the employee doesn't finish their task, does that effect the completion of another task down the line (like an assembly line). Also, determine if tasks performed less frequently are as important as tasks completed more frequently. This would enable the employee to move to tasks that better match their abilities.

What skills or abilities are needed to perform the job? - Employee abilities needed for the job would include the ability to sit, stand, stoop, lift objects, etc. Another area under employee skills may be the ability to read or write. Find out if the job requires specialized training (i.e. to operate specialized equipment, etc.) and if previous work experience can replace some of this training.

This area of the job analysis is critical because it provides a guideline for the match between the employee and the job - matching the employee to the essential functions of the job.

Where is the work done? - This area covers more than just the location of the job, it also includes job site conditions, organization, and movement.

• Location - This is the obvious question to ask in this section. But an important thing to consider is could the essential functions of this job be carried out somewhere else or do they need to by completed at this location.

• Conditions - There are two conditions to the job that this refers to: physical conditions and social conditions. The physical conditions of the work site include: hot, cold, inside, outside, underground, dirty, greasy, noisy, etc. This is an important consideration for employees who may have allergies or cannot work in certain environments. It is important to ask these questions in order to avoid surprises once the employee starts the job. Social conditions are equally as important and many people overlook this area. Social conditions refer to the personnel involved with the employee (i.e. works alone, works with others, works in public, works under close supervision, works independently, works under deadlines). We all know people (probably even ourselves!) that wouldn't like to work in some of the

environments discussed above, so we have to be aware of this when looking at potential job matches.

• Organization - This refers to the safety and efficiency of the work place organization and is there any room for adjustments to accommodate the individual. Some work sites will not be able to be modified due to safety concerns and the team will have to be aware of this. An example of this would be a machine shop with large power tools. These tools are all set up with safety devices on them to prevent injuries and removing the safety devices or moving around the parts of the tool would raise the potential for injury of the individual and others.

• Movement - In this area, the team addresses where all the work is completed. Does the individual need to move between various work sites to complete a task? If so, this job may be a problem for someone with a mobility impairment. If an employee with a mobility impairment has to use all their energy getting between work sites, there will be no energy left to perform their job.

While this whole Job Analysis process seems too involved, it is much easier to go through this in the beginning than have to scramble after an employee gets the job. There have been many instances where teams have not gone through this thorough process up front, and the individual suffers, either by not performing up to their capabilities or worse, by getting fired. It is important not to set up the individual for failure because the up front process seems long and too involved. This reflects poorly on the individual and employers may then be reluctant to hire other individuals with disabilities.

Case Study 5: Ed

Areas Covered in this Case Study:

• AT Applications

- Description of Levels of Hearing Loss; Individuals who are Deaf; Deaf Culture
- Assistive Technology for Persons with Hearing Impairments
- Assistive Listening Devices; Interpreting; Captioning
- Hearing Aids

Tech Point 1

There are two types of hearing loss, conductive and sensorineural.

• Conductive Hearing Loss is due to abnormalities of the outer or middle ear, around the location of the eardrum and "ossicles" (hammer, anvil, and stirrup). Some common causes of this are fluid in the ear, wax build up and stiffening of the middle ear bones. Many of these conditions lend themselves to surgery or correction because there is no neural damage with these conditions.

• Sensorineural Hearing Loss is the most common type of hearing loss and is typically found in cases of aging hearing loss, hereditary hearing loss, noise damage, and results of medical conditions. These are caused by damage to the sensory and nerve structures of the cochlea. This type of hearing loss may be accompanied by tinnitus (ringing in the ear) or vertigo (dizziness). People who have this hearing loss have trouble hearing in crowded places and the loss is gradual, usually in the higher frequencies.

Case Study 3

Case Study 4

Case Study 5

Case Study 6

Module 4

Module 5

Module 6