Proceedings

of the

2nd Annual

Pittsburgh Employment Conference

for Augmented Communicators

PEC@ '94

August 12-14,1994

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PREFACE
The 2nd Annual Pittsburgh Employment Conference for Augmented Communicators, PEC@ "94

Building on the Foundation

SHOUT is a non-profit corporation whose mission is the study of and advocacy for the employment of people who rely on augmentative communication. It is pleased to further this mission by sponsoring PEC@ '94.

Last year's Pittsburgh Employment Conference for Augmented Communicators, PEC@ "93 laid a foundation for the study of employment issues as they relate to the augmentative communication (AC) community. PEC@ '93 also caused a substantial increase in the AC community's awareness of employment issues. The distinguished *Augmentative Communication News (ACN)* devoted its fall issue to employment topics and a review of the Conference. *Communicating Together,* a quarterly magazine about **AC,** reprinted one of the *PEC@ '93 Proceedings* papers in its September, 1993 issue. That same issue devoted its front cover and its feature article to the Conference itself.

The current issue of *Communication Outlook,* an affiliate publication of the International Society for Augmentative and Alternative Communication (ISAAC) features a photograph from the Conference on its front cover as well as having a description of the Conference written by SHOUT Board Member, Jim Prentice, as its lead article.

As a result of PEC@ '93, a series of employment papers will be presented this fall at the Biennial Conference of ISAAC in Maastrict, Netherlands. SHOUT is gratified by the response of the AC community to PEC@ '93.

PEC@ '94 is now building on the academic and social foundations laid last year. Clarifying discussions, interesting statistics, and practical suggestions from last year's Conference guided SHOUT in its work this year. In particular, an experimental style sheet has been circulated to facilitate interaction among natural and augmented communicators. PEC@ has a commitment to equal interaction among augmented and natural communicators. Interacting in a group which encourages give and take among natural and augmented communicators may be a new experience for many of us.

The Acme of PEC@ '94 is Breaking the Barriers to Employment. Authors were asked to explore, in their differing presentations, particular barriers. Social, academic, legal, attitudinal, funding, training, and economic, these barriers are described in various contexts and a variety of approaches are suggested. Various perspectives, multicultural and international, business and engineering compliment papers written by scholars, developers, therapists, and augmented communicators. The hope of last year's conference was to provide a Focus and Synergy on employment for the AC community. PEC@ '94 will use that focus and synergy and expose the barriers to employment in our mutual deliberations.

Welcome to this year's Conference

Bruce Baker
PEC@ '94 Chairperson

PEC@

1994

Platform Presentations

'Children who need to use augmentative communication from the pre-school years have historically not always been considers candidates for employment, and, as a result we who work with them have unintentional built barriers.' Faith Carlson, in "How Can You Expect to Get a Job if You Don't Start Pre-School?" PEC@ Proceedings, 1994, p.

Attitudes as Barriers to Employment of AAC Users:
Research and Personal Perspectives
A Presentation to the Second Annual Conference on
Employment of Augmentative/Alternative Communication Users Pittsburgh, PA
August 12, 1994
by Mick Joyce

Introduction:

I am an augmentative/alternative communication user. I use a computer voice to speak to people who don't understand my normal speech. For about 10 months, since my last job ran out of funding, I have been looking for work. I am blessed with qualifications. There are my two master's degrees, ray 15 years experience in planning, and my computer skills. Still, at the time of this writing, I have no job.

So I have come to the conclusion that there must be something wrong. As it turns out there are many barriers to my employment. Madison Wisconsin is a highly competitive city. Every Tom. Dick and Harry wants to work in Madison. We have over 40.000 University students. Most want to stay here, at least for a few years, after they graduate. This is true even though the job market is very limited. State government is the main business and major employer in Madison. Twenty-one percent of the work force is employed by the state. Being a state capital, politics enters the employment picture at every turn. More often than not, the deciding factor in finding employment in Madison boils down to "It's not what you know. but who you know." However, in my own particular situation, there is an even stronger force acting as a barrier to employment. This is the attitude some people have towards people with disabilities. These attitudes are reflected and deflected, bounced at me like a short hop to the short stop. Sometimes I am able to get rid of the ball in quick order, perhaps even making a double play, and sometimes not. It remains

in my glove, turns to Silly Putty, melts in the hot sun, and becomes a part of me. This has a double effect and reduces even more my chances of landing a job.

Attitudes come into play in all employment situations. This is especially true of people with disabilities, in particular those of us who use assistive device technology to communicate. In the brief time we have together this morning, we will look at both the academic and personal sides i this important issue.

First we will examine the research, mostly from the field of social psychology, that addresses attitude formation, attitude stagnation, and attitude change. This will lead into a more narrowed discussion which will shed light specifically on how attitudes remain as significant barriers in employment of people with disabilities in general and augmentative communication users in particular.

In the second half of the presentation I will examine the "other side < the coin." that is, the attitudes that people using augmentative communicate devices often have towards the employer. I will, in this part, discuss such things as poor self-image, self-fulfilling prophecies, and un forgiveness. Since not much research exists in these areas, this part of the discussion will be based on personal experience more than research.

Throughout the paper, as you will see. I will slightly season the discussion with anecdotal material, examples, and humor. I believe that this is the best way to talk about a topic that may evoke stress, guilt, blame, self-realities, and a degree of emotional arousal. Because of limited space, (time of the actual talk) I will only have time to touch briefly on the above topics. Hopefully, this will inspire you and me to read more about attitudes,

examine our own perspectives, and make needed changes in our thought processes. Through these mechanisms both professionals and consumers will hopefully break archaic "mind sets" that act as barriers to employment.

Attitude Formation:

The field of genetics has not yet been able to find a gene where all attitudes are stored. Experts still rely on social psychology and social learning theory to explain how our attitudes are formed. Attitudes towards people with disabilities are formed like attitudes about fat people, tall people, people of a different race or any other group. At a very early age children learn to react to people by social observation and modeling. Observation serves as a platform for new experiences. Children are exposed to others at a very rapid rate during the first five years of life. This exposure helps the child acquire some sense of mastery over the environment. It also helps children learn to accept or reject people in a consistent manner (Elliott and Byrd. 1982).

Social modeling helps form a consistent pattern of reaction to people that are different from oneself. We tend to model behavior from many different sources. Our parents, day care workers, peers and television are only a few sources of early modeling. It is important to remember the three major components of attitudes.

The first is cognitive: we think about what we see. The second is affective: we react emotionally to the stimulus. The third is behavior, where we act out our emotional reaction to what we see. Our emotions and behavior vary a great deal depending on our perceptions of what we see. A small child's reaction to King Kong, for example, may be different from that of another toddler of similar social background. And as children get older they

are often guided toward what others may feel is the proper way to behave. For example, it is not proper to stare at .people in wheelchairs. This type of teaching disrupts normal learning and behavior, and thus may be a catalyst to mal-adaptive behavior and negative attitudes.

Attitudes are formed fairly early in life. If we don't see the stimulus, we associate it with a like stimulus. For example, a child may not see someone use a communication device until they're sixteen, but they associate it with something else like a wheelchair. Wheelchairs are usually associated with sickness and therefore take on a negative sense, although the behavior may be suppressed.

Attitude Stagnation:

Attitudes once firmly established are difficult to change. This stagnation is especially evident with attitudes formed during a traumatic event. For example, one of the child's grandparents may have been in a wheelchair just prior to his/her death. Therefore, the wheelchair is associated with pain, grief, and death. Attitudes formed in this way are extremely hard to change.

Even as adults, we form attitudes out of bad experiences. I recently had an extremely overweight supervisor. I perceived her as lazy, short sighted, and uncaring about the opinions of her employees. We "had it out" a few times and when a budget cut came, I was the first to go. Even with ray knowledge of attitudes, it would be very difficult for me to work for another overweight person. We are all guilty of this type of over-generalization. **Attitude** Change:

Attitudes are sort of like a bowl of gelatin. While outside the refrigerator, one may mix Cool Whip with it and do various other things to

create an augmentative dessert, one that communicates all kinds of dreams, desires, taste. Once put into the refrigerator, however, it doesn't take long for it to set; afterwards it's impossible to change. Of course, people are not gelatin desserts, and attitudes can be changed. However, with advancing age, it becomes increasingly difficult to do so.

Since small children are watching ever-increasing amounts of television, it's helpful for characters such as Barney, Big Bird and Mr. Rogers to project positive images of people with disabilities along with other minority groups. This supplements the feedback from parents and other family members. Parents and others close to the child express varying behaviors (actions, words, tone of voice, gestures, etc.) that he/she models (Livneh, 1982). Rearing practices that stress the significance of health and normalcy also result in an aversion towards people with long-lasting physical conditions. The least little deviation (such as weight) can be cause for great alarm. This is why Barney and similar characters stressing unconditional love and acceptance are so popular with young children.

Attitudes and Disability:

If nothing else, the past few pages indicate that attitudes towards people with disabilities are not all that positive. Indeed, research cited by Livneh and others tell a grim tale. Very few studies are concerned with a single disability group, such as AAC users. Most lump all disability conditions together, from a slight case of Cerebral Palsy to severe mental illness. Although this can be viewed as a flaw in the research, it still has some valued insights.

Attitude studies that pertain to people with disabilities usually use the Attitudes Towards Disabled Persons Scale, the Attitudes Towards the

Employability of Persons with Severe Disability Scale or some other such test that measures attitudes. Along with these tests a general demographic profile is taken for each participant taking the test. Other tests may also be given, depending on the researchers' interest. These tests may include personality inventories, social distance scales, and company policy inventories.

Two variations in study design are most common. The first is just a single administration of tests. The second requires researchers to give the attitude test two or three times: a base line test is given to see what the subjects' initial attitudes are. Then subjects are provided with some contact with people with disabilities (live panel discussion of people with disabilities or video tape) before the primary test is given and again after the exposure. Sometimes a third test is administered at a later date to see if attitudes remain constant over time.

These studies sometimes lead to interesting findings. For example. females have a tendency towards more positive attitudes than males (Livneh 1982, Levy. et al., 1992). Other demographic factors include:

- Age - the very young and very old had more negative attitudes.
- Race - whites had better attitudes than other races.
- Education - more education is associated with improved attitudes.
- Income - the higher the income the more positive the attitude.

Along with demographic factors, researchers (listed in Livneh. 1982) have cited a long list of personality traits that seem to be associated with attitudes towards people with disabilities. Without listing them all, most relate to self-worth. In other words, people who feel good about themselves usually feel good about other people, including those with physical conditions.

By far the biggest predictor that shows up in almost all studies is contact or lack of contact with people with disabilities. For example, subjects with family members with disabilities have significantly higher scores (an increased degree of positive attitude) than subjects without disabled family members. Employers having had prior experience with people with disabilities are more likely to have more positive attitudes than employers without any (Levy. et al., 1992). Medical students have more positive attitudes towards people with disabilities after four years of school than before (Paris, 1993). Introduction to Psychology students had more positive attitudes after watching a video about people with disabilities than students who listened to an audio tape. Moreover, students who watched an actual discussion live had even higher attitude scores (Livneh. 1982). Structured contact is more helpful in changing attitudes than unstructured contact because it is less anxiety-provoking. Finally, many researchers have shown that so called "equal status" contact, between workers with disabilities and those without, are the most powerful in changing attitudes.

Perhaps more significant for augmentative communication device users are the disability related factors associated with more positive or negative attitudes (Livneh, 1982). A list of indicators that lead to less positive attitudes follow. Note that most of the factors are associated with MC users.

^ Less perceptual functionality of disability
^ High level of severity
^ High degree of visibility
^ High degree of cosmetic involvement
^ Number of body parts affected
^ Perceptual contagiousness
^ Higher degrees of perceptual unpredictability

With these factors in mind it may be a while before we see an AAC user depicted as a greeter in a Wal-mart advertisement. On the other hand. many augmentative communication users hold important positions. Bob Williams is a fine example. I have had good jobs in the past and expect to hold them in the future. The research on contact, perhaps, holds the most hope for AAC users. The passage of accessibility and civil rights legislation sets up a cycle. As more inclusion laws are passed social interaction increases. In turn this leads to improved attitudes toward people with disabilities which in turn lead to enabling disability policy that leads to more legislation. As AAC users, we need to find a catalyst to speed up this cycle.

Self-defeating Behavior:

In the remainder of this discussion we will focus on attitudes we, as augmentative communication device users and people with disabilities, may have that can act as barriers to employment. Since there is little research on this topic I will have to rely on my own experience for most of the discussion. I have chosen three of my most self-defeating behaviors for discussion. I want to let the reader know, however, there are more than three in almost every case.

The first is a poor self-image. It is documented in the literature that all minority groups emulate attitudes of the general public with respect to our group (Livneh). In the case of people with disabilities, we are supposed to be helpless, hopeless, unattractive, and truly pitiful creatures who suck up government resources like a sponge. Part of this attitude is due to the role people with disabilities, in some cases, are forced to play in order to access what other "whole" people are automatically entitled to. Buying into the mentality of ourselves as being diseased, or sick. dictates to ourselves

and others that if we only did the right things, we would be "cured." This mind set portrays individuals with disabilities as passive recipients at the mercy of their environment (Lynch and Thomas. 1994). People think we have no choices, no options, no alternatives. If we're given an opportunity, for example, provided with a job (even though we had to fight tooth and nail for it), we should be grateful until the end of time. The trouble is some people with disabilities start to believe what others say we're supposed to be like and never really develop our own character. We get trapped in our own melancholy.

The media is the chief reinforcer of these attitudes (Elliott and Byrd 1982). If people with disabilities are not looking for hand outs, or waiting patiently for a doctor to cure them, a lawyer to win a case for them, or a teacher to marry them, they are psychopathic killers taking out all the wrongs society dealt to them with a round of gun fire. This bipolar portrayal of roles only gives us pathological role models, all but removed from reality. Very few of us are extremely good or extremely evil.

People with disabilities, especially when searching for employment, must be careful not to act the way they are expected to act - particularly in the interview situation. We don't want to continue to reinforce stereotypical behavior patterns. Furthermore, very few employers (except maybe Bob Packwood) want to hire a helpless, hopeless, passive, co-dependent adult. On the other hand. if a job seeker with a disability acts somewhat aggressive, he or she may be seen as too aggressive. This may put the person with a disability in a "catch 22" situation. The best policy is to not act at all in the sense of playing out a role one way or another. What needs to be worked on is our attitude of ourselves so we are seen as we truly are and not as we

are expected to be. This may not lead to immediate employment, but over time the job seeker will "mellow out" and find out what works.

The second self-defeating behavior I want to touch on is self-fulfilling prophecies. We are all aware that we have the habit of predicting the outcome of an event before it happens. This prediction may influence the actual outcome. Very little research exists on this as it relates to employment of people with disabilities. But research on cancer and other illnesses show that people get pretty much what they expect. For example, when told they had cancer, researchers ask subjects what they expected. A very significant number who expected death managed to die within a year.

In employment situations, expectations rub off on the employability of people with disabilities. Many of us looking for jobs for long periods of time have been told "no" far too often. It is sometimes difficult to maintain a positive attitude as we come to expect the negative response. I always say "expect the best, be prepared for the worst." Of course, that's easier said than done.

I have a special problem with this one. As a planner. I am trained to be realistic and predict outcomes. I don't want to be seen with my head in a cloud, applying for jobs for which I am not qualified. Often tines employers see qualifications different than I do. I read the job description and if I meet the qualifications, I apply. Sometimes I think that employers, at least in Madison, expect more than they write on the position description. Or maybe they hire more on personality than qualifications.

The hardest topic I saved (or put off) for last. For me it's unforgiveness. In the last ten years I have applied for over 200 jobs. In my career I have held over ten jobs. The major reason for my release has been

blamed on funding cuts. I "did a fine job" they say, "but we're out of money." Sometimes I understand. Other times it has been a case of sloppy management, a lack of vision, and the reckless use of funds. In these cases I have found myself feeling increasingly bitter. When I see this taking place during the course of a job I can rarely express my feelings; that would be disloyal. But the feelings do come out, sometimes at national gatherings such as this one. Eventually, my comments make it back to the employers who hired me who seem to cop the attitude of "We gave him a job. He should be grateful to us forever." So what am I to do? Sometimes you need to just shoot the horse and move on.

There are elements of stress and negative energy in all forms of self-defeating behavior. We want to eliminate it as much as possible. But first we have to learn to identify it. Most of us have only so much energy. To drain it on negative emotions would be like the recent national media fixation on the problems of O.J. Simspon instead of staying focused on health care reform.

Attitudes - ours and those of others - and self-defeating behavior are indeed big barriers towards the employment of people with disabilities and AAC users in particular. They are mountains in our mind that we often make bigger than the physical conditions themselves. But with faith the size of a mustard seed we can put our knowledge to the grindstone. Our choice is therefore much simplified: either let the stone grind away your resolve or serve to sharpen it. We, as AAC users, must continue use to every tool we can, including public policy, laws or even our psychological jackhammers to keep hammering at the wall of illusion that separates us from the rest of "normal" society.

Only in this way will the walls come tumbling down. It's time to circle the wagons.

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Overcoming Academic and Lifestyle Barriers in Making the Transition from High School to College

Jennifer Lowe, Senior, Edinboro State University, Edinboro, Pennsylvania Dennis Hollman, Sophomore, Edinboro State University, Edinboro, Pennsylvania

The following two personal statements are addressed to anyone interested in understanding the transition from high school to college for augmented communicators. Both of us authors have professional careers as goals. Education is an important part of such a career. Although professional careers are only a part of the types of employment opening up for augmented communicators, we felt a description of professional preparation would be a contribution to the understanding of employment in the augmentative communication community.

We would also like to express our enthusiasm for the educational experiences we have had at Edinboro State University. The Office of Disabled Student Services (ODSS) is an extraordinary support service within the University. Serving more than 135 people with various disabilities, the ODSS counts among its student 9 augmented communicators.

We would like to express our appreciation to the Vocational Rehabilitation departments of New York and Pennsylvania for funding our education and the assistive technology which enables us to communicate and have mobility.

The existence of voice output communication systems have had a major impact on both of our lives. It is a part of the reason we have confidence in our professional futures.

Jennifer Lowe

I have used augmentative communication since I was a child. I am familiar with letter boards, word boards, and Bliss boards. I have been using voice output communication since I was in high school. The remarks I have prepared are in the form of practical suggestions for other augmented communicators and professionals advising augmented communicators.

How to handle personal care worker's varying demeanor

Everyday I deal with a lot of Personal Care Workers [P.C.'S] Each have a distinct personality and sometimes they have unkind demeanor. First, I ask the P.C. how they are. Depending upon how they respond, indicates to me how I should proceed. If I get "not so good..." I try to sympathize with them. As I'm sympathizing, I ask them to do what I need. "That's too bad. I understand how you must feel...would you please...." After the task is done, I say "Thank You", and still be willing to listen. Chances are that they won't stay but hopefully they'll realize I care.

How to assert one's opinion with an older individual

This is most difficult, when you're younger than the person you are talking to. You don't want to force your opinion and yet, have it heard. You want to present your opinion in firm way without disregarding that theirs might be better. "I understand why it's like this, but it's difficult for me doing it that way. If I could suggest..." Having such language prestored in your system can be helpful.

How it's all right to say "No"

There are times when you should say no to people, for example, if someone asks you to go out but you have an exam the next day. Another example would be if someone important asked you to speak somewhere, but this would mean that you'd miss a class which you're struggling in. If the individual is older than you, you can't let that convince you to say yes. You have to take care of yourself. In these cases, it's all right to say no in a polite fashion. I would say "I'm sorry,...! can't do...because.... Remember, you get more from sugar than from something bitter. An augmentative communication system is a crucial ingredient in being able to say "No" and keep a friend.

How to schedule yourself; homework, personal needs, eating

I have to schedule myself enough time to accomplish certain things. In my mind, I have to plan my day out from the time I wake up until the time that I go to bed. It's really easier than it sounds. The students with disabilities at Edinboro are allowed to schedule their classes first. Once I have my class schedule, I can decide when I'd like help with homework for the entire week. With my personal needs, I anticipate when I'll need certain personal tasks done. However, scheduling isn't rigid. When I need something done that isn't written down, like an emergency bathroom, it's okay.

Dennis Hollman

I have been a student at Edinboro University in Pennsylvania for the past two years. In these years, I have encountered numerous barriers academically and socially. The ones I want to look at in this short essay are some academic problems related to communication disability. It may be obvious to everyone here, but I would like to state it anyway: A communication disability is the most significant disability an individual can have. It goes far beyond problems caused by difficulties in mobility or difficulties with handling objects. It interferes not only with my ability to do things, but my ability to be perceived as a person, and my ability to gather and provide information.

When I first started going to college, one of the things I was concerned about was, "Will the faculty and staff be courteous enough to give me sufficient time to get out what I need to explain?" At first they weren't patient at all. They would ask me something, and when they saw me programming my response, they would walk away, because I believe they thought I was playing a game. They tended to ignore the words coming out of my augmentative communication system, and they seemed impatient. I can't really explain their behavior, because they were plainly hearing the voice output.

I was able to correct this situation somewhat over time by constantly interacting with them. My communication aid definitely helps me establish myself as a thoughtful person, fully aware and taking things in. Nevertheless, there are still problems.

I think that in order to make people become more tolerant of slowed communication, we must just ask them to wait. In fact, it is often necessary to use a prestored sentence like "Wait a couple minutes while I program what I want to say." I generally do not use preprogrammed sentences. They never say what you what them to say, they feel weird when you use the same sentence more than once with the same person, and I don't usually remember what sentences I have quickly enough to use them when they are appropriate.

So except for public presentations, I access my vocabulary through words, not prestored sentences.

However, there is nothing like a sentence for getting person's attention. I must confess that I am more than a little frustrated about some people's unwillingness to give me the time I need to talk. And, I say this as a relaxed augmented communicator who talks at a fairly rapid rate.

In the last two years, I have found it somewhat challenging to communicate with my teachers in academic settings, because either they don't have the time or they don't have the patience. And some of these times, I had something important to let them know or some important question to ask on a certain assignment, or I needed to ask to come in for extra help. I realize I may have missed important opportunities and need to grow in terms of style and assertiveness. Nevertheless, some social attitudes are hard to overcome.

This past spring, I had lots of questions in my psychology class that went unasked and unanswered. For instance, after the last class before the final, I even tried to stop the professor. He couldn't stop to meet with me, because he had a meeting to go to. I just wanted to make myself understand something important he had said, because I was confused.

This had happened before on other occasions and with other instructors. I had some academic problems last year, and although everyone tries to blame everyone else for his or her own problems, I believe I have a legitimate issue here. I think we should make these professors aware that there may be times when we have a question or we may need help sometime during the semester. I am not quite sure how to deal with this problem. I don't want to alienate the faculty, but I have got to do something. If we, as augmented communicators, don't try to make them understand that we may need to meet with them, it is only going to make things harder on us.

In conclusion, augmented communicators have to deal with these problems head on to clear our own paths to success! The only way we can achieve success is to communicate our needs and our rights to whomever we need to. We may need to speak directly. May it be a professor, friend, or an attendant, because we know we are going to have a rougher time than usual.

AAC devices are "external devices," and will be identified as such in the congressional report discussing this section. This re-definition of the prosthetic device definition is now included in both the President's and Senator Kennedy's proposals.

In assessing the quality of any health care proposal, people should weigh first whether the plan states covered services, and should be extremely wary of any plan that leaves the identification of services to other decision makers and another time. In addition, people should inquire specifically whether any plan that does specify covered services includes the definition of prosthetic devices stated above.

AAC Evaluations & Selection

Another section of the Health Security Act should provide coverage for the initial AAC evaluation and selection/ recommendation process. It is here, however, that a gap now exists in the scope of proposed coverage. And it is essential that efforts be undertaken by people with severe expressive communication disabilities to re-word the scope of the benefit.

Section 1123, titled "Outpatient Rehabilitation Services," includes "outpatient speech pathology services for the purpose of attaining or restoring speech." While this benefit is more appropriately identified as "speech language pathology," this is not a substantive barrier to coverage for AAC evaluations. Nothing in this language excludes restoration of speech through

achieve AT access and funding reforms. Medicaid, education and vocational rehabilitation programs must be targeted for efforts to achieve "systems change" which is defined as permanent changes in program structure and operation that result in expanded access and funding for AT devices and services.

In addition, Congress also mandated that the AT projects provide funds to their state Protection & Advocacy programs to assist with their systems change activities. The P&As will be providing individual representation to people needing assistive technology in administrative proceedings and in judicial appeals.

Medicaid AAC funding denials and policy barriers are precisely the type of issue to which both the AT projects and the P&As should be directing their attention.

In addition, no later than October 1994, the federal Education Department will be establishing a new national support center related to assistive technology, which will have a primary focus on expanding AT access and funding. A central priority for this new technical assistance project should be elimination of remaining Medicaid and other third party funding program barriers to AAC devices.

Conclusion

People with severe expressive communication disabilities continue to be subjected to extraordinary discrimination by third party funding programs in regard to their access to AAC devices and services. But ongoing progress is being made, and the pace

How Can You Expect to Get a Job if You Don't Start in Pre-School?

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Unity, ME
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Children who need to use augmentative communication from the pre-school years on have historically not always been considered candidates for employment and as a result we who work with them have unintentionally built barriers.

Whether we are aware of it or not we are all in the business of making or breaking barriers to employment from the time a child is born. The children themselves, parents, therapists, teachers, and even disinterested parties are often busy building barriers in the guise of helping. In the early days after diagnosis or onset of a condition which may cause the child to have need for augmentative communication, so much is happening that the seeds for the skills needed later in employment settings are often ignored, forgotten, or sabotaged by good intentions. We need to look at this first generation of children, now adults, who started their preschool years using formal augmentative communication systems and learn from what was done which actions might have created barriers and which actions appeared to have built pathways instead of barrier walls.

Ideally we need a lifetime to study the effectiveness of any intervention or teaching strategy, in reality that is not possible. Working and interacting with people is an art or at best a very inexact science rather than a true science. What we strive for in communication is creative spaces between the silences that help us to reach each other. We must learn from the experiences of the generation before us and apply it artfully to the present generation and pass our experiences along to the next generation.

When I began my career in the 1960s I was working with individuals with severe communication problems and some of them did not speak. My supervisors wanted me to only work on speech and not use any intervention methods that used alternate forms of communicating. This was based on their experience that they had started with a generation that had had no therapy and even with intervention with older children and adults many individuals began to be able to communicate via speech. They felt that if we started working on speech with young children then all would learn to speak.

I had a number of experiences in the first year of working that led me to doubt that theory. One was a very strong young girl who left me injured and bloody after almost every therapy session because she was so frustrated at not being able to communicate, so I tried everything to save my skin. We eventually spent 95% of every session communicating peacefully and interestingly by drawing and gesturing to each other and 5% of the session struggling through work on speech. Since the supervisor only observed every three months but read the daily log regularly, I only wrote up the 5% speech work. After the girl bloodied a substitute while I was on vacation, the

supervisor saw it our way and I had an official okay on my first try at augmentative communication intervention. At that point the last thing on any of our minds was that girl's career.

Later augmentative communication strategies were tried with younger and younger children and the problems seen in the girl early in my career were avoided. Some of these children also developed sufficient language skills that we were able to convince some school systems to take them into regular classrooms and provide them with academic educations. I still did not hear people asking these children "What do you want to do when you grow up?" I must confess I did ask the question myself and I did not hear the parents asking it. We were so busy struggling to make the present happen that we hoped the future would take care of itself.

I have had a chance to visit with some of those babies and children, now becoming adults. Some of them eventually learned to speak (I have never given up on that goal for everyone) and some did not. Some who learned to speak still use augmentative equipment for written work or in some situations. Some expect to work, some do not, and some have created jobs for themselves, not expecting someone else to provide it.
What are some of the things that we did or did not do in the early years that may have created barriers or broken down barriers? There are many things I think we did or needed to address in the preschool years but I will be elaborating on only nine areas that I think helped to prepare children for entry into the working world.

Development of:

1. A responsibility for self and others.
2. A sense of time.
3. Interests and desires that reach outside of self.
4. A sense of money, its worth and its use.
5. Skill basics that are potentially marketable.
6. An independent communication system.
7. Social sensitivity.
8. A sense of realistic optimism.
9. A sense of the community in which we live.

As you can see these nine areas are the valid for children who speak as well as children who use augmentative communication. How they are put into play may require some creative and augmentative strategies for some preschoolers.

A responsibility for self and others: Children who do not have any of the conditions which may require augmentative intervention are given responsibility at a very early age. Before they can talk and walk babies are often asked to go and get things for their parents and preform simple tasks within the family. I remember my sister being pleasantly amused when her oldest was able to crawl off and get his shoe when asked. He would then attempt to put it on, looking to her for help only when he

could not complete the task. His early attempts to take responsibility for himself were later translated to a younger brother and sister. He is now successfully employed.

How can we translate this early responsibility to children who have cerebral palsy and other conditions that may cause them to need augmentative communication? First look for what skills the child does have and use them to parallel what is seen in other more independent children functioning at the same level. Once discovered use those skills to set up tasks and anticipate the child will carry them out. One child seated in her adapted highchair helped her mother by "finding" things visually while her mother was cooking. The mother would ask "Where did I put the flour?" The child would search around and fix her gaze on the flour when she spied it. I have observed others carry out similar activities, but they interrupted the child and found the item themselves before the child had a chance to complete the job. Little wonder that children like this, given responsibility that is immediately taken away, accept little responsibility later in life and hamper their chances in the work setting.

Part of responsibility is living with the consequences. When we accomplish greatness (find the flour) we should receive the credit. When we fail we should suffer the consequences or be given a chance to find another solution and get experience in problem solving. If the child finds the salt instead of the flour, she should get to taste the error and try again.

Too often we give the child immediate feedback about errors and successes. The children do not learn to make judgements for themselves and self correct errors like one must do in the work place. One teacher's major complaint about a boy we had gotten placed in a regular classroom was, he takes so much time away from other children because he does not judge his own work. He was asking her if he was right or wrong after every problem. She expected him to complete the lesson, check it for errors, correct them, hand it in and then she would grade it later. He was not accustomed to this kind of delayed feedback. We had been so anxious to have him succeed that we had created a barrier with our good intentions. Avoid the "lack of responsibility barrier".

A sense of time: Some of us struggle our entire working lives with the time lines imposed on us by the job situation. The problem is often exacerbating by the additional time to complete tasks needed by many individuals who use augmentative communication. Children begin to learn how to use their time relative to adult time schedules in the preschool years. They learn there is not time to put together the whole Lego project before they get taken to daycare in the morning, because you need to leave enough time to get dressed for the snowy weather.

We often do not give the child using augmentative communication the chance to experiment with time. The child's sibling may have time to tell a story before breakfast but the child may need to wait until after school to tell a story because augmentative communication takes longer. It is not fair and it can make a person angry, but that is the way it is now. If the child learns to judge time usage at least the story gets told.

The sense of time with many individuals using augmentative communication must often include the use of someone else's time. This is a heavy responsibility, to develop a sense of planning that includes two or maybe more individual's time. The child needs to begin experiencing having "now", "wait" and "later" planning in the preschool years. Along with the responsibility for planning time needs to go the development of a self concept that "I am worth the time".

Interests and desires that reach outside of self: The skills learned while intensely playing games, pursuing hobbies, reading ideas, carrying out activities and other acts of childhood are the seeds of later careers. Do we create barriers by spending so much time in therapy trying to make a child "normal" that there is no time to spend observing nature in the woods beyond the window and reading Peterson's guide to trees. Those activities may be the very ones that plant the seeds which grow a budding scientist when no amount of therapy will keep the child out of a wheelchair as an adult. Ask yourself and the child now and often what do you want to be when you grow up. If you get the answer "I don't know" or no answer, get busy expanding that child's world. There is something out there that will make an interesting career.

Be careful of restrictions. The child's interests may seem lowly to you, but may be interesting and challenging to that child. I have known individuals for whom dishwashing was a satisfying career and doctoring was a dissatisfying one. Not all of us are superman or superwoman but a career that seems impossible (given the child's handicapping conditions) may be possible given the background, encouragement and interest of that individual child. I recently talked with a teenager who formerly used augmentative communication, who has developed a small business while still in high school. I asked him what advice he would have me pass on to those working with young children who use augmentative communication. He said, "Help them develop and intense interest in something outside of themselves."

A sense of money, its worth and its use: Like it or not the working world is about money and a lot of what happens in the United States and the world is because of money and what doesn't happen is because of the lack of money. For that reason it is important to begin to give children who are candidates for the working world a sense of money and its worth. One of my favorite question to parents of children using augmentative communication systems is, "When did you start giving him or her an allowance?" Regardless of age group, most of the time the answer has been "We don't give her or him an allowance." Younger siblings were often reported to get allowances. One of the best ways to learn about money and its worth is to handle money yourself.

Games, such as Monopoly, give a child the sense of relative worth of money and its use. Real life money experiences are also needed. I often would "hire" a child to do a certain therapy task. We agreed on the task and "signed" a contract for the work and its worth. Independent work was worth more than supervised work. The children were paid in "communication" money which they could use to immediately buy an activity or

save to later buy a more expensive activity. With older children the "communication" money could eventually be exchanged for real money to buy a desired item. Some children worked hard whether they got paid or not. They enjoyed their work or saw themselves as volunteers. Some children worked hard for the money alone. They did not enjoy their work but did enjoy what its compensation bought. Other children did not enjoy their work and lost interest in the desired items when it was not just given to them. The latter group did not appear to have a good start toward the work world.

Much of the equipment that makes it possible for individuals using augmentative communication to enter the work place is expensive. It is important that it is cared for and used well so that the individual can continue to communicate. For a demonstration one time all equipment in the center where I worked was labeled with its price. It was interesting to see how much better the children and others treated the devices when they knew how much they cost. Awareness of cost and where the money comes from to pay for equipment can start early. The children can then become part of the process of budgeting, searching for funding and deciding on devices so that when they are responsible for decisions later on they are more familiar with the process. I remember the first time I was able to give a child this choice. The boy had been evaluated on all pieces of equipment and I listed the features and costs of each. He contemplated them all and concluded that all the features he wanted in a devices were not available in any of them and the per feature cost was too high. He then listed the features he felt were most important and asked me to call his parents when such a device became available. A device with the features he wanted came on the market six months later and I did call his family. The boy tried the device out and it was purchased for him. He felt good about his decision. Incidently his decision to wait saved someone over a thousand dollars.

Skill basics that are potentially marketable: The preschool years are the time to start developing skills and interests that may become marketable as parts of jobs in the future. One of the dangers is that we may use too narrow a scope when considering skill marketability. So many jobs exist today that few people had even thought about 20 years ago and many jobs that seemed very secure 20 years ago have largely disappeared. Years ago my nephew spent endless hours keeping information on games that he created with a deck of cards and a small roulette wheel. The only job skills we felt he was developing seem to lean toward becoming a gambler in Las Vegas. However the data keeping and organization skills he practiced and honed as a child are the very ones he uses now in his position as a manager of a brokerage firm, a position none of us thought about as we observed his play.

Some jobs in the future may requite the ability to lift heavy items, others the ability to read and write, others the ability to observe differences, and still others the ability to find alternate solutions. The list can go on and on. We need to observe the child's interests and skills and provide opportunities for the child to practice and develop in the direction the child chooses. Too often we look at the deficits and omit something that might be very interesting to a child. We also need to open far more books and doors for children who use augmentative communication and open them more

frequently. The child who notices that there are only holes in certain plants in the garden and doesn't have the augmentative symbols, etc. to ask the questions that would lead him or her to find out that those plants are in the cole family and let him or her open the book to find out what bugs eat cole crops and what can be done about it may have just lost a career opportunity. The academic appetite started at home on the parents' knees is often difficult to make available and the children start school with an additional created, academic handicap. The barriers to information about the world around us needs to be broken down early.

An independent communication system: We have traveled a long way down the augmentative communication road. But before we pat ourselves on the back we need to look at the much longer road ahead leading toward a totally independent (in every situation) communication system from date of diagnosed need onward. That is the idealistic goal. The realistic goal is that there are probably some individuals who will always be dependent communicators, but the goal for these individuals should be as much self control over communication as possible.

We as adults often make far more decisions for children who use augmentative communication that we do for their speaking siblings and friends. The child should be in control of the communication system from the beginning and our job should be just to make the opportunities for a wide variety of communication decisions available. Speaking children pull the words into their vocabulary from the words they hear around them. They arrange them into groups that other speakers react to which may or may not match the speaker's intent. If the intent fails the child tries again or cries. When children are using augmentative communication, we need to become sensitive to the words they are snatching in their minds and make them available on their boards and devices or make it possible for the child to retrieve them on their own from a vast body of words. We need to resist the temptation to make communication boards and devices into interpretation devices, expanding single words or symbols into phrases and sentences before children can easily formulate their own sentences.
We each put our own stamp on the words we use that lets others know who we are, where the general language stops and where the "me" begins. The children using augmentative communication need to be able to very early differentiate for themselves where the handicapping condition(s) stop and where they themselves begin. From the self concept that is developed through communication comes the confidence the child can take as an adult to the job interview that says to the interviewer "I am a person worth hiring."

Social sensitivity: Early childhood is the time to begin developing a sensitivity and compassion toward our fellow human beings. Treat family members, friends, and those encountered in public fairly and equally in front of the child. Don't fall into the pattern of treating the child as a handicapped object when someone around the child does so. Turn the situation around and talk to the child as a person and explain to the child, not to the uninformed individual what the score is. The terms that others will use (handicapped, head injured, etc.) should be introduced to the preschool child in a

matter of fact manner in a loving situation. I remember one child being rather upset finding out that he had cerebral palsy from a relative stranger at the age of 7 or 8. It took him a while to understand that it was just a name for something he knew well and he let his parents know that they should have told him. Children need the vocabulary to take the mystery out of the familiar. This goes for other handicapping conditions as well that the child may encounter relative to friends and classmates. I am always surprised at the lack of sensitivity someone with a handicapping condition has toward other handicapping conditions.

The prejudices toward so called normal individuals and individuals with unfamiliar handicapping conditions can create difficulty in the work place or limit job opportunities. The development of social sensitivity at an early age can lead toward more cooperation, open job opportunities and raise status in the work place. Getting along with fellow working makes work much more enjoyable and often opens other doors.

A sense of realistic optimism: Realistic optimism is almost a contradiction in terms. Being realistic I would discourage a blind preschooler who wants to be a truck driver, but being optimistic about where technology is going I would not discourage that same blind child. The realistic and caring adult will expose the child to opportunities that will lead to potential jobs so that the child does not encounter activity after activity in which participation is not possible. The optimistic and caring adult will investigate future trends of activities which the child discovers on his or her own in which the child expresses interest.

Some of the barriers may be in the form of political and community restrictions which the child should know can be changed. When I was a child my friends and I were talking about the presidency and if it was possibly in our future a career. No one mentioned that being female might be a barrier. As we got to studying government we found that being born in the United States was a requirement and I was quickly singled out as the only one who could not become president since I had been born overseas. I remember being devastated even though I had not aspired to become president. Nobody mentioned that the law could be changed. That would have done me a lot of good. The realistic, optimistic and caring adult will let the child know that restrictions can be lifted. It is important for the child to gain a sense of history in order to feel a sense of control over the future.

A sense of community: In the preschool years the children need to gain the sense that they are part of a larger community and what they do or do not do affects others. The child needs to understand that sometimes what I do benefits the community and sometimes what I do harms the community. The child needs to be able to express an idea and find out that someone else likes that idea or finds it new, novel or interesting. The child needs to begin to learn early who are the members of my community; my family, my school, my town or city, state, etc. and how the structures work that can provide pathways or set up barriers and who can help remove those barriers.

Entrepreneurship, Employment and the Augmented Communicator

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A funny thing happened on the way back from the Pittsburgh Employment Conference last year. I gut a job. I wasn't looking for work. Far from it. I was busy licking my psychological wounds from having turn down a job I really wanted.

The job I decided against was in a far away state which would have meant ripping roots cultivated over a lifetime and moving into the unknown. Then there was the weather factor. Where I live, you don't need a weather person to know which way the wind blows. It's always nice, Well. most of the time. The suite I was contemplating moving to, however, has weather in the extremes. You roast in summer, freeze in winter and revel in the few good days of spring.

Weather played a major pan in my decision not to relocate. Even though it was a job that would utilize my skills as a librarian, and even though my future co-workers were people I would have been proud to be associated with, I just couldn't face the thought of experiencing the full power of an Eastern winter after living almost forty years in a temperate climate, 1 would have been out in the cold in another respect, too. All my support systems would have been gone. I would have had no network of family, friends and personal care assistants. I would have needed to build this .support network while trying to settle into a new job in a strange city As it turned out, I made the right decision. In fact, whenever I spoke to people in the East on the phone last winter I would give them a snicker of West Coast superiority and mumble something about, "And you wanted me to move back there?"

I felt really sad when I turned down that job. I spent months brooding about my decision. Had it been the right one? "You know chances such as this don't come along everyday," I would tell myself. I stoked the fires of my guilt with internal dialogue. Would I ever get another chance of gainful employment? After all. I'm not getting any younger, employers want youthful blood, not an old geezer like me. Hamlet. that most. melancholy of Danes, has nothing un me in the worrying department. As my mother always used to say, "Michael, if they passed out degrees for negative thinking, you'd have a Ph.D. by now."

I was musing on these matters one lovely October afternoon when the phone rang. It was Sarah Blackstone, publisher and author of Augmentative Communication News. I had done contract work for her from time to time, and she had interviewed me on various AAC issues for her newsletter, so I certainly wasn't surprised to hear from her she called to offer me two tickets to a rock concert benefiting the Bridge School for children who use AAC, This annual event is one of high points of the pop music scene in Northern California. Tickets sell out fast, so I was overjoyed when two were being dangled under my nose.

After my glee in getting the tickets had subsided, Sarah moved on to other matu.-rs. She toid me that the board of directors of Augmentative Communication, Inc. (ACI). the entity that publishes her newsletter, had been discussing the possibility of publishing another newsletter targeted at AAC consumers and their families. Would I be interested in being involved in such a project[7] This was couched in such vague and nonspecific teniii; that I immediately said yes. Sarah thanked me and was about to hang up when she said, "By the way, some of my board members will be at the concert tonight,"

It took me about five minutes after I hung up the phone to realize what just happened. I wasn't just going to a rock concert; this was also a job interview. Total panic set in. I began to scream, sweat, and worry about what I would wear. In short, I did everything any normal job applicant would do.

I must have done something right, because in the ensuing weeks Sarah began to explore ways to fit me into her organization. I researched what taking this job would do to my health insurance and the funding for my personal care assistants. I also had access to Sarah's accountant who gave me a crash, course in the ins and outs of the IRS. He also explained to me how I could work for Sarah and still do freelance consulting work.

When Sarah and I both were satisfied it would be possible for me to be her employee, we then began discussions on what I would need to produce an eight page newsletter on AAC for consumers and their families. We had the assistance of a consulting group that was well versed in the details of desktop publishing. They recommended what hardware and software I would need to accomplish the task, Once we had our requirements on paper, Sarah and I each went shopping. We were in close and constant phone contact with each other, comparing prices.

When all the smoke cleared, I had enough computing firepower sitting on my desk at home to publish a small town newspaper. A fax machine and speakerphone were at my side. right next to my communication device. I was an official employee of ACl, and I was happy as a pig in mud. I was doing something I had always wanted to do—put out a newsletter.

I was also doing something 1 swore I would never do—work at home. Before this opportunity came along, I viewed working at home as the essence of handicapism. Give the disabled person some meaningless job he can do at home at his own pace and get him out of the office where we don't have to look at him or interact with him. Such a fate was not for me.

But these are the Nineties and telecommuting is all the rage. And let. me tell you something, it works, Between the telephone, the fax machine and the Internet, Sarah and I communicate with each other almost everyday. Par from feeling marginalized and isolated, I feel like I'm an integral part of ACI.

Entrepreneurship has always played a vital role in American business. An entrepreneur is willing to accept great risks in order to accomplish big things. Although he or she has a good business sense, an entrepreneur has the flexibility to do things in unorthodox ways. It is in this spirit of entrepreneurship that I have been given the opportunity to do things I've always dreamed about.

A Holistic Philosophy of Work

People who are successful in the work world are accustomed to dividing their lives between those things that are work related and those things that are not. People organize a support structure (place to live, regular routines/ transportation, food sources, health care, recreation, relationships, etc.) that sustains their ability to function in the workplace. This is taken largely for granted as the responsibility of the employee in order to meet their work responsibilities. People with disabilities, especially those with severe disabilities, such as many augmentative communication technology (AAC) users, have all the same needs and responsibilities for a support system in order for them to be effective employees. The fundamental difference is that the environment in which they have to construct their support system has been designed to support people without disabilities. Therefore, in order for them to be effective employees, their accommodations must also extend into their non-work life, if they are to be granted an equal opportunity to secure and retain employment. The shortcoming of the ADA, and often the vocational rehabilitation system, is the narrow interpretation of work that has being taken in terms of reasonable accommodation and technology support. These federal mandates still fall short for many individuals. In particular, since many individuals with severe disabilities have not had the means, or support necessary, to structure their required support system, they have either given up hope of ever being able to compete successfully, or have opted for or been forced into home-based employment. Home based employment essentially reduces the amount of accommodation necessary by the individual in order to carry out vocational activities. However, being located in the home leads to additional social isolation and is often the last choice for most people, who want nothing more than to be part of the main stream of society, which includes involvement in a workplace.

In this day of high technology, many people automatically tie the concept of the work station to a computer based desk environment. In fact this is the case only in a relatively small percentage of work situations, as many people have no inclination or desire to be computer workstation users. By far the majority of opportunities for people to work are not at computers, but on farms, in warehouses, in classrooms, factories and in stores, etc., just the same as the remainder of society. The workstation is wherever the individual chooses to work and can acquire a job with skills they possess. Therefore, the concept of

work station accommodation must be much broader than computer-based employment.

The purpose of this presentation is to underscore the essential importance of embracing a more holistic definition of work, particularly as it relates to people with severe disabilities. Since the focus of the conference is on the user of AAC technology in the work place, this presentation intentionally focuses on other assistive technologies. That is, those assistive technologies that can be employed in a more holistic approach to work, which includes the adapted support structure and/ essentially, activities that support a person's regular participation in gainful employment.

Other Shifting Paradigms

Attitudes and relationships in the provision of assisdve technology, and other community-based services, are also changing. Service delivery systems are now slowly evolving into more consumer responsive services, as a result of persistent and successful action by people with disabilities, particularly through recent amendments to federal legislation. People with disabilities are given the education and the information necessary to make their own choices as to the technology they need. The evaluation process, followed by recommendations, is now being done more in the spirit of assisting people in making wise choices, rather then dictating the devices and services that will be provided. More and more, the enlightened professional is seeing their role as one of advising and informing people with disabilities as to their options. It is then up to the individual themselves to make the appropriate decision. This partnership between consumer and advisor will greatly enhance the outcomes of assistive technology provision in the years ahead.

Personal Technologies

The following is only a brief description of the assistive technologies that can be employed to provide people an equal opportunity to compete in the workplace. The emphasis is on 'personal' technologies in contrast to those technologies most often associated with the work site. The selection of specific personal technologies is dependent on the needs and preferences of the individual. In general, the provision is made based on an appropriate evaluation of need, a thorough knowledge of the features of each device, and a support system that can promptly deliver, modify and maintain the technology, if costly mistakes are to be avoided and the intended outcome is to be achieved and sustained.

Communication Technologies:

These will be covered by other speakers and are not specifically covered in this section. Communication technologies used to access the environment or used in the work environment are included but not in any depth.

Seating:

The ability to sit comfortably and in a position of function is essential for almost all jobs. The seated posture may refer to someone sitting in a wheelchair, on a chair at a work station, a seat on a car or truck or on some other vehicle such as a tractor. Issues related to sitting posture are comfort/ the ability for functional postural change and hand and eye use and the prevention of pressure and discomfort. Dynamic, comfortable sitting enables people to concentrate on the task rather than on their maintaining a functional posture.

Personal Mobility:

People get from place to place in off road situations/ either walking or using a personal mobility device. Canes and crutches are the most common personal mobility devices used today. Other options include manual and powered wheelchairs, scooters, powered wheeled bases and forms of bicycles/tricycles. Some use outdoor powered carts such as golf carts to get around.

ADL Aids:

Aids for daily living can include those used to facility bathing/ toileting/ feeding, and controlling the environment (ECU). Technology can be quite simple such as an extended handle on a comb to the more complex and complex hydraulic bathtub lifts. Some communication devices can also be included in this category such as alarm systems, telephones and others that enable persons to be independent in their personal environment at home and work.

Recreation aids:

Although persons with disabilities have known that recreation is essential for a balanced life, it is only more recently that technology has been developed to assist them in actually participating and competent in sports and other recreational activities. Participation is avid in horseback riding, skiing, tennis, archery, basketball, to name only a few.

Home modifications:

Home modifications means different things to each person depending on their personal abilities, needs for independence and home environment. Options include door openers and alarms, computer work stations, bathroom modifications, ramps, kitchen layout, appliance modifications and so forth. Often a product, if carefully chosen, can be purchased in any store. New designs make some products easier to manage by persons with arthritis or quadriplegia. Other times, the product has been specifically

designed for persons with disabilities. Unfortunately, this often results in a higher cost.

Community Mobility and Accessibility

On the road transportation may be public or private. People may be able to drive their own cars or vans with appropriate modifications. Others may modify a van so they can be transported safely. Still others may need access to public transportation in the form of taxis, busses, trains or airplanes.

Information Highway:

More and more technology is allowing people to access money through bank machines, food in cafeterias, communication through telephones and shopping through television and telephones. If positioned within reach and configured so that people with sensory impairments can use them, this technology designed for the general public will also offer tremendous opportunities for people with disabilities. Home computers can enable people to use encyclopedias, order merchandise, 'talk' with people with similar interests, play games and acquire reading materials on a variety of subjects.

Environmental Technologies

With the advent of ADA, there are now mandates to make public facilities accessible. Ramps, accessible restrooms, meeting and sleeping rooms and facilities at hotels are becoming more accessible. For example, the University of Pittsburgh, as well as many other public agencies, now have committees working on removing architectural and other barriers. As well, there is now a policy in place to hold meetings and educational activities only in facilities that are accessible. Materials are offered in alternate format for most events and other reasonable accommodations are being made. There is much to be done. The speed of accommodation is not moving as fast as many would like, but it is moving in a forward direction and in most instances in a spirit of working together for positive outcomes.

Work site:

Many think of the worksite as a desk and computer. This is currently the reality for many. Custom desk arrangements, rotating file holders, page turners, adapted computer hardware and many other technical devices, enable persons with disabilities to work productively. However, there are many other work environments that people may choose based on their skills, education, where they live and their disability.

Recreation:

A component of living that is often overlooked by the professional community is the desire and, in fact, need of people with disabilities to participate in recreational activities. Many of the adaptive recreational technologies has been developed by persons with disabilities themselves in their effort to participate and be competitive in sports. Competitive wheelchair racing, archery/ skiing, bicycles and technology that enables people to bowl, play pool and fly their own airplanes are just a few areas in which equipment has been adapted for specific recreational purposes.

Service Provision Options

People with disabilities can access technology through a variety of different service delivery models. A team of professionals might be available in a University setting where faculty not only teach but also deliver technical services to the community. More traditionally/ the team of rehabilitation professionals, including a rehabilitation engineer, might be available at a hospital or rehabilitation facility. More recently/ technology professionals might be in private practice either individually/ as a team/ or part of the university/ hospital or rehabilitation facility structure. Another option is the growing number of rehabilitation technology suppliers (RTS) who offer commercial technology services within the community. They work in conjunction with an evaluation specialist and advise the consumer as to the technical options available to meet their needs. They than sell/ service and train them in the use of the technology solution. Local chapters of national disability organizations like United Cerebral Palsy and Easter Seals may also have assistive technology services. In recent years a growing number of Centers for Independent Living (CILs) have been developed in each state with federal support. Some of these centers have opted to provide assistive technology services/ in addition to their information and referral services which is common to all CILs. And finally/ there are volunteers/ either in engineering schools or community colleges (student supervised projects)/ or in industry (high technology industries often have staff interested in doing community service) such as the Telephone Pioneers. Each model has its pros and cons for the consumer and only after thoroughly researching the options will the person needing the service make the best choice as to where to go with their need in their community. A word of caution. Only if there is timely provision and follow-up available is a service delivery system considered appropriate/ even if the cost of the service is less.

A more extensive description of service delivery options may be reviewed in a report that resulted from a RESNA-organized conference on service delivery (RESNA/ 1987).

Funding

Unfortunately, the funding system does not often support the broadened concept of work. Many essential community-based support technologies are still viewed as convenience items that are the responsibility of the individual. Once one moves outside of the VR job site focus to other funding sources like Medicaid, Medicare or private insurance, the issue of medical necessity dominates the decision-making process. As a result, the individual consumer is once again confronted with a complex maze of options and non-options that are not designed to meet holistic needs of a person. Whether the systems change, initiatives being carried under State Tech Act Programs can effectively realign existing resources into a more supportive, seamless and consumer-responsive structure remains to be seen. A very good beginning has been made in Pennsylvania by its Tech Act Project, PIAT. Not only is PIAT working on the systems change issues, but it has also developed fourteen Funding Fact Sheets that provide a concise reference which includes; agency mandates/ what is covered and contact sources. For more information, contact Ernestine Gigger, PIAT, 800-204-PIAT.

What health care reform will do in terms of providing a broader base for AT funding remains to be seen. The early versions were not adequate in this regard, and ifs hopeful that the consumer and professional lobby will be effective in expanding coverage in the final versions moving through the congressional committee process this summer.

Conclusions

This paper and platform presentation underscores the concept that a more holistic view of employment and sustained work must be taken if people with severe disabilities, such as are many AAC users, if an equal opportunity is to given to pursue meaningful work. Examples of assistive technologies that can support this more comprehensive approach to employment were briefly discussed. It is further recognized that a fundamental shift in the relationships between professionals, their agencies, and clients/consumers is now dearly underway. Consumers are being viewed more as equal partners in the rehabilitation and community services processes. Enlightened professionals more and more see their role as one of informers and educators, with the individual acquiring the service assuming the responsibility for final decision-making about those things that impact on their lives.

Health care reform and systems change may open doors to seemless systems of provision and funding of assistive technologies that will enable larger numbers of severely disabled people to participate in meaningful employment. However, this landmark health care legislation will have to go hand in hand with the development of accessible community-based resources, through

which people can become better informed/ and receive technologies and related support services appropriate to their needs.

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Graphics
Slides Garfield-environmental access
Schematics-Paradigm Shift
Workstation Slides-Terry/Nigel/John /Lenard/Weisman
Video and slides of Sandy Blatt and maybe others.

Proficiency in Aid Usage and Its Impact on Employment

Arlene Luberoff Badman, MA, CCC-SLP

Effective use of an augmentative alternative communication (AAC) device may require an individual to learn a specific pattern of motor movement. Becoming proficient in any motor movement whether it be with a musical instrument, a performing art form, a sport or an AAC device requires extensive practice, repetition and consistency. When a motor pattern becomes automatic requiring less thought, it frees the mind for higher level thinking such as formulating language to converse professionally and socially in the work place. The AAC device and the encoding method selected for an individual can encourage proficiency in aid usage. This paper will provide supporting arguments for this theory and perhaps suggest the importance of automaticity in AAC device effectiveness.

Imagine the following:

Our Hero Bip hauls his suitcase onto the platform, climbs aboard the train, locates a seat, and then, with considerable strain, shoves his heavy suitcase onto the overhead rack. As the train gathers speed, Bip is tossed about on his seat even as his precariously rested suitcase is thrown out of the overhead rack. Bip manages to catch it and then carefully replaces it upon the shelf. The conductor arrives to gather his ticket. Bip goes through his pockets and, with increasing frustration, turns them inside out, as all the while the moving train continues to toss him about. When he still cannot find his ticket, his search becomes frantic, and he goes through all the compartments of his suitcase.

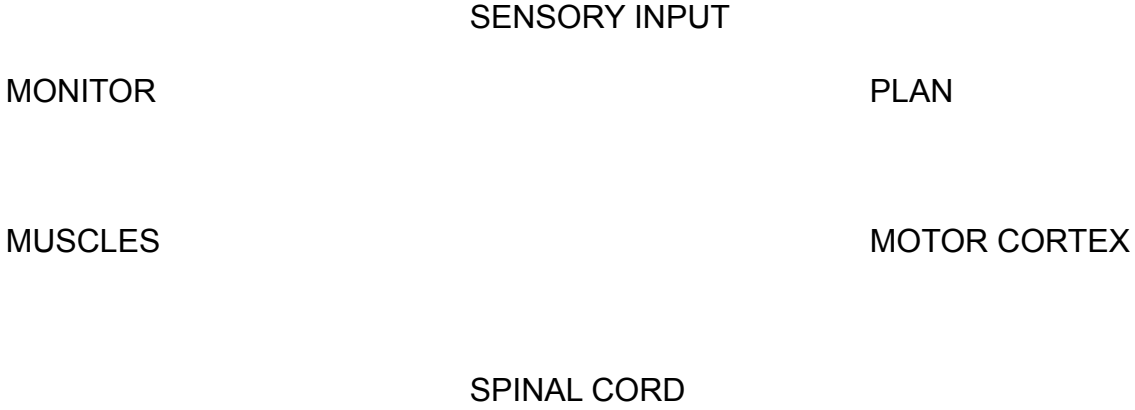
Next our Hero takes lunch out of his suitcase. He unscrews the cap of his thermos bottle, lifts the cork, pours coffee from the open thermos into the cup, which has earlier served as the cap of the bottle. But, due to the sway of the train, the coffee being poured from the mouth of the thermos never reaches the cup. Instead, the liquid flows in a straight line downward to where the cup was but no longer is. The hapless Bip eventually falls asleep. As the train slows down and comes to a rather abrupt halt, Bip is rudely awakened, apparently jolted by the cessation of the train's movement, (p. 205)

This scenario was a mime performance by the French artist Marcel Marceau as described by psychologist Howard Gardner (1993). A mime performer must create the appearance of an object, person or action so that it is recognized by the audience. An especially talented mime artist like Marceau is able to create multiple illusions simultaneously. How can the motor patterns required for creating these multiple illusions be performed so quickly, effortlessly and with little to no thought? The answer lies in the fact that a motor pattern becomes automatic. We may find ourselves conducting everyday routine activities within our life at an automatic level. For instance, we may converse with a colleague while driving a manual transmission car. We also may be walking across the kitchen floor while whipping eggs in a bowl and talking to a friend on a cordless phone.

To perform even one of these motor activities, a motor idea, a motor plan and a motor execution is required (Ayres, 1985). Then with practice, a motor pattern becomes automatic (LaBerge and Samuels, 1974; Logan, 1988). When an individual develops an automatic motor pattern, it does not require thought, freeing the mind for higher level or alternative thought (Shiffrin & Dumais, 1981).

Components of Learning a Motor Pattern

Campbell (1988) stated that when first learning a motor movement, sensory input such as the size or texture of an object is important. This input is communicated via our nerves to the brain for the planning of the movement Once a plan is developed in the planning areas of the brain, then it is transferred to the motor cortex section which is responsible for motor movements. The motor cortex directs the motor movement This information is sent down the spinal cord and out through the muscles into our extremities. As the movement occurs, parts of the nervous system continue to monitor the movement and sensory changes. If a



sensory change occurs requiring an adjustment in a movement pattern, it is communicated to the brain for the appropriate movement modifications to be made (Table 1).
Table 1. Components of learning a new motor pattern.
For example, this process can be seen when a person learns to touch type. First, one must use as much sensory input as possible to type. Therefore, the eyes may be glued to the keyboard as we begin to learn the location of each letter. Our fingers try to determine the size of the keys, the distance separating the keys and the pressure required to activate the keys. The sequence of movements needed to type a word is slow and contains many stops and starts. Also, effort and attention are devoted to each small movement and sequence of movements. But with practice, this movement can become smooth and automatic. One does not have to rely as heavily on sensory input so one can begin to look away from the keyboard. Eventually little effort and attention are required to execute long movement sequences for typing. The cognitive load of the typing process is reduced so that other motor tasks or cognitive skills can be combined with it such as recognizing words on a

document, talking to another person on a telephone, or simply thinking your thoughts as you simultaneously type them into the computer.
With any new motor movement, one must concentrate heavily on the movement. This results in what is known as "discontinuous movement" characterized by many starts and stops (Campbell, 1988). However, with practice the movement becomes automatic, faster and requires less thought. It then becomes a "continuous" movement A continuous movement is one that is well practiced and easy. It does not require a lot of sensory information to be performed accurately. The motor plan and program are all in place before the movement is started. The movement eventually enters our long term memory waiting to be retrieved upon command (Logan, 1988; Rosenbaum, Bames, Vaughan & Jorgensen, 1992).

Any learned movement pattern does not just happen, but is practiced repeatedly (Biy, 1983; Campbell, 1988; Guild, 1990; LaBerge and Samuels, 1974; Logan, 1988). An infant may practice a new motor movement when learning to get on all fours more than 300 times in one practice session. One principle of motor learning is to repeat, repeat, repeat, and repeat some more. How often have we heard the adage that "practice makes perfect" or that to get proficient with a musical instrument or to become competent in a sport, one must practice, practice, practice? Imagine how many times a professional basketball player has practiced dribbling a ball. For those who first learned to type, do you recall the hesitancy in your finger movements? Also, the stopping and starting of the finger movements? But, with many hours, days, and months of practice, the movement became fluid and effortless, fast and efficient and required less and less conscious thought enabling you to think of other things as you type.

Implications of Automaticity For AAC

The learning theory outlined above is important to understand and implement when treating people using augmentative alternative communication (AAC). People relying on AAC need to learn a movement pattern similar to typing with a keyboard when operating their device, and they must practice so that it becomes a continuous movement The end result is effective use of an AAC device that requires less effort, attention and conscious thought Because less effort, attention and thought is required on the part of the person using the AAC device, more attention can be given toward higher level or alternative thinking. In *Augmentative Communication News* (September, 1990), Blackstone emphasizes the importance of developing automaticity with people relying on AAC for them to be "communicatively competent so they are free to focus on their partner and the interaction" (pp. 2-3). For cognitively intact or impaired individuals preparing to enter the work force, developing automaticity with their communication aid means that more attention can be directed toward developing skills necessary for competing successfully in the workplace. These skills include developing communicative competence to exchange professional and social information with supervisors and colleagues, literacy for writing work-related reports or memorandums, or appropriate assertiveness to initiate any necessary changes to perform a job task (Blackstone, 1993; Bryen, 1993; Creech, 1993; Erickson, Koppenhaver, Pierce, Steelman, 1993; Light, Stoltz, McNaughton, 1993; Prentice,
1993).

How to Encourage Automaticity on an AAC System

There are many different electronic and non-electronic communication aids and many different approaches to representing language with these aids. Whatever approach ones

chooses, automaticity should be an important objective in the evaluation and implementation of an AAC system with an individual.
Some design features in electronic communication aids which lead to the development of automatic motor patterns were admirably summarized by Jutta Treviranus (1994) in her recent article in *Assistive Technology :*
1) the user can perform the task without reference to or dependence on external prompts, cues, or timing;
2) the system is predictable and relatively stable;
3) the system does not require visual or auditory vigilance;
4) the number and variety of steps required to complete the task are kept to a minimum; and
5) decisions to be made are kept to a minimum or the decisions to be made are routine, repeated decisions, (p. 30)
In the same issue, Cheryl Goodenough-Trepagnier suggests that AAC systems which cause shifts in attention or require the user to "evaluate a prediction," detract from automaticity. She states:

The ability to use the device without ever needing to search for the desired controls and, if possible, without ever needing to use visual guidance to operate the controls, would allow the user to maintain eye contact with her conversational partner. Operation without need for visual attention, then is a desirable goal of an optimal communication device, (p.5)

"Vigilance,' "decisions," "evaluate," and "visual attention" are all terms that are used to describe control processing. Control processing is the opposite of automatic processing (Schneider & Fisk, 1982; Schneider, Dumais, & Shiffrin, 1982). It is characterized by stops and starts, judgments, effortful processes, and reflective activities different from and hostile to efficient language generation with an AAC device.

Automaticity can be promoted by joining practice with consistency when generating language with an AAC system. In a classic article, Schneider and Fisk (1982) write:

Practice does not improve performance. Only consistent practice improves performance. Practice and consistency appear to have a multiplicative effect on performance improvement. Large amounts of practice in the (inconsistent) condition, produced little improvement in performance. Also, consistency shows little benefit until a substantial number of practice trials have occurred. There was no clear benefit for consistency with only 560 training trials.....The subjects' performance in the (inconsistent) condition did not improve even after thousands of trails, (p. 160 and 165)

Therefore, having a predetermined arrangement of icons, letters and numbers is essential to eliminate the need for the brain to constantly interpret new sensory information and allow the person to develop continuous movement patterns. The development of a continuous movement pattern cannot occur if new sensory information is constantly being presented to the learner.

Although having an appropriate device and an appropriate language representation technique is important, shifting devices and shifting softwares within a device can be a destructive experience for an augmented communicator. Multiple overlays and multiple screens may produce challenging barriers to automaticity. Even rearranging letters or

screens may produce negative consequences because an individual is faced with struggling to "relearn, or worse yet, unlearn previously acquired knowledge" (Goosens,' Elder, Caldwell & Page, 1988, p. 2).

Also, Shiffrin and Dumais (1988) noted that retraining of a new automatic sequence can be a difficult task, even more difficult than the initial learning. Blackstone (1990) further warns professionals that "once we do something one way, it is very different to learn to do it another way. Beware! When you 'update' even part of a person's communication system, you may be taking away their automaticity" (p. 3).

William James, one of the fathers of American Psychology, provides us with a poetic analogy in his foundational work. *Principles of Psychology:*
Never suffer an exception to occur till the new habit is securely rooted in your life. Each lapse is like the letting fall of a ball of string which one is carefully winding up; a single slip undoes more than a great turns will wind again. Continuity of training is the great means of making the nervous system act infallibly right

Importance of Practice in Establishing Proficiency with an AAC Device
Guild (1990) stated that a basic principle of teaching a new motor pattern is to obtain spontaneous use of the patterns in functional activities through practice and repetition. Therefore, another component needed for establishing a effective use of an AAC device is to practice the motor patterns required for recalling specific words through a variety of functional activities. To teach the first 50 most frequently used vocabulary items, for example, the alphanumeric, iconic, or pictorial codes for these words can be modeled and then practiced through employment related activities such as practicing responses for interview questions, dialogues for telephone and person-to-person conversation and writing work-related letters or memorandums. Recall how an infant practiced a movement pattern 300 times in one practice session? This amount of repetition is what needs to be required of people learning to use an AAC device. Anthony Roberts, an employed adult who has obtained automatic use of his augmentative communication device, stated that at first he spent four to six hours a day practicing the use of his communication device. It was Jim Prentice who so candidly stated in his presentation at last year's Pittsburgh Employment Conference "You must use your communicator constantly and not just once in a while. Don't get me wrong, I'm not saying a communicator makes Jim Prentice, but that Jim Prentice makes the communicator and the communicator helps me to be what I want to be." Jim Prentice has developed such proficiency in the use of his communication aid that he now does not have to think of its operation but rather about things that make him who he is today.
Initially, it will require substantial effort, attention and thought for the individuals beginning to use an AAC device to determine where to place their finger(s) or how to access their switch(es). They will be interpreting the sensory information from the letters, the icons, the key size, the distance from the other keys, the switch and more. As they practice, the movement becomes more continuous because the motor plan is established and the sensory input for performing the movement is not needed. These continuous movement patterns will be stored in the person's long term memory. Speed, accuracy and reduced cognitive load results. It is at this point we may notice that an individual using an AAC device can continue to communicate in a dark car returning home after an evening out with friends. This individual may even be able to remove his overlay from his device and continue to communicate fluently. What is more important, this individual is able to

concentrate on other aspects of communicating such as exchanging information with supervisors or coworkers, conversing on the telephone and writing memorandums.
The substantial effort and attention required to learn to use an AAC device effectively is not greater than excepted for any of life's other major mind/bodily kinesthetic skills. A comprehensive high school devotes 180 hours or two semesters for able-bodied individuals to learn typing. How much time and practice does a basketball player devote to dribbling and foul shots? Even an average golfer is prepared to spend many, many hours honing his or her skills. Are we as an educational, therapeutic community unwilling or unable to except anything less for people with disabilities? Should we not expect effective communication with the same effort able-bodied, able-minded individuals are willing to spend on any mind/bodily kinesthetic activity in which they wish to develop proficiency?

Conclusion

When a motor pattern becomes automatic, a person is able to think about other things. Often this results in doing multiple activities at one time. Consider the individual who is speaking on the phone, typing an unrelated memorandum with an occasional reach for a cup, all completed simultaneously. Consider the basketball guard who is able to walk, dribble and yell out commands for a play. This can occur only with fully integrated motor patterns that arc so continuous that little to no thought is required to accurately accomplish the task. In relationship to individuals using AAC devices, the development of continuous movement patterns can be facilitated by having predetermined characters on the overlay and by joining consistency with extensive practice. As a result, the person who relies on an AAC device who has learned the motor patterns necessary for communicating will be able to focus more time and energy on developing effective conversational, educational and employment skills. Ultimately, the individual will be able to use the AAC device to communicate efficiently and effectively with little or no thought about the device itself.

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Vocabulary Selection for Vocational Training Activities with Augmented Speakers who are Moderately/Severely Developmentally Delayed

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Employment opportunities for individuals who are moderately/severely developmentally delayed are limited at best. Those individuals who are functionally nonspeaking are particularly at risk in securing competitive employment due to their inability to communicate effectively and efficiently in the vocational environment. The use of augmentative and alternative communication techniques by these individuals may assist in demonstrating their ability to learn, participate in, and, in some cases, supervise vocational activities. Possessing a voice output communication device, however, does not insure communication competency at the workplace or, indeed, anywhere. Equally important is the selection of vocabulary which provides the augmented speaker a viable message set for interactive participation. As augmented speakers who are moderately/severely developmentally delayed may be excluded, in fact, from vocational activities due to their communication limitations, vocabulary selection for these individuals is of critical importance.

Critical Issues in the Selection of Vocabulary

Prior to selecting the particular vocabulary for vocational activities, several issues regarding the structure of the language content should be addressed. These issues center on the relative strengths and weaknesses of a language content that is:

a concentrated message set versus a diluted message set,
a predominantly sentence/phrase-based message set versus a word-based message set, and
an ordered message set vs a random message set.

Concentrated Message Set versus Diluted Message Set

A diluted message set is an array of messages that inadequately attempts to address the communicative needs of a variety of activities. Typically, the diluted message set offers an extremely limited number of messages that are specific to any one activity thereby limiting the potential number of conversational turns and reducing the variety of messages. In contrast, **a concentrated message set** is an array of messages that attempts to comprehensively address the specific communicative needs of a single activity. The concentrated message set provides numerous messages, allowing multiple communication turns with a broader range of message types. Thus, the

Concentrated Message Set is selected as the appropriate message set for individuals who are moderately/severely developmentally delayed participating in vocational training environments.

Predominantly Sentence/Phrase-based or Word-based Message Set

When determining whether concentrated message sets should be predominantly word-based or sentence/phrase-based messages, several issues should be considered. First, the advantages and disadvantages of each message format should be recognized. Second, the communication potential of the user should be considered. The importance of **speed** and **flexibility** come into play when evaluating the advantages and disadvantages of word-based and sentence/phrase-based messages sets. Word-based messages sets possess a high degree of flexibility in message composition. When using single words as the building blocks, messages can be composed which a) are novel, b) reflect a variety of semantic/syntactic forms, and c) can increase in length. Word-based message sets, however, have the disadvantage of being slower to generate, requiring numerous key strokes (on a graphic communication overlay) as the mean length of utterance increases. This requirement reduces the time efficiency in message generation and may decrease motivation to generate lengthy sentences.

In contrast to the word-based message set, the sentence/phrase-based message set provides a more rapid speed of message generation. As the sentence/phrase is associated with a single graphic representation, only one key stroke is necessary. The ability to generate time efficient messages during conversational exchange fosters motivation to communicate and the communication partner's willingness to interact The disadvantage of the sentence/phrase-based message set is its lack of flexibility. Novel sentences cannot be composed. The semantic/syntactic form and length of a sentence cannot be manipulated once it is dedicated to a graphic symbol.

The advantages of using either word-based or sentence/phrase-based message sets do not in and of themselves identify one format to be superior to the other. When determining which message set should be selected as a primary design format, however, the target user population is the primary consideration. The critical issue is whether the user population can profit from the advantages of the word-based message set. Thus, the linguistic potential of the intended user should be identified by determining whether he is:

cognitively capable of generating novel messages,
linguistically capable of generating a variety of semantic-syntactic forms, and
linguistically capable of expanding the sentence length.

If severe cognitive or linguistic limitations preclude an individual's attempts to learn and use a word-based messageset (i.e., the resulting messages are significantly linguistically inferior), a sentence phrase-based message set may be preferred. When an individual generates messages which are severely limited in length and form (i.e., messages that are significantly discrepant to the person's chronological age and social/vocational needs), a sentence/phrase-based message

set should be considered. The 'rigidity' of the sentence/phrase-based message set, considered a disadvantage, may prove to be an advantage for individuals who are severely developmentally delayed. The sentence/phrase-based message set offers the individual a viable tool for generating messages which are linguistically correct and grammatically complete. It also allows the individual to communicate age-appropriately, thereby presenting himself as a socially competent communicator. It should go without saying that the ability to present one's self as socially competent is a critical skill when performing in vocational environments. Using the sentence/phrase based message set, the individual may direct his energies towards learning self-initiated, interactive communication skills which will assist him at the workplace. **Thus, the Sentence/Phrase-based Message Set is frequently selected as the primary message format for many individuals who are moderately/severely developmentally delayed participating in vocational training environments.**

Ordered versus Random Message Set

A third critical issue in determining vocabulary selection is relative to ordered versus random message sets. Before generating messages which will allow participation in an activity, the structure of the activity sequence should be considered. Whether an individual is participating in daily living, recreational, or vocational training activities, effective learning of the event sequence of an activity is contingent on its organizational structure. It is the ordered, causal sequence of the action components of an activity which facilitates comprehension and subsequent recall of those action sequences (Mandler, 1984). If the organized structure of the activity assists in learning the activity sequence, its ordered structure may also assist in learning the messages relevant to the activity. It has been suggested, in fact, that prior knowledge of an activity sequence may facilitate the acquisition of language and communication relevant to that particular activity (Nelson, 1986). In addition, research suggests that learning communication skills in the context of an interactive activity may facilitate learning the activity's event sequence (Nelson, 1986). Thus, there appears to be a reciprocal relationship between the activity sequence and the sequence of messages which mediate the activity.. With this relationship in mind, a random message set, an array of messages in which a message has no causal relationship with other messages or the action sequence of an activity, does not offer the order necessary for efficient learning of the constituent messages or the action sequence of the activity. The ordered message set, however, an array of messages which has a logical sequence and a temporal relationship with the unfolding of the natural events of the activity, offers maximal order for efficient learning of its constituent messages and the activity's event sequence. As such, the **Ordered Message Set is selected as the approriate message** set **for individuals who are moderately/severely developmentally delayed participating in vocational training environments.**

Scripts

Having determined that the message set embedded within an activity should be concentrated, predomanantly sentence/phrase-based, and ordered, the particular messages necessary within the

context of the activity arc determined. This **expressive language which mediates the event sequence within the context of the activity is the Script** (Elder & Goossens', 1994). The script can serve as a valuable tool in facilitating both the learning of the event sequence of an activity and the interactive communication skills relevant to the activity. In vocational training environments, such generic vocational activities as assembling, collating, sorting, packaging, stocking, and quality control are a natural forum for relevant scripts which mediates the unfolding of the activity with interactive language. The same phenomena occurs during more specific vocational activities such as cleaning the office, loading a vending machine, mailing service, running errands, gardening, and preparing food. All of these vocational activities may be structured to have two or more people acting on objects or interacting with each other thereby providing the necessary communication partner(s) and mutual topics for conversational exchange. Before, generating the vocabulary necessary for this conversational exchange the roles of the participants within the activity, the props necessary for the activity, and the specific event sequence are determined (Elder & Goossens').

Roles

In every vocational activity, each participant assumes a role with its own particular goal, related responsibilities, and mediating messages. The identification of these roles is critical in the development of a script because it will determine the messages needed for the activity to unfold. Numerous vocational activities lend themselves to scripts for **shared roles** (i.e., *Preparing Food, Assembling, Packaging)*. These scripts have messages potentially shared by all participants in the activity. Other vocational activities mandate scripts for **different roles** (i.e., *Supervising...Quality Control, Selling... Coffee Shop, Assisting in the Office)* where the communication partners have different responsibilities and, therefore, require different messages.

Props

Frequently, vocational activities involve participants acting on objects or props. The props used will have an impact on the vocabulary requirements for the script Identifying the props prior to script composition can assist in recalling messages for inclusion in the script which might otherwise be overlooked. Identifying that boxes will be used during a *Packaging* activity, for example, will prompt consideration of such relevant messages as "Open it, please", "I need some help", or "This is heavy" although the word "box" may never be included in the message array.

Event Sequence

The third element in script composition is the event sequence. The event sequence consists of a series of events with their related action components directed towards the primary goal of the activity (i.e., stocking the shelves, assembling pens, crushing cans). The event sequence

becomes the backbone of the activity from which relevant messages are generated.

Once the roles, props, and event sequence within the vocational training activity are identified, a contextually-relevant script is composed. For many individuals who are moderately/severely developmentally delayed, a thirty-six message script is generated. Thirty-six messages should provide an adequate, concentrated message array for a single activity and are also easily configured on voice-output communication devices having a matrix-36 or matrix-32 overlay format. When individuals require a reduced message array. **Mini** Scripts may be developed which reduce the message array to eight or nine critical messages selected from the larger thirty-six message pool (Elder & Goossens', 1994). When significant visual, cognitive, attentional, or linguistic limitations make a large number of graphic symbols or messages on an overlay unrealistic for an individual, the mini script is selected as the format for vocabulary presentation. These mini scripts are designed with messages which have a) a strong cause-effect relationship with the event sequence of the activity, b) may be frequently generated, c) are generic and widely applicable, and d) are not redundant to other messages in the array.

Conclusion

Appropriate vocabulary selection for augmented speakers who are moderately/severely developmentally delayed should positively effect their ability to perform vocational activities. The selection of message sets which are concentrated, predominantly sentence/phrase-based, and ordered offers many of these individuals communication competency and the resulting social competency never experienced. The organization of this vocabulary into either scripts or mini scripts reflecting the vocabulary needs of numerous vocational activities provides a broad message array in which to perform at the workplace. Employment opportunities which may have previously been out of reach for the augmented speaker who was moderately/severely developmentally delayed may now be realized with the support of appropriate vocabulary selection and organization.

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How much does getting a job cost?

Carole Krezman, M.L.I.S.

Abstract

This paper is a snapshot of the effects of employment on one family's economic situation. The family consists of two highly educated parents, both with disabilities, and their two young children. Described are a lack of support by federal, state, and local agencies for employment, the difficulty consumers face in managing these programs, and some of the actual costs incurred by becoming employed. Questions to ask before taking a job are listed, and recommendations for systems change made.

Anyone who is looking for work has questions. Will I make enough money to support my family? Will the job last? Are the benefits adequate? Will I like the job? A person with a significant disability has these questions and at least one more: Can I afford this job?

I live with my husband and our two young children. He has significant speech and physical impairments and I have a mobility / fatigue disability. Rather than wondering how much a given job will improve our family's economic status, the question we ask is: "How much will this job hurt our family's economic well being?"

Last year my husband was offered a job working with wonderful people doing what he is trained to do. After much research, the agonizing truth came out: We would be much poorer if he were to take the job. Every time I count up the numbers of what working will do to our family, I am shocked. The thought that my husband's employment might not benefit our family goes so against my beliefs that it is not possible to accept. I tell myself that with this change or that change it will be in our best interest to work. Not necessarily,

I am sure there are those who think we are lazy for not taking whatever job is offered, but we would be doing no one a service by risking our existing independence. We, like most people with disabilities, would rather be working, but knowing that the rent can be paid, the wheelchair repaired

and the children fed is more important than being self-supporting. At the same time, we are acutely aware that social identity comes from what one does, and that it is intrinsically unsatisfying to volunteer when one can't work.

This year my husband and I have found jobs we think we can afford. I want to describe the changes that have occurred in our finances to illustrate the catch 22 of a social system that assumes people with disabilities can't work. Our situation is exasperated by the perception that people with disabilities don't have children.

Please do not use this paper as a guide in counseling yourself or your clients. I am going to describe our current situation. While it is typical, it is not your situation. Regulations change, they vary from state to state and disability to disability. Most independent living centers have benefits counselors. Protection and Advocacy in each state has lawyers who understand the effects of working on disability benefits, and United Cerebral Palsy Association has resources. Check with at least one source before making a decision which may jeopardize a person's independence or safety.

Living poor and disabled in California means juggling many different federal, state, and local agencies and programs. Being married adds further complications. Having children involves more agencies and programs. When we decided to work, we tried to predict what would happen to us financially. The systems are so labyrinthine and clandestine that even with thorough research we could only make estimates.

We were lucky to be offered jobs that will not cause us to commit "Substantial Gainful Activity" as the Social Security Administration calls it. This ensures that our Social Security Disability Insurance (SSDI) and our official status as "people with disabilities" remain intact. I keep a log of financial changes caused by working.

The first change was quite nice: paychecks! It gives a wonderful feeling. Knowing that it wasn't discretionary money, we resisted the urge (for the

most part) to go out and buy things, We noticed that, as expected, withholding taxes had been deducted from our cheeks.

I wrote a letter to the director of the school lunch program. The department of Agriculture provides free or reduced price meals for low income school children. Our son has always qualified for free meals. We received a prompt reply letting us know that he now qualifies for reduced price meals. At $0.25 a meal, we've lost about $5,00 a month by working.

In March it was time to renew our Universal Lifeline Telephone Service, but we no longer qualify for the $7.68 monthly discount. Our total monthly income (earned and unearned) is too high.

Sign-ups for our son to be on baseball and soccer teams were problematic. They require self-assessment of need. In March I said to myself, "We're working; we don't need a scholarship," and paid for baseball. By the time soccer sign-ups came around in June, I had come to my senses and asked for a scholarship.

I have difficulty coming to terms with the discrepancy between our hard work and our lack of discretionary income. I find myself thinking that if we are working we must have enough money to buy what we need. In fact, there must be enough for some of what we want. We're working—we deserve things. All of us have difficulty keeping in mind that there is no more discretionary income than there was before.

In April the letter from the landlord came. We live in public housing, so our rent is based on 30% of our "adjusted monthly income." May's rent would be $176 more than April's. It took them awhile to catch up with us, but this is a big change.

In May I had an appointment to be re-certified for the Women Infants and Children (WIC) program. WIC is a federal program which provides coupons for nutritious food to low income pregnant women and children up to age five. Our daughter qualifies for monthly food coupons worth about $60.00 from this program until she turns five or our total monthly income is more than $2282. We were quite happy to find that our working wouldn't affect this.

IHSS is the funding agency for my husband's personal care assistants, We have been told that one out of every two of our gross earned dollars after the first $65 will be our share of cost for IHSS services. Although we report our income every few months as the county social services agency requests, nothing has happened so far. Eventually the paper work will go through and 50% of our earned income will go toward my husband's personal care assistants.

As our income increases we will be responsible for a greater share, and eventually all, of the cost of my husband's personal care assistants. When that happens we also will have to start paying a share of cost for Medicaid, Ultimately we will lose this medical insurance.

To sum up: For every dollar we make, $.30 goes to the rent increase and $.09 goes to withholding taxes, leaving $.61 for school lunches, phone bills, baseball, income tax, child care. clothes and life's pleasures. Shortly, the County will catch up with their paper work. At that time 300 will go to the rent increase, $.09 will go to withholding taxes, $.50 will go toward personal care assistants, and $.11 will be left for school lunches, phone bills, baseball, income tax, child care, clothes, and life's pleasures. Eventually, if we were to make enough money, we would lose our accessible apartment, lose any subsidy for personal care assistants, and lose most of our health insurance. These are our work incentives!

Questions to Ask Anonymously*

- What will my take home pay be if I accept this job?
- What will happen to each benefit if I earn this much money?
- What will happen to each benefit if my spouse earns this much money?
- What will happen when our wages increase?
- At what income level will each benefit stop?
- Will I be eligible for some other program?
- What is the formula you use to determine my eligibility?
- Are there any deductions (such as work expenses) or exclusions (such as a vehicle used for work) which you could tell me about?

• What do I need to do to get this benefit back if I lose my job, develop a serious illness, or am involved in an accident?
• I'm a student. Does that change anything?
• Are there any special programs for students you can tell me about?

* Be very careful. Asking too many questions may mark you as someone who is trying to defraud the system. This would cause you trouble. Intentionally limiting your income to retain benefits is illegal under many benefit programs.

Recommendations

• Work disincentives must be removed from Social Security

Administration's programs. Existing work incentives must be evaluated

for their effects on families.

• All independent living centers must have well trained benefits counselors who can explain the effects of various levels of earnings on any client's benefits.

• Agencies should be forthcoming with information about the effects of working on eligibility for services,

• Eligibility for services should be transparent. The average consumer should be able to predict the effect of any action he takes on any services he may have or want.

• When a person with a severe disability stops working for any reason services should start up again quickly.

• Becoming employed must never lower a person's economic status.

• Becoming employed should always raise a person's economic status.

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Stroke Recovery and Work: Language, Social, and Technology Issues

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I. THE PROBLEM

A number of years ago, when I first became interested in aphasia rehabilitation, I remember learning that the ideal hobby for a stroke victim was photography. Since an individual was rendered speech impaired by stroke, what better choice than a completely visual activity, where speaking was not necessary. Since that time, I have encountered many stroke survivors with the language impairment of aphasia, none of whom by the way, have taken up photography. So what's an aphasic to do after recovering from a stroke? Before we begin to identify the possibilities, let's start with some background.

II. CONSEQUENCES OF STROKE

I'd like to take the liberty of focusing on a specific type of individual who has suffered a stroke and for whom employment with augmentative communication may be a possibility. First, there are many types of stroke. Primarily, they can be broken down according to site of lesion or injury. For the purpose of the upcoming discussion, I'd like to rule out patients who experience brainstem, subcortical, and right hemisphere strokes. That leaves individuals with left hemisphere injuries. Of the individuals who suffer a left CVA, I'd like to direct my comments towards those who experience mild, moderate, or severe aphasias.

Who are the stroke patients for whom AAC may be helpful? I reviewed 10 charts of patients I have had the opportunity to evaluate over the past 5 years who I feel had the best potential for AAC system use. Here's a profile of what a stroke recovery patient, who is a typical candidate for AAC implementation, may look like:

Physical: Ambulates, right hemiparesis
Education: College degree
Work Type: Professional/Technical
Marital Status: Married
Children: Two
Age: 57
Post-Onset: 18 months
Aphasia Type: Moderate Broca's
Type of AAC: Combination of Low and High Tech
AAC Systems: Communication Book with
Speaking Language Master / DynaVox / Macaw
Worked post-stroke: No-9 Yes-1
Potential for Work: No-6 Yes-4

As a member of a Rehabilitation Technology Team, I evaluate individuals who have been recommended for assistive technology from primarily 7 types of disability categories

(cerebral palsy, mental retardation, neurological disease processes, respiratory insufficiency, spinal cord injury, closed head injury and stroke). Of these disability types, only individuals with aphasia subsequent to stroke have an acquired language disorder. While individuals with cerebral palsy, ALS, and respiratory insufficiency may have speech impairments that reduce the intelligibility of their utterances, individuals with mental retardation may have congenital impairments that limit vocabulary and language development, and those with traumatic brain injuries may have confused language; it's only the aphasics who present with disruption of grammar, comprehension difficulties, reading and spelling disorders, and word retrieval deficits unique to an acquired language disorder.

The course of recovery from stroke also provides specific considerations regarding the implementation of AAC approaches. Understanding the amount or course of recovery from stroke is often difficult. We do know that the younger the individual, the better the prospects for recovery (Darley, 1982). The more severe a stroke the less amount of recovery may be expected (Eisenson, 1984). Rehabilitation specialists recognize that typically the first 6 months to 1 year is when the majority of physical, speech, and cognitive recovery will occur. The provision of therapy during the first 6 months to a year has also been shown to improve the amount and rapidity in which recovery may occur (Darley, 1982). Also, the individual with a flexible personality who accepts the impairment with little anxiety, has a better chance of recovery (Samo, 1981).

III AAC AND APHASIA REHABILITATION : LANGUAGE ISSUES

Arlene Kraat (1990) provided an excellent review of the historical application of AAC in aphasia rehabilitation. She aptly identifies the 60's and 70's decades as "the burgeoning of hope". Much work was being done on the development of symbol systems and the teaching of alternate modes of communication to primates and persons with aphasia and mental handicaps. AAC was identified as having three roles: 1) a compensatory or alternate means of communication, 2) as a facilitation technique for the re-acquisition of "natural" spoken language, and 3) as a link to enable spoken language to take place. This was also a time when the study of language pragmatics blossomed and the development of new technologies such as personal computers, speech synthesizers, hand-held calculators and dedicated augmentative communication devices occurred.

By the time we reached the mid-80's, hope had turned to what Kraat identifies as "a period of disillusionment". While the field of augmentative and alternative communication was expanding at a rapid pace and children were successfully communicating through books and boards with large vocabularies of picture symbols, the application of AAC technology to aphasics was meeting with limited success. It was difficult for aphasics to learn repetoires of greater than 100 symbols or signs. Aphasics also did not appear to incorporate alternate forms of communication that were being taught, but rather relied on their unsuccessful verbal or nonverbal behaviors (Coelho and Duffy, 1985). It appeared that some minimal gains in communication skill could be acquired through AAC implementation, but these were nowhere near what had originally been anticipated (Kraat, 1990).

Zangari, Uoyd and Vicker (1994) in a historical perspective of the field of AAC, credited Silverman (1980) for dispelling the myth that AAC intervention would impede speech development in children. Unfortunately, many family members and professionals I have encountered ascribe to the myth that AAC intervention means abandonment of "natural" speech recovery. Therefore, the opportunity to provide AAC intervention is frequently

rejected. Interestingly, after traditional speech intervention modes have been exhausted, these families and tired "communication warriors" return for consideration ofAAC systems. Unfortunately for too many the light of hope has faded and the effort of fighting yet another battle for control of a fractured communication system is too much.

Sarah Blackstone (1991) called for improved collaboration among professionals in aphasiology and AAC. That type of interaction and changes in the way we look at individuals with aphasia is starting to help us direct our services toward those individuals with the best employment potential. Garrett and Beukelman (1992) developed a new classification system for AAC intervention for persons with aphasia. They identified five types of communicators:

Basic Choice - who need maximum assistance from a partner to facilitate interaction.
Controlled Situation - can provide specific information in predictable exchanges. Augmented Input - fluent speech, yet comprehension deficits require listener to provide key words or written choices. Comprehensive - provides scraps of information to partners who may or may not be able to figure out the message. Specific Need - needs support only in situations requiring clarity or efficiency of interaction.

Intervention strategies have been proposed for each of these types of communicators. With acceptance of these classifications and with greater emphasis on improving the skills of the comprehensive and specific need communicators, we may be able to improve the potential for AAC use by aphasic individuals in work settings. I want to clarify that I do believe individuals with severe aphasias can be employed. I just feel that the number of those individuals is much smaller than the high level aphasics who may be able to achieve more satisfying jobs with more appropriate intervention.

Arlene Kraat has also challenged us to view AAC techniques for individuals with aphasia not solely in the light of communication boards and devices, but rather with re-newed focus on the use of a multiple modality, compensatory strategy approach. We should not be choosing among gestures, writing, articulation enhancement, word books or speech output systems, but instead be incorporating all of these approaches to bring about "maximum functional change".

IV RETURN TO WORK : SOCIAL ISSUES

The frequency of aphasic patients who return to work has met with some disparate findings. Black-Schaffer and Osberg (1990) reviewed 14 studies of return to work following a stroke. They found a range of 3 to 84% of the individuals returned to work. Reasons for such wide variations were: a) different definitions of work were included. When competetive full-time employment was the goal, the percentage was much lower than when part-time employees and homemakers were included., b) when individuals under age 50 were studied, better than 80% returned to work, while much lower percentages were obtained when studies included older subjects, c) the amount of rehabilitation services provided also influenced the number of individuals who returned to work, d) in Scandanavian countries, 61% of those studied returned to work while only an average of 23% of participants in American studies returned to work.

Interestingly, the authors propose a more liberal definition of work, studying younger patients, and cultural factors such as help *from* family members contribute to the higher percentages in Scandanavia, and e) most studies are completed in universities in metro or urban areas where jobs require sophsiticated verbal skills. It may be that studying individuals in more rural or industrial areas might show differing percentages of return to work.

In a highly controlled study of 79 stroke patients who participated in the same vocationally oriented inpatient stroke rehabilitation program, five predictive factors influencing potential for return to work were cited (Black-Schaffer and Osberg, 1990). The positive predictors included age, length of stay in rehabilitation, and the amount of improvement in rehabilitation. Negative prognosticators included history of alcohol consumption, smoking, and presence of aphasia. While 82% of individuals who did not have aphasia post-stroke returned to work, only 25% of their patients with aphasia were re-employed.

Two additional studies provide further insight into this issue. In a survey of rehabilitation facilities regarding the number of aphasics who return to work, DeRuyter and associates (1990) found most respondents reported no one returned to work, while a third of the respondents estimated that only 2-5% of aphasic patients who use AAC systems returned to work. McAleese and his associates (1984) reported 29% of their patients with aphasia returned to work and suprisingly, there was no relationship between working and the severity of aphasia.

These researchers have identified a number of reasons or barriers to employment. These include: 1) age - many stroke victims are in their 50's or older and the incentive to retire is high. Howard and his associates (1985) found that only 18% of the stroke patients with aphasia were working at the time of their stroke. 2) other health problems - many stroke victims also suffer from high blood pressure, heart disease, or diabetes. 3) neurological instability - there is a chance of having a second stroke, 4)language impairments affecting speaking, understanding, reading and writing restrict many employment opportunities, 5) depression over loss of function and role change in the home, 6) reduced work speed -physical and language and cognitive skills may be slowed as a result of the stroke, 7) unacceptance or unfeasibility of AAC systems to facilitate employment, 8) caregivers reluctance to promote return to work - more responsibility for care is being placed upon the family, 9) expectations of return of physical and communicative skill before return to work, 10) changing job requirements - team work and increased communication skills are expected in today's job market, 11) employer's inability to deal with changes in an employees physical or communicative status, 12) disincentive to work - entitlement benefits encourage disabled adults to remain unemployed or partially employed in order to remain dependent on government benefits (Bowe, 1992).

A number of additional studies have suggested guidelines for successful return to work after onset of aphasia. Hatfield and Zangwill (1975) studied four aphasic men who returned to work (ie, assistant chef, storekeeper, ranch manager, and laboratory technician). Each received excellent reviews of their job performance. They suggested that the individual's personality in relation to acceptance of disablities and determination to communicate was crucial to their success. Carriero and associates (1987) reported job restructuring strategies that permited 10 moderate to severe aphasics to return to work. These strategies included:
1) reducing the number of hours worked and the workload, 2) reducing the number of verbal

interactions required for the job, 3) allowing the individual to use overlearned language and behaviors. They further reported that self-employed, younger individuals who have the capacity to modify their own jobs have distinct advantages over employees whose jobs were regulated by employers. Berkeley Planning Associates (1981) in a survey of federal contractor compliance with the Rehabilitation Act found the most frequently reported accommodations for promoting return to work of disabled individuals were: orientation of co-workers and supervisors (67.9%) and additional speech therapy services for the employee (18.9%).

V TECHNOLOGY ISSUES

Selection of AAC devices for aphasic patients seems to come down to three types of systems: those with 1) digitized speech output, 2) comprehensive vocabulary representation, and 3) text to speech spellers.

One of the first areas I must assess when considering augmentative communication technology for an aphasic is the individual's comprehension skills. Many individuals have speech discrimination deficits that rule out understanding of synthesized speech. Even the DECTalk speech synthesizer can not be effectively understood. Therefore, good quality digitized speech devices are necessary. We frequently recommend the Macaw, DigiVbx. and now, AlphaTalker. These devices provide limited key selections and the need to learn levels or icon sequences. This often presents a challenge as many of the individuals with comprehension deficits also seem to have difficulty learning and recalling key sequences.

Concerted efforts have been put forth to develop communication devices to serve the severely unpaired aphasic patient. The development ofLingraphica (Steele, 1989), publicized as "a language prosthesis for aphasia", as well as other high technology devices (DynaVox. Liberator. Touch Talker. System 2000/Versa). are designed to meet the needs of the severely aphasic patient. They all feature large vocabularies with either dynamic displays or fixed sequences for coded language representation. While this provides the "language" that aphasics need, these systems also require high memory and cognitive demands on the part of the user, and considerable learning skills to operate conversationally.

Robert Marshall (1987) took an unpopular position in a Clinical Forum paper on reapportioning time for aphasia therapy. He suggested that excessive time is spent in the treatment of globally (or the most severely) aphasic clients while the needs of the mildly aphasic persons may be dismissed because they are less obvious. He proposed that the amount of services provided be apportioned according to the functional results that may be attained.

It seems the same argument could be made for the development of many AAC devices for patients with aphasia. The ambulatory aphasic individual with word finding difficulty who may have the best potential for employment may not need or be able to use an alternate language based, desktop system in a potential work environment. While work on word-finding software (Colby and associates, 1981) and adaptive word prediction software (Woltosz, 1986) has been available for a number of years, it's incorporation into a hand-held device with rapid search speed has been limited. We have found the most effective option for mildly impaired individuals is a combination of a comprehensive word communication book with the use of the Language Master - Special Edition. Aphasic individuals frequently present with

spelling errors which limit the effectiveness of keyboard entry of letters for word searches associations. Thus the combination of word lists in a communication book which can copied into the Language Master provides an effective, albeit slow method of speech outpi

Further development of speech recognition software coupled with we retrieval/prediction features may provide a handheld or wearable intelligent speech prosthes to meet the needs of the mildly impaired aphasic individual who may be the best employme candidate. Will the future development of AAC technology provide a venue for apha individual's return to work? I believe we all want to supply a positive answer to tt question. I would like to leave you with a few other questions to ponder as we strive understand the employment potential of individuals who are recovering from stroke.

Do incentives exist to return stroke patients to work?

Do the expectations of rehabilitation specialists and family members limit orconstrs stroke patients' capacity for return to work?

Should an AAC device serve as a means for employment or as a supplement on t job site?

Does fair to effective use of an AAC device suggest that a stroke patient shoi acquire a job that has a fair to moderate emphasis on use of the device to perform 1 job?

Should aphasic patients learn computer operation skills to effectively loa employment?

Should professional/technical people be encouraged to seek labor positions afte] stroke?

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Augmentative Communication Technology and Employment: The Year 2010

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Abstract

This paper will consider Augmentative and Alternative Communication (AAC) technology from the perspective of employment. It attempts to look into the future and anticipate how the workplace will change in the next 15 years. It will then consider how AAC technology might fit into future office environments via two scenarios. The first scenario considers a receptionist position that would require a high school education. The second scenario considers a software project leader that would be appropriate for a college educated individual. Finally, this paper will briefly review current research at Applied Science and Engineering Laboratories that we hope will help in attaining the important goal of competitive employment for individuals who use AAC technology.

Introduction

Successfully integrating individuals who use augmentative communication technology into the workplace remains an important challenge for the present and future. While the benefits to society such as increased self-sufficiency for people with disabilities are commonly acknowledged, the methods to achieve greater employment opportunities remain elusive.

Any approach to overcoming such a significant barrier must by necessity be multi-dimensional. For example, while this paper is primarily addressing AAC technology, it would be foolish to believe that technological advancement by itself is sufficient. In addition to technology, a multidimensional approach must address a wide range of issues including policy, societal attitudes, basic education, and training. It must also address a range of employment possibilities that reflects varying aptitudes, educational achievements, and interests.

As mentioned, this paper will focus on the role of technology in employment of AAC users. It will consider a future looking vision from the perspectives of how the workplace may change over the next fifteen years and how AAC systems can take advantage of these changes. It will dis cuss some of the likely improvements to AAC technology that we can expect and pose some future workplace scenarios, circa 2010. Finally, it will highlight some of the current research efforts in our laboratory that we hope will play some role in this potential future.

The Changing Workplace

Predicting the future can often be a dangerous activity. It is possible to either be too optimistic 01 too pessimistic in what might happen. Predictions may also be totally "off-the-mark" and suggest possibilities that are tangential to the future's actual path. The history of Artificial Intelligence, foi example, has been plagued with many incorrect predictions, and as a consequence has come under heavy criticism for its perceived failures (e.g., unconstrained natural language dialogues). Another failure of the prediction process is the "Paperless Office" which despite advances in

computer and communications technologies has never materialized. However, given these risks, predictions are a necessary component of the research and development process since they provide future goals to work towards. Without them, there is little chance for significant breakthroughs.

Attempting to make long-range predictions about AAC and employment requires that we first consider how the *workplace* might change in the future. Most certainly, rapid advances in technology will change the office landscape. In particular, the merging of computer and communications technology has begun and will continue to have major effects on the way that many people work.

One particularly evocative vision of future workplace technology comes from the laboratories of Xerox Palo Alto Research Center (PARC). Research at PARC can be credited for many innovations including the graphical user interface and computer networking, now commonplace in office environments (Brown, 1991). More recently, research at PARC has focused on understanding workplace activities as a means to motivate future technology development. This research, which has included psychologists, sociologists and anthropologists as well as computer scientists, has emphasized how people collaborate and communicate in the work environment. The resulting technology that is currently being explored reflects the rich set of contexts that work activities create. These contexts include attributes such as collegial relationships, location, and histories. The idea of "ubiquitous computing" has been offered as a new paradigm for workplace information technology that recognizes the realities of work environments. It attempts to take the computer from the foreground of work practice and to make it a transparent part of our environment in much the same way print technology has evolved (Weiser, 1991). Characteristic of ubiquitous computing are some of the following technologies:

Multitudes of task-oriented computers: Computers will be designed for specific activities and will exist in great numbers (hundreds per room) and varying size. Current efforts at PARC have distinguished 3 types of systems. "Post-it" size computers called *tabs* can be used for a variety of applications including active notes (e.g., with alarms), personal location devices, and environmental controllers. *Pads* are similar to notebook computers except they are intended to be used as scratch computers that just exist in the environment and can be picked up by anyone. Finally, *boards* exist as large public computer and communication spaces that can be used for such activities as shared design between remote locations.

Situated information systems: Critical to the function of devices such as tabs and pads is the idea of "spatial awareness." First, computers will be aware of their location. Second, there will be information associated with that location that each system can use. One interesting demonstration of this concept comes from the University of Toronto (Fitzmaurice, 1993). Researchers there have developed a system called *Chameleon* which consists of a palm size computer and sensors that track the computer's position. When a user holds the computer up to physical objects, the computer display shows information relevant to the object. For example holding the computer up to a city on a wall map will display information about that city. Locations near a fax machine could display a variety of related information such as call logs and personal phone directories. Feiner, MacIntyre, and Seligmann (1993) have pursued similar directions except they utilize a head-mounted see-through display that overlays information on real-world objects.

Sophisticated networking infrastructure: To support the tremendous amount of information that will be available in the future and the diverse computing platforms discussed above, it will be necessary to have a much richer information network that includes support for highly portable (e.g., wireless) devices. This trend is already underway in the development of the "National Information Infrastructure" (commonly referred to as the information superhighway).

Intelligent agents: While not explicitly part of the vision of ubiquitous computing (and somewhat contrary to the idea of transparency), a number of researchers have begun discussing the development of software based agents that can perform a variety of tasks for users automatically (Dertou-zos, 1991). This might include retrieval of specific information from the network or filtering of incoming information (e.g., junk electronic-mail).

While this workplace future discussed above is neither exhaustive nor definite, it is likely that at least some of these technologies will exist, and it is almost certain that a wealth of electronically networked information will be available to the individual. One way that AAC users will be more competitive in the future is to take advantage of this information. Consequently, AAC technology must be tightly integrated into workplace technology in ways that we have not yet considered today.

Future advances in AAC technology

Developments in augmentative communication systems will be driven by a number of areas of research including: continuing advances in electronic components and computer peripherals; developments in computer systems and human-computer interfaces; and, AAC research into language representation and conversational processes. The years separating 1994 from 2010 will hold many exciting changes.

Electronic components

Fifteen years ago, the Apple n and Radio Shack TRS-80 represented the state-of-the-art in personal computers, with green monochrome displays, low capacity floppy disks, and a few kilobytes of memory. Today, many pocket calculators are more powerful than this. Electronic devices continue to get smaller, cheaper, and far more powerful. These advancements will result in AAC systems whose batteries last longer and recharge faster. Color LCD displays are available with high contrast and excellent visibility, even in difficult lighting conditions. Also, AAC systems will continue to grow smaller, sleeker, and more aesthetically pleasing.

Today, the voice output on many AAC systems is either digitized recorded voice or synthesized speech. Currently, recorded voice sounds more natural. However, synthesized speech allows greater flexibility. The quality of synthesized speech has improved a great deal over the years, and ongoing research promises still greater improvements in the future.

General systems issues

Computer systems are changing. They are becoming more powerful, but also simpler to use through better interface design. Research into human-computer interfaces is investigating alternative methods for input and output, including gesture recognition, speech recognition, and small head-mounted displays that detect the direction of a user's gaze or head orientation. General issues that apply to AAC include the following:

Integration: AAC systems will be able to take advantage of the trend towards modularity and compatibility between computer systems and peripherals. For example, many devices around the home and office are, or could be, controlled remotely: environment controls, such as light switches and thermostats; stereos and televisions; even automobile alarms and locks. The remote control of these devices could be integrated into the AAC system, so that it becomes not only a communication aid, but also a central control center for independent living that far exceeds current ECU capabilities. Cordless or cellular phones could also be integrated into the AAC system. As organizations become increasingly networked, such an AAC system could also provide access to a wide range of information services.

Personalizability: As systems become more complex, it becomes increasingly unnecessary to be aware of all of their underlying processes. And yet there are more and more features that the user might like direct access to, and the ability to modify. A transparent system would allow the user to "look inside" and see these features in action. Controlling such things as voice quality, vocabulary, and conversational features allows a person, an individual, to choose the image she would like to project to the outside world. Higher level AAC features, such as how the vocabulary is organized with respect to different contexts, may also come under the control of the user.

Issues specific to AAC

Current systems consider, to varying degrees, various components of language such as phonology, syntax, semantics, and pragmatics. For example, synthesized speech continues to approach natural phonology. Some systems make use of syntax and semantics in order to predict words or to add appropriate function words and morphological affixes. Systems that consider the context of the utterance, the augmented communicator's mood, or with whom they are speaking, begin to take pragmatics into consideration.

More efficient parsing methods, better knowledge representation, more effective speech recognition and synthesis, and the modelling of features of natural conversation are all current areas of research. Other issues for the future include:

Language ability independent of physical ability: Augmented communicators can access today's communication systems by light pointer, mouth stick, finger, eyebrow, or almost any physical means. However, as large as the choice of access devices may be, they all share one common requisite: they all require physical motion. Thus, any difficulties in a person's muscular control will be reflected in their language production. Interaction between the user and the AAC system continues to cause a major bottleneck in the rate and effectiveness of augmented communication.

An AAC system that supports a number of input methods and modalities would allow the user to choose the most appropriate and effective channel for interaction. Recognition of gesture is one option, but there may be others as well.

Visible or invisible communication tool: Just as we can ignore the cameras and microphones that we do not see but know are present during a television newscast, we should also be able to overlook the tools augmented communicators use to communicate. AAC systems can become almost invisible, both as a result of continued reduction in physical size, and also by being less distracting during a conversation. Multiple and redundant input modalities and small eyeglass-like head-mounted displays would, for instance, allow the user to maintain eye contact with a conversational partner while accessing the system via the modality of their choice.

Some augmented communicators may prefer their system to be more visible at times, perhaps acting a little like an interpreter. This may be especially true for individuals who communicate slowly and make considerable use of word prediction and other interpretive techniques, as well as anyone in an unfamiliar situation or in a group setting.

Tool for education and therapy: Speaking persons have the opportunity to learn and practice with their communication apparatus nearly from birth, while most augmented speakers are not given this opportunity until much later. A growing body of interest is investigating the long-term benefits of providing nonspeaking children with communication systems at a very young age.

Education and acceptance by the speaking public: Of course, nothing stands in the way of a person's growth and development socially, intellectually, or professionally, more than the prejudices of the people around them. In the future, integration with and better education of the general public will lead to a much wider acceptance of individuals with disabilities in our society.

Scenario #1: Glen

This brings us to Glen, a receptionist and administrative assistant in a small but prestigious firm somewhere. Glen uses a wheelchair to move around and a new AAC system to speak. The voice is synthesized, but with features derived from his own voice patterns. At work, he sits behind a desk, with a computer in front of him, and the office's phone-message box to his right.

It's 9:45 am and the phone rings. His AAC system is connected to the phone line by a wireless remote, and automatically answers the call with: "Good morning, This-and-that Firm, may I help you." After only his second day at work, he had decided to store that sentence in the auto-answer buffer. The person on the phone asks for Carol, who Glen knows is on vacation. The AAC system, recognizing the reference to "Carol", suggests a number of responses appropriate at this point in the conversation. Glen can choose one as is, modify it, or compose a different response. He selects "sorry" and the second option, producing: "I'm sorry, Carol is on vacation." Then the first option appears on the next screen: "Could I take a message?" He is impressed how the system has automatically learned and adopted his style of conversation.

There is no answer, then an apology: the person had been called from the phone for an instant. Glen waves his arm slightly, which the AAC system knows is the gesture for "repeat", and the last two sentences are repeated.

When the conversation has ended. Glen plays it back and has his AAC system pull up the phone-message application on his computer. This way, he can transfer the important information to the phone-message note at a comfortable pace. He selects "Carol" for the name; the time and date of the call are filled in automatically. He then selects "John Updike" for the caller's name, and "wants talk book lunch Tuesday", which the AAC system expands to "John wants to talk with you about his book over lunch on Tuesday." The system is able to make this small leap of logic, that it is John's book, because John had called the week before, asking Carol to read his first draft. The phone-message memo is sent to the printer, and Glen turns his wheelchair toward it By selecting the proper commands on his AAC device, he is now able to use the wheelchair's joystick to operate the robot arm by the printer, and he moves the memo to Carol's message folder.

At 10:15am, the new accountant comes in, together with Scott, head of accounting. Scott has known Glen for a few years, and can understand much of Glen's own speech, but Glen senses the new accountant, who introduces herself as Helen, is a little nervous. He decides to continue to operate his AAC system by manual selection rather than by interpreting his vocal selections. Glen smiles a greeting at Scott, and selects "hello, name." for Helen, which produces: "Hello, Helen. My name is Glen." The AAC system was able to recognize Helen's utterance as a greeting and introduction, and transferred the word "Helen", now in Glen's voice, to its output.

Glen asks Scott and Helen to follow him to the meeting room, where Helen is to meet the rest of the firm's small staff. As he wheels to the door of the meeting room. Glen selects the door control on his AAC system. The location detectors in the ceiling are tracking the transmitter in the AAC system, and sense that Glen is approaching the meeting room door. The door opens.

Scenario #2: Emily

Emily received her M.S. in computer science and after working as a software engineer for 4 years was promoted to team leader within her company. Her job responsibilities include management and coordination of the project team as well as overall product design. While she does not get a chance to do much programming anymore, she still enjoys getting her hands dirty on occasion. Her team, which is developing a multimedia application on the International Space Station, consists of two programmers, a graphics/video artist, a science teacher, and an administrative assistant (who is also trained as a technical writer). Emily's communication system consists of a wearable computer that she has on her belt with an eyeglass-based heads-up display that also monitors her eye-gaze. This system suits her best because most of the time she can get around fine without a wheelchair. Her system also has a wrist-mounted touch-pad that she can use for gesture-based input.

This Monday morning starts out with Emily reading her e-mail on her bus ride to work. This allows her to get a jump on the day. She marks several messages that she needs to answer later on. The bus ride is a little too bumpy to effectively type, but just fine for reading through her mail, most of which is announcements and electronic newsletters that she subscribes to. When she gets into work, she sits at her desk and responds to the messages that she marked. While in her office, she switches to a traditional keyboard with a larger display. Changing between different systems helps her avoid fatigue, and fortunately the systems provide seamless switching between devices. One message was a request for a letter of reference from a former co-worker. She loads her reference-letter generation module and selects an appropriate template. To the template she adds some specific information and then personalizes it a bit She also saves the letter away in her telephone communication area because she knows that she will also be getting some telephone-based reference requests and she can use much of the letter to answer a caller's questions (e.g., "John worked for me from Spring 2008 through the Fall of 2009").

At 9:00, it is time for the weekly project team meeting. She e-mailed the agenda to her group on Friday when she was working at home (which she is able to do two days a week). As she was composing the agenda, she also prepared some comments that she would like to make at the meeting. Fortunately, meetings run pretty predictably, so much of the formulaic conversation can be prepared ahead of time. In this case, the agenda served as a script for much of her communication. For communicating unique sentences, Emily used a combination of touch-pad gestures (that would select a word category) and eye pointing (that would select an individual word). With this

method, she was able to communicate at approximately 60 words per minute. Using both gesi and eye-gaze gave her a speed advantage, but more importantly reduced fatigue. At any time could switch to a single mode of operation. Rather than take notes at the meeting, Emily was e to record important comments. Actually, the whole meeting was being recorded, so she would a 'mark' button when any important event happened. During a discussion on the system interf design, a question came up about a particular aspect of the design decision that was made earl Emily was able to access the project documentation that described the feature and move it ova the electronic whiteboard for everyone to see.

The rest of Emily's day was quite varied. She needed to write a progress report on the project:

her boss. Fortunately, this amounted to collecting various tidbits from previous meetings and assembling it together cohesively. She is also having lunch with her boss. They decide to run c to McDonald's (people still have junk food urges in the new millennium). Fortunately, McDonald's started a home delivery service (after they sold 100 billion) and Emily can download a menu from the net. This information and her restaurant script allow her to quickly sequence through the predictable aspects of the fast food experience. During her lunch conversation, she able to access her report and use parts of it in her discussions with her boss. In the afternoon, Emily is able to settle back and do some project programming. Her programming vocabulary s< not only includes C++ keywords and operators, but also automatically derived symbols such as function names that are denned in the program that she is working with.

Research at ASEL

Currently there are no projects at Applied Science and Engineering Laboratories specifically devoted to AAC technology in the context of employment. However, we believe that much ofth current research that will improve the general state-of-the-art in AAC technology efficacy will also be applicable to employment situations in the future. While it is beyond the scope of this paper to review every relevant project at our labs, it is useful to highlight some of the current activities that have relevance to the scenarios presented above[1].

Speech Research: Research in speech is focused on developing more natural and intelligible speech synthesizers. In addition, the creation of personalized voices is presently a major emphasis. The speech program also is working on techniques that can process dysarthric speech to improve intelligibility.

Interface Research: Research in interfaces is focused on both gestural and eye-gaze input. Gesture-based input will provide a rich set of additional input channels for individuals with disabilities. Eye-gaze input research is attempting to create more robust systems that are more tolerant to head movement. This includes head-mounted systems that could someday be incorporated into wearable computers.

Systems Research: The Systems lab, in addition to developing new PC-based software systems, is also researching some longer term issues. These include multimodal control, and approaches to facilitate custom AAC system authoring.

1. A more comprehensive description of ASEL's activities can be found in Demasco (1993).

Language Research: Research in this lab is focused on the representation, organization and processing of natural language in AAC systems/This includes graphical representation of language for individuals with cognitive impairments, the application of artificial intelligence to the development of intelligent assistants, and the investigation of spatial models of language organization using virtual reality technologies.

Conclusion

While much of ASEL's research is expected to improve AAC technology for individuals in the workplace, there is a definite need to begin considering specific issues related to employment. Specifically, it is essential to understand how computer-based information in the workplace can be integrated into AAC language models. In addition, the issue of fatigue must be strongly considered if competitive employment is a goal. Future research may very well need to begin by looking at very specific workplace situations and developing highly customized systems that can take advantage of any opportunity to minimize physical and cognitive costs of communication.With specific examples of success, it will then be possible to generalize solutions to a wide range of situations.

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Augmentative Communication Employment: Multi-Culturalism, Demographics, and Resources

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The Pittsburgh Employment Conference (PEC) for AAC users is timely/ especially within the context of two other emerging areas: the Federal Government's attention to supported employment, and multi-culturalism. On the one hand, it is exciting to be invited to participate in a conference in its second year. On the other hand, it is frustrating that little AAC literature, except for PEC Proceedings (1993), pertains to employment in general, and employment for AAC users within a multi-cultural environment, in particular. As I prepared some thoughts for our discussion, the 1993 PEC Proceedings served as a guide for beginning my thinking. As I reviewed the Proceedings, I was surprised that so few demographic studies were included. In addition, I noted an absence of information pertaining to Federal Laws with regard to supported employment. The government provides federal funding for social security and supported employment projects. Vocational rehabilitation programs across several states publish information to assist disabled consumers in accessing jobs. Such information was not referenced in the 1993 PEC Proceedings. As funding for employment is a major issue for persons with disabilities who are AAC users, a brief list of resources will be presented within this paper. Specifically, the objectives of this paper are:

1. to examine the demographics of employment of persons having disabilities, in general; and unemployment of AAC users in particular;
2. to review the topics which were presented at the 1993 PEC which are presumed to have a direct impact on the employability of AAC users;
3. to consider those topics identified within the context of the culturally diverse issues relevant to AAC users seeking employment; and
4. to list available resources for further study of employment issues.

Demographics

The 1993 PEC Proceedings reveals a dramatic absence of demographic data pertaining to persons with disabilities who use AAC and are employed. The available data from the 1993 PEC as well as other sources (i.e., population studies, census reports) are confusing and misleading. Terms are not defined, complete references are not available, and records are inconsistent across ages, extent of employment, and categories reported. The data in Table 1 form a composite of

information which is found across several sources. With reference to the data in Table 1, it is immediately apparent that the data are not complete. There are numerous "holes" where data are absent.

Table 1. Demographic data for employment of persons with disabilities

	Non-disabled	Disabled	AAC
Population in USA	244 million	43 million	2 million
Employed			122,000 25 persons 24.4%
Gender			
Men	75%		27.2%
Women	47%		19.4%
Ages			
16-64 Years		14.2 million (work-disabled)	
Gender			
Men		23.4%	
Women		13.1%	
Education			
16 plus years of school		61.7%	
12 plus years of school		40.4%	
8 or fewer years of school		17.6%	
Unemployed	7%	38%	
Gender			
Men			
Women			
Ages			
16-24 years		30%	
Education			
high school graduates		50-70%	

Note: These data are compiled from Erickson (1993), Haney (1993), LaFlante (1993), Baker (1993), and Current Population Survey (1990).

What do we know about employment with regard to persons with disabilities across the USA?

Question: How many persons with disabilities reside in the USA?

Out of approximately 244 million Americans in the USA, approximately 43 million are classified as disabled. A 1990 survey by the US Dept. of Health and Human Services found 5.3 % of the population was using some type of assistive technology;

and 3% of all Americans lived in homes specially adapted a accommodate a person with a disability.

Question: What are the numbers (percentages) of persons with disabilities in the USA who are employed? According to a United States General Accounting Office Report (GAO/1993), individuals with disabilities are more likely to be unemployed than are individuals who are not disabled. A Current Population Survey (CPS, 1990) nationally, reveals that 14.2 million of 16 to 64 year-olds are work-disabled [note:

the term "work-disabled" was not defined]. Only 23.4 % of males and 13.1% of females with a work disability were employed full-time. Erickson (1993) noted that unemployment figures for persons with disabilities is 5 times the national average [7%] @ 38.3% unemployed. Of those persons with disabilities who are employed, 61.7% have completed 16 or more years of school; 40.4% have completed 12 or more years of school; and 17.6% have completed 8 or fewer years of school. Haney (1993) stated that 50-70% of high school graduates with disabilities are unemployed in comparison to 30% of students with disabilities who are ages 16-24 years and are employed.

Question: What are the numbers (percentages) of persons, without a disability, who are employed in the USA? According to the CPS (1990), 74.8 % of males and 47.1 % of females without a disability are employed .

Question: What demographic data are available re: persons with severe disabilities and persons who are unable to speak? LaPlante (1993) reported that of the 122,000 persons who are unable to speak; 24.4% are employed and a breakdown by gender finds that 27.2% are males, and 19.4% are women.

Question: How many AAC users are employed? Baker (1993) noted that fewer than 25 individuals using AAC in the USA may have independent economic control of their lives.

Question: What are the percentages of persons within underrepresented groups?

The 1993 national statistics for the USA reported that 57% of the population was Caucasian, 34% African-American, and 9 % represented other racial groups.

A review of the demographic information provided reveals that persons with disabilities are often unemployed. Additional demographic studies should be conducted in order to more completely begin to answer questions such as those asked within this paper, and to fill in the "holes" in Table 1.

During the 1993 PEC/ multiple topics pertaining to employment for the AAC user were introduced. In preparation for my comments/1 conducted a preliminary search for key topics re: employment issues across the papers presented in 1993. My methodology was simple. I read all the papers and listed key words or topics which were identified or emphasized by each of the authors of the 1993 papers. As my list grew longer/1 grouped like topics under one of several headings which seemed to emerge. These topics form a core around which this paper is organized. My compilation of those topics is reported in Figure 1.

A review of the information presented in Figure 1 indicates that data presented during the 1993 PEC covered at least 7 broad categories/ and approximately 60 topics. Given the scarcity of information pertaining to employment of the AAC user/ the 1993 conference provided an excellent foundation for continuing our discussion.

Figure 1. Employment issues for AAC/ identified at the PEC (1993).

Access

appropriate job match (Light/1993) barrier-free work environment (Light/1993) career decisions (Leslie/ 1993) community mobility (Stump/1993) device funding (Golinker/1993) "hot" vocational fields (Leslie, 1993) independent living (Stump/1993) marketable skills (Light, 1993) mass transportation systems (Leslie/ 1993) placement services (Golinker, 1993) recession (Blackstone, 1993) reliable transportation (Light, 1993)

Attitudes

accept constructive criticism (Van Tatenhove/1993)
employer expectations (Stump/1993)
learned helplessness (Golinker/1993)
maintenance of customer satisfaction (Van Tatenhove, 1993)
negative attitudes (Blackstone/1993)
positive social attitudes (Light/1993)
positive work ethic (Light/1993)
reduced expectations of employers and professionals (Blackstone/1993)
respect (Creech, 1993)
value as a person (Blackstone, 1993)

Communication Competence
ability to exchange information (Blackstone/ 1993)
ability to sustain and control conversations (Creech/1993)
assertiveness (Stump, 1993)
attending (Erickson, 1993)
express basic needs (Blackstone/ 1993)
initiation of conversations (Creech, 1993)
strong interpersonal skills (Light, 1993)
thinking (Erickson/1993)
Experiences
decision making (Stump, 1993)
early childhood work experiences (VanTatenhove, 1993)
home (Stump, 1993)
life situation (Stump, 1993)
managing personal finances (Stump, 1993)
realistic work experiences which are available (Van Tatenhove, 1993)
social experience (Stump, 1993)
Support
family and care giver support (Stump, 1993) job coach
(Erickson, 1993) on-the-job assistance (Light, 1993)
transition-to-work program (Erickson/1993)
Technology
access to assistive technology (Light, 1993) comfort and familiarity w/
technology (Stump, 1993) functional communication channels (Light,
1993) use a communication device (Blackstone/1993) use of technology
(Blackstone, 1993)
Training
accept responsibility for team work (Van Tatenhove, 1993)
cooperate with fellow workers (Van Tatenhove, 1993)
delivery of products (Van Tatenhove/1993)
education (Stump, 1993)
general academic achievement (Erickson/1993)
keeps records of work accomplishments (Van Tatenhove, 1993)
lack of experience (Blackstone, 1993)
literacy (Stump, 1993)
maintaining work schedule (Van Tatenhove, 1993)
management of money and financial records (Van Tatenhove, 1993)
promoting products (Van Tatenhove/1993)
review own job performance (Van Tatenhove/ 1993)set personal work goals (Van
Tatenhove/1993)
training (Stump/1993)
Note: All authors referenced in Figure 1 are cited from the PEC Proceedings (1993).

Multi-Cultural Issues

With reference to the categories in Figure 1, one can not assume that a similar list would be generated across all cultures. That is, if we were to identify several case studies of AAC users who are employed within dominant and minority cultures, I suspect that we would find that cultural differences are operational which are impacting employment practices. Please examine the categories within Figure 1.

It appears that AAC practices and literatures in the USA have focused almost exclusively on providing communication within the Anglo "white" culture. It is the premise of this paper that the provision of services from the perspective of one dominant culture must cease. Within our current practices, we can no longer afford to overlook inter-cultural communication variables. All of our practices are expanding to include the delivery of services to an increasingly diverse population. Unfortunately, many practitioners have only been prepared (in academic training programs) to deliver services to all persons within the context of one particular culture!

Persons with disabilities who are AAC users are found within a diversity of cultures across the United States. Internationally, consumers are served by members of the International Society for Augmentative and Alternative Communication (ISAAC). As we approach the year 2000, it is not unreasonable to expect that AAC practices in the USA will increasingly incorporate strategies already utilized by practitioners within other ISAAC Chapters. The field of AAC is one of probably very few disciplines uniquely positioned to access information across cultures. In 1994, members of ISAAC are located within approximately 50 different countries. As a profession, AAC has immediate access to information pertaining to inter-cultural communication. Within the USA, the larger urban areas, like the greater Los Angeles area for example, include children in the public schools who speak up to 41 different languages. Practitioners throughout greater Los Angeles are already dealing with multi-cultural issues in AAC. The objective of this paper, then, is to examine the issues of cultural diversity with regard to employment in AAC. Specifically, to examine those dynamics which AAC users from underrepresented groups face when searching for employment.

Let me provide some examples of how issues around employment might differ across cultures. Refer to the seven categories listed in Figure 1. One immediate question which might be asked is: Would the same list be generated for AAC users who are seeking employment in an Asian-American community? We know that each culture has its own routines and rituals. Communication behaviors are culturally bound. Therefore, some areas in which we might see differences pertain to the process of the employment interview with regard to eye contact, rules for social interactions with others, dress and personal appearances. There are distinct

differences between cultures with regard to how decisions are made. Cultures place different values on the presence of disabilities. Family structures differ. Life expectations and aspirations are dependent on the dominant as well as the minority culture. Practitioners should develop sensitivity to stereotyping.

Within the 60 topics listed in Figure 1, each AAC user's personal life experiences will impact employment issues like access, childhood work experience, acceptance of technology, and care giver support. Successfully gaining employment for culturally diverse consumers poses new challenges to practitioners. To date, we have no information regarding the contribution to success made by any one variable listed in Figure 1. That is, we do not know which of the 60 issues listed carry more weight in achieving employment. During the round table discussions, we will examine the variables listed in Figure 1 as we sort through those established by our dominant Anglo culture.

Resources

Practitioners continue to assist consumers using AAC to find appropriate employment. Towards that goal, there are several Federal programs which provide assistance for persons with disabilities seeking employment which were not included in the 1993 Proceedings. I refer practitioners to their local state offices of vocational rehabilitation, or to their governor. In addition, inquire into the availability of the following programs in your state:

Social Security Programs and Work Incentives:
Supplemental Security Income (SSI) and
Section 1619 (A)
Section 1619 (B)
Social Security Disability Insurance (SSDI)
Entitlement to Medicaid/Medicare
Impairment-Related Work Expenses (IRWE)
Trial Work Period (TWP)
Extended Period of Eligibility (EPE)
Continued Payment to Individuals under a Vocational Rehabilitation Plan (Section 301)
Working in Collaboration with the Social Security Administration (SSA)
Plan for Achieving Self Support (PASS)
Locations of State Client Assistance Programs (CAP)
The impact of PL 101-476, Individuals with Disabilities Education Act (IDEA) (1990), Part H of 1986 amendments to Title I of the Education of the Handicapped Act
Rehabilitation Act of 1973, Title Vm, Section 803 (C), Amended to 29 U. S. C. 760-762 [with regard to independent living, supported employment]

Americans with Disabilities Act (ADA), PL 101-336

Summary

This brief paper examines the limited information which is available pertaining to employment of AAC users. It has been the author's intent to provide a "think piece" from which future research, debates, and careful reflections will emerge re:
demographics, employment, and diversity. Time and space do not allow for an in-depth discussion of the needs in each area. Therefore, the objective of the author has been to "stimulate" inquiry into the employment issues addressed in preparation for the 1995 PEC.

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Will Augmented Communicators be Able to Hold Competitive Jobs in the Workforce?

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Abstract:

To chose employment one needs choices. Choices are available for aug-comm users who prepare themselves for a first job and for a lifetime of changing and expanding jobs. Many careers are available which require various levels of mental acuity and mobility and which do not require speed of discourse. Those which require technical education generally offer the best financial security.

Introduction

Why do you want a job?

To support yourself and your family? Surely.
To have social interaction with peers? Surely. To have greater self-esteem? Surely. To be stimulated by the outside world? Surely.

All those things are great. They are great if they work out. At the same time, it is an error to depend too much on a job for all emotional satisfaction in life. The fact is that many people work for bosses they don't like, they do jobs they don't like, they work with people they don't like. Of course, they wish it were otherwise, but they deal with their own situation as best they can. People need other sources of human interaction, with family, with friends, with church and synagogue members, with hobby club members. We each need to build those relationships, too, because job relationships aren't enough.

The United States economy thrives on what Joseph Shum peter' of Harvard called 'creative destruction,' grinding down old industries to replace them with new. In Pittsburgh, one can look in any direction and see where steel mills used to be. The steel industry lasted a hundred years and it still exists today, but our modern economy requires less and less steel, other countries have excess capacity and want to dump it here, and the modem steel mill has 10% the labor content per ton of steel that it had just twenty-five years ago. Steel production is down a little, steel employment is down a lot. And yet, total employment is up, not down. While the steel mills have lost a million jobs, the economy created thirty million jobs. They aren't in steel, but they exist. Twenty million jobs have been created in electronics and computers in the past fifteen years. Retailing and hospitality have expanded as people travel more and have more money to spend.

That big job destroyer we call the economy works on the individual just as it works on industries. Rare is the person who does the same job for a whole career. Most people find their working life to be broken up into five-year blocks, with each five years' being spent in quite a different way. Even in those cases where the job title remains the same, the technology shifts so fast under our feet that the nature of the job changes. What's more, people leam while they work, learning more and more. After a while, that extra learning makes them useful at other jobs, working with customers, working with suppliers, teaching newer employers, directing other

employers. Often enough, the worker decides to go work somewhere else for personal or family reasons.

What doesn't happen any more is retirement. Nobody seems to sit on the porch and rock anymore. Retiring from one job means starting a new one. That's true even when money is not a concern. We Americans don't know how to retire. Some have proposed that we need a new definition of the word 'employment,' for this very reason.

It is also the case that many people participate in the economy without actually getting a pay check. Mrs. Hillary Roddam Clinton is the most visible example in present-day America. There are many people who contribute their time and effort. There are others who learn to care for themselves, wholly or partly, internalizing an external cost. Why do people take these initiatives? Because they are paid, not in direct cash money, but in personal satisfaction. This is perhaps the new meaning of 'employment,' being active for our own benefit and for the benefit of others.

Things are changing. Those five year blocks are becoming four year blocks. Maybe they will become three year blocks. They certainly are not going to become six or ten year blocks. Change is in.

Another way of looking at this is that the likelihood of working for one company for an entire career is getting smaller every year. Since 1945, the Fortune 500 have employed fewer people every year even while growing enormously in all other measures. Manufacturing companies have reduced their target plant size from 500 workers in 1960 to 50 today. More and more large companies do their hiring through intermediaries such as Manpower even for middle managers both to match the available pool of labor and to side-step ever-growing governmental restrictions on personnel management. Both of these trends are likely to accelerate over the coming years. There are more small companies than there are union workers, and these small companies account for all, all, the growth in jobs in this country. Employment in government is stagnant and is likely to fall when taxpayers demand that the same winnowing of management layers and administrators be done in government be done, indeed there are already calls for this in Washington. Actual reduction in government employment may be a pipe dream, but there will be little or no growth in government in the coming decades. There may be expansion of some government activities and reductions in others within a shrinking or stagnant total.

A common career path today is for a person to start out working for a big company and then move to a smaller company. Many people are starting their own companies, which is more possible today than before because many more families have two paychecks coming in, allowing one or the other to take more career risks than would have been possible before.

Planning a career today means planning your own career, feeling responsible for your own career, participating in the planning to the extent that you are able, to find a good, long-term match between capabilities and interests.

The Three R's for the 21st Century.

Professor Carlitz of the University of Pittsburgh, writes" that the Three R's are going to be research. Retraining, and Restructuring. Dr. Carlitz is an authority on computer-related education. By 'research' he means that everyone will be seeking information from computer networks in a more intense way than has been possible or necessary in the past. Retraining and restructuring are clear enough. All three will be supported by public institutions such as libraries and schools, but the formality of it all will somehow disappear. People will be on their own, finding their own information and kindred spirits, using the National Information Network as their source, vehicle, and club.

Preparing for the job.

Preparing for *the job,* then, is an illusion. What one can reasonably do is prepare for a career, but not for a job. A career is a sequence of jobs connected by a thread of interest. To prepare for a career, develop that interest plus a set of entry level skills. Then, keep developing that interest with additional education, self-study, and participation. To the extent that assistive devices are a productive part of that self-study, mastery of the assistive technology is very likely to be a key element in preparation.

There aren't any jobs.

People with significant disabilities may feel there aren't any jobs, let alone any careers, for them. Yet, the fact of the matter is that surveys of business managers conducted by the Commission on Advanced Technology for the Office of Vocational Rehabilitation have consistently shown that there are more companies willing to hire substantially impaired individuals than our system can produce candidates for those jobs. That is not to say that every company and every job are there waiting, but rather that there are more than enough opportunities.

Where are the jobs?

It is said that communications are the key to success in any career. Business is about communication, communicating with suppliers, with workers, with customers, with regulators, with the public, with the boss. Indeed, some say that management is communication. Can people who have difficulty communicating prosper in the business environment? Yes. That's particularly true because of the modem modes of communication.

People communicate these days with messages. Electronic mail. Voice mail. Electronic data interchange. Each of these requires content, but they don't require speed of delivery. The wise user takes time to get the message right by thinking it through. If it takes longer to do the mechanics of recording the message, that doesn't matter very much. Instantaneous response is not required.

Some messaging jobs require a lot of keyboard work. People with poor keyboard acuity should avoid those jobs whether they are handicapped or not, it's just a poor fit. As Ted Williams says, get a good pitch to hit.

That probably sounds pretty odd, considering Ted Williams was maybe the greatest batter in the history of baseball. But that's what he says. Ted says that when he first came up to the Big Leagues back in the thirties, he found himself playing a Grapefruit League game against Rogers Hornsby, who has just finishing his career at that time. After the game, Ted went over and said, "Gee, Mr. Hornsby, I want to be a great hitter like you are. Can you give me any advice? " Ted goes on to say that Hornsby kept doing what he was doing, banging his shoe with his bat to get the mud out of his cleats, never looked up, and said, "Kid, get a good pitch to hit." Ted took it to heart, and he says it's the best baseball advice and the best business advice he ever got. Why do something hard, like hitting a slider low and away, when it's so much easier to hit a fast ball over the plate? Ted Williams didn't always get a good pitch to hit every time he went to the plate, but that wasn't exactly his point. His point was, and is, there is no point in putting effort into something that just isn't going to work out, look for better opportunities. Bad choices are bad choices. Look further, look for a better fit.

Why work hard at doing something that can't ever work out very well? Why try to run a word processor or a cash register if the hand motor speed just isn't there? Competitive employment means getting a good pitch to hit.

Along with a good pitch to hit, you need to have a bat. In our modern economy, the batter with the bigger bat is the batter with the better education. Sweat-of-the-brow jobs are gone and won't come back. You can hardly make a living with a strong back anymore. As Lester Thurow of MIT puts it, if you have a third-world education, you're going to have a third world standard of living, even if it's right here in the most affluent economy in the world.

So where are the jobs?

There are jobs, and careers, at all levels of ability.

The hospitality industry, which leads in the employment of persons with cognitive impairment, has lots of jobs for mobile persons in jobs requiring very little communication. The food industry, from planting & picking to making sandwiches, has lots of jobs requiring very little communication. If you think of the physical jobs, such as maid or counter attendant, that come to mind, you see physical abilities required. If you stand one step away and think about planning, organizing supplies, scheduling work, analyzing results of this labor, then less physical effort is required and more mental effort. Even there, with computer prompting, memory aids, and some supervision, then the mental requirements can be managed as well. For instance, inspection of work done in hospitality requires the ability to view the work and follow a check-list, but it doesn't require much physical effort. So, a person starting as a maid could work up to inspector, planner, administrator, or other such positions, particularly with augmented communications.

At the high end. Bill Gates of Microsoft says he hires smart people to think. Bill Gates never uses a phone, it is reported™, he does all his distant communications by electronic mail.

In-between, let's look at positions which match a person who can earn an associate degree in business, general science, or a technology program. There are positions in factory inspection, factory quality control, factory production planning, logistics, sales support, and marketing support. Most of these positions require computer operation these days, all require mental agility, and all require communications of the messaging sort. Some require mobility, others do not.

Let's look at positions which match a person who can earn a bachelor's degree in business. Retail product planning, inventory control, logistics, data analysis, travel management. All are computer based these days, all use electronic messaging, all are world-wide operations these days.

Let's look at positions which match a person who can earn a bachelor's degree in engineering. Engineering analysis, product design, manufacturing design, research, packaging design, technical support, logistics, statistical analysis, data modeling. All these are computer based, all are team-based these days, and all work on messaging. It is common these days to find engineering teams working together but located in different time zones, even different countries on different continents.

Money.

The technical disciplines pay well. Only about two percent of college students go into engineering, physics, chemistry, or other sciences, which means that people with these credentials are always in demand, which means they are well paid. A middling engineering earns a thousand dollars a week. Associate degree graduates in technologies earn thirty thousand dollars a year and up. Salaries vary widely in business, and many are very high.

Technical careers.

Let me speak specifically about careers in engineering and science. These fields have always been open to employing persons with handicaps, persons in wheel chairs, persons with every imaginable physical challenge. Why? Because the work is demanding mentally, the work groups are educated and sophisticated, and the contribution of each person is valued. This applies not only to employees but also to management. Thirty years ago, I worked with a manager who was confined to a wheel chair. Twenty years ago, I worked with an engineering manager who was incapacitated to the point that he was carried around on a board. He did the job, and it was simply accepted by all parties that he didn't need much of a body to run his engineering department. There are blind engineers, deaf engineers, nonspeaking engineers, amputee engineers, and every combination thereof imaginable.

In the Greater Pittsburgh area, and in some other parts of the country, there is an organization called Tech Link, Inc. Tech Link'" is a nonprofit organization which promotes careers in the sciences for students in-junior high and in high school. Tech

Link organizes work place visits, summer work experience, mentors, and peer groups. Tech Link targets students in junior high so that interested students can be sure to sign up for math and science courses each year so that they will have the option upon high school graduation to elect an engineering or science college program. Students who decide not to will at least have had the benefit of math and science education in high school.

Tech Link's Executive Director is John Bernard, 412 237 2767. All are welcome to participate.

Some Job Specifics

What does a production planner do?

A production planner tracks factory orders, incoming material, machine availability, and labor supply with a view towards meeting customer schedules. Production offices in some industries run to 20% of total headcount, with 5% to 10% being common. Good production planning pays for itself in good customer service and minimum inventory. Production planners need to communicate with each work center in the factory, with purchasing, with order-entry, with engineering, so that the normal plan is known to all, difficulties are identified, outages are dealt with, and everybody knows what's going on this day and for the planning period. That takes communications, which today are usually by electronic mail. Getting around the factory to see what's going on, where parts are stacking up, and where machines are making scrap is part of the job, too. Much of the analytic work is supported by computer models of the factory, and the computer does all the detail work given the production plan. The planner needs to understand the factory and the products so that the right plan is fed to the computer.

Production planners are considered professionals, most of whom belong to professional societies. Production planning can be an entire career, a fast-paced and changing one in our competitive world.

An extension of factory planning is logistics, which is the science of getting things to move to the right location at the right time. The concepts are the same, it's just a little more complicated. Logicians are often registered professionals belonging to professional societies.

A product planner in retailing does similar duties at the retail industry. The issue is not manufacturing the product, it's understanding which products are selling at which stores, where the refill products are in which warehouses, and how long it takes to get new supplies from manufacturers around the world. Retailers deal in thousands of different products, each of which needs attention. A factory which misses a ship-date can usually catch up; a retailer who runs out of stock loses that sale forever. Good planning makes all the difference in the retail game.

The retail planner works for one or more buyers, each buyer being responsible for a set of related products, like sporting goods, men's shoes, or home electronics. The buyer is the power-person in the retailing game. The buyer relies on the planner to

analyze sales patterns, to understand upsets due to weather or other factors, and to keep in close touch with warehouses and shippers. All the details are in the computer, and electronic mail is the workhorse. Suppliers, warehouses, and retail outlets are all over the world.

i. Schumpeter, Joseph Alois, "Capitalism, then, is by nature a form or method of economic change and not only never is, but never can be, stationary." Page 82, Capitalism. Socialism. and Democracy. Third edition. Harper Roe, New York, 1947. The title of the chapter is The Process of Creative Destruction.

Schumpter (1883-1950), Austrian-American economist and social theorist, born Triesch, Moravia (now the Czech Republic), and educated at the University of Vienna. He began to practice law in Vienna in 1907, and, after winning recognition as an economic theorist, he taught economics for various periods at the universities of Vienna, Gernowitz (now Chernovtsy, Russia), Graz, and Bonn after 1909. After visiting the United States as an exchange professor at Columbia University in 1913 and at Harvard University in 1927 and 1931, he received a permanent faculty appointment at Harvard in 1932.

Schumpeter remained at Harvard for the rest of his career. He achieved prominence for his theories about the vital importance of the entrepreneur in business, emphasizing the entrepreneur's role in stimulating investment and innovation, which determined the rise and ebb of prosperity. Schumpeter also predicted the sociopolitical disintegration of capitalism, which, he maintained, would be undermined eventually by its own success. His best-known books are The Theory of Economic Development (1911; trans. 1934), Business Cycles (1939), Capitalism. Socialism, and Democracy (1942), and The History of Economic Analysis, published posthumously in 1954.

Source: "Schumpeter, Joseph Alois," Microsoft (R) Encarta. Copyright (c) 1993 Microsoft Corporation. Copyright (c) 1993 Funk & Wagnall's Corporation and The Monroeville Pennsylvania Public Library.

ii. Carlitz, Robert D., "Network Democracy," available from Common Knowledge: Pittsburgh, Woolslair Elementary Gifted Center, 501 Fortieth Street, Pittsburgh PA 15224, or from gopher server gopher.pps.pgh.pa.us. Dr. Carlitz is a member of the faculty of Physics and Astronomy, University of Pittsburgh, Pittsburgh PA 15240. rdc@ckp.edu.

iii. Karlgaard, Rich, "Five days on the road with Bill Gates," Forbes ASAP, February 29, 1994

iv. Tech Link Program of Pittsburgh, c/o Institute of Advanced Technology, Community College of Allegheny County, 808 Ridge Avenue, Pittsburgh PA 15122, John Bernard, Executive Director. Telephone 312 237 2767. Fax 412 237 4512.

AAC and employment in the United Kingdom

Tony Jones M.Ed., B.Ed. Cert. Ed.

This paper is a preliminary study of the position on employment of people with a congenital disability who use a system of AAC as their primary means of communication in the United Kingdom.

Labels and definitions

It became very obvious while making enquiries at a number of book shops throughout Britain that there was a dearth of statistical information on the topic of AAC and employment. Few people really understood the terms I was using and I had the feeling that even after my lengthy words of explanation they were no wiser!

If the information wasn't readily available then I had something of a challenge -1 would have to attempt to find out! Again, after ringing a number of people working in or connected with the field of AAC, I rapidly came to the conclusion that this task wasn't going to be easy! First, after I had explained the information I was seeking ("how many people with a disability who use AAC are there in employment?), a number of questions were asked of me: What did I mean by employed? What did I mean by disabled? What did I mean by person using AAC? What did I mean by AAC?

What did I mean by employment?

There are a number of employment situations in existence varying according to whether the person is in full or part time employment, and to the category of employment - Open, Sheltered, Self Employed, or Family concern (See Table 1 below).

TABLE 1: Types of Employment

	OPEN	SHELTERED WORKSHOP	SHELTERED PLACEMENT	SELF EMPLOYED	FAMILY CONCERN
FULL	Full & Open	Full Time	Full time Sheltered	Full time Self employed	Working full time in family business
PART TIME	Part time Open	Part Time	Part Time Sheltered	Self employed but only part time	Working part time in the family business

I was able to find a few people who were working in a family business either part time or full time. The family had created a position for the person such that a job was secured for life. A few people were also self employed. This appeared to be a difficult situation as work was never guaranteed and this often meant that what was intended to be a full time occupation tended towards part time work. Indeed I found two people who had set up their own businesses which had subsequently failed and were now unemployed. In the U.K., there are two forms of sheltered work placement. First, there are special units set up by local authorities and charities which provide 'sheltered work' for individuals with a physical or a cognitive disability who are unable to find open employment. These are known as'Sheltered Workshops'. However, there is another form of sheltered employment. If an individual is able to perform at least 30% of the work of an able bodied peer then (if companies are willing to

take on such a person) the individual is given a full time (or part time) job in which the company pays 30% of the salary (or whatever proportion of the normal salary that position would attract according to how much the employee is able to perform on assessment) and the remainder is made up by the Government. This was established in 1985 and is known as the Sheltered Placement Scheme (SPS). There is a drawback however, each area is given a quota, a number of people it is able to place in this form of sheltered employment. Should this quota be reached (it varies according to the population of the area in question) then the next individual seeking employment under this scheme, even though a position may exist, has to wait until another person retires, leaves the job, or dies. In reality, people do not have to wait as there is usually someone leaving or moving on. However, if the number of people with disabilities seeking employment was to rise then problems would be caused by the sheltered employment quota system.

I decided that I was interested in people in both full or part time open employment. I also included in this anyone who came under the category of sheltered employment (but not Sheltered Workshops). I was interested in the number of people who were self employed and those in a family business but would want to ask why they were in this position. Was it because no other job was open to them? Had they tried to find a job? I am in no way implying that these forms of occupation are not worthwhile, but, for the purpose of this paper, I wanted to see just how many people were able to find work in the vocational market place through the standard channels.

What did I mean by disabled?

There are a number of categories of disability and I was asked repeatedly what I meant by the term 'disabled'. The question raised some interesting issues. In order to qualify for a number of government funded grants to both the employee and to the employer the individual seeking work must have registered as disabled. The *Disabled Persons Register* is voluntary (although you have to register in order to achieve certain grants) and administered by the DEAs *(Disability Employment Advisers)* found in every *Job Centre* (these are centres for all people seeking employment based in most large towns and cities). It relates only to employment and is not connected with any other register that may exist for housing or social service purposes. The person registering is entitled to a number of 'benefits':

- Help in getting and keeping a job
- Help with the cost of travelling to work
- Equipment for the period of employment if it is necessary to carry out the job
- Employment under the Sheltered Placement scheme or in a Sheltered Workshop

In order to be eligible to join the register the individual must;

- Have a health problem or disability which makes it substantially more difficult for you to get or keep a job
- Have a health problem or disability which is likely to last 12 months or more
- Be in work, or self employed, or want to work and have a reasonable prospect of being able to do so
- Be above school leaving age

On registering the individual is given a certificate (normally called the *'Green Card')* which can last for a number of years depending upon the individual's disability. It can be immediately seen there are a number of problems with basing any research on statistics compiled from this register. First, a person whose sole 'disability' is a severe communication impairment may not register and thus may not qualify for help under the scheme. It appears to be on the discretion of the local DEA. Although most DEA's are very helpful and flexible there have been instances of inflexibility in some cases

(see below). Many people with disabilities refuse to register as a political act. They see it as demeaning to do so in order to get help which is seen as a right and not a charity. Further, the third criteria *'want work and have a reasonable prospect of being able to do so'* seems open to abuse although I have no evidence that this is the case. The very fact that many people with disabilities' expectation of employment is extremely low (more on this below) would suggest that few people actually get as far as seeking open employment though the "Register of Disability*.

I was asked if I included both congenital and acquired disability in my statistical survey. This gave me great trouble. I wanted to include both and to represent the statistics according to whether the individual concerned had a congenital or acquired disability. In the end I decided to look at people with a congenital condition alone (or acquired in early childhood). There were several reasons for doing so:

- The task, in the time I had available, was proving to be extremely difficult. Facts and figures didn't appear to exist or, at the very least, were very difficult to find. The smaller of the two tasks was to research the number of people with congenital disabilities and this result might suggest the likely outcome of research in people with acquired problems.
- People with acquired problems may have already been in work when the originating trauma occurred. Thus the work place was kept open until the individual was fit to return.
- Oneway of assessment the quality of the educational and vocational system that exists in the UK for people with 'special needs' would be to analyse the numbers of people with congenital problems achieving work. People with acquired problems may not have travelled this road.

Of course selecting only congenital disability discounted Stephen Hawkin arguably the most famous augmentative communicator of them all. I should emphasise I don't discount Stephen Hawkin, I wouldn't dare to! However, for the purpose of this paper .....

What did I mean by person <u>using</u> AAC?

Some people had no idea what I meant by an Augmentative Communication System and proceeded to tell me about the number of people they had 'helped' to find employment through the provision of a computer with a voice recognition system or a screen reader. Having explained that statistics on this area was not what I was looking for it became necessary to delimit what I meant by both *'USING* and *'AAC'.*

I decided after some thought that using should be replaced by 'Using AAC as the primary means of communication' rather than a system which had been supplied but wasn't in reality being utilised. This caused further problems! Many people said that they 'thought' they knew of a person who was in employment but were not sure if the AAC system was in use. The speech impairment in these instances was obviously no barrier to finding and keeping a job and would be an interesting area of study in itself. However, I was interested in people who were *using* (as their primary means of communicating with others) a system, not in those who simply *had* a system (although in a fuller study this would be important).

What did I mean by AAC?

Did I include screen readers, writing down messages on pieces of paper, or typing onto a laptop screen? Oh dear! Any line that is drawn between one end of the continuum and the other would be arbitrary at best. However, the issue had to be addressed. What should be included and what shouldn't? I wanted to include anyone using an aided system, whether high or low tech and both with and without voice output. However, this would include a typewriter! I found it easier to say what I

wouldn't count as an AAC system rather than those I would! The Canon Communicator (though the latest version has significantly more facilities), in its simplest form, is a typing system little different than a portable typewriter. However, while the portable typewriter or computer was not specifically designed for the purpose of communication (in the AAC sense) the Canon Communicator was. Thus, I specified dedicated systems or, at the very least, devices which had been adapted such that their primary purpose became the provision of an Augmentative Communication system.
Thus the task became to find *the number of people with a congenital disability who used a dedicated form of AAC as their primary means of communication working in open employment or on the sheltered placement scheme** in the united kingdom. (* not in sheltered workshops)

The law, employment, and people with disability

There are a number of laws relating to both disability and employment in the UK which are worthy of mention here. The situation is changing rapidly. As I write, a 102 page consultation paper entitled 'A Consultation on Government Measures to Tackle Discrimination Against Disabled People' has just been published which is proposing (among other things) that the existing quota scheme is abolished (see below) and is replaced by a statutory right of non-discrimination in employment. This appears to be in response to the outrage caused by the failure of a private member's bill (Labour MP Roger Berry), 'The Civil Rights (Disabled Persons) Bill (similar in proposals to the Americans with Disabilities Act), which proposed radical changes to the civil rights of people with disabilities, to be enforced after the Government sabotaged it by tabling 82 amendments. Even the Minister for the Disabled's (Nicholas Scott) daughter Victoria (who is coordinator of the disabled action group 'Rights Now') has publicly criticised the government and called for her father to resigned over this issue!

"The Government does not accept a concept of rights for disabled people. We can accept nothing else" (Victoria Scott 1994)(The daughter of the Minister for the Disabled)

The Disabled Persons (Employment) Act of 1944 was responsible for setting up the Disabled Persons Register (as outlined earlier) and made it law for all employers with a workforce of over 20 people to give employment to a 'Quota' of disabled persons (currently 3%). This became known as the 'Quota Scheme*. Even the Government freely admits the Quota scheme is unenforceable and has never worked (Partridge 1994). The ludicrous situation is made clear by the statistics involved. There are 6,000,000 people with disabilities in Britain (3.5 million of working age - based on extrapolation of figures from Commission of the European Communities 1988) and yet only 371,734 are 'registered disabled' (Interestingly, the figure is falling 936,000 in 1950 and 389,000 in 1986). Further, the three percent 'quota' of the current workforce amounts to some three-quarters of a million people. Thus, in reality, there should be two jobs for every person who is already registered! However, on average, firms are employing less than 1% of people registered as disabled with only 27% of firms actually meeting the quota (Worman 1989). Even government departments and local authorities are failing to meet the set standard with 43 local Authorities not employing any people registered as disabled (TUC 1993). However, if all 3,500,000 people of working age with a disability were to register tomorrow (an unlikely event) there would be a serious shortage of places available under the scheme and the wait for a sheltered placement would be greater than the average lifespan! The figures on the unemployment of people with a disability when compared with that of the total working population consistently show a percentage ratio of approximately 2:1, that is the unemployment rate amongst disabled people is at least 'twice that for the working population as a whole' (Walker 1982, Commission of the European Communities 1988, Freshwater and Leyden (1989), Worman 1989, See also Youthaid 1992). Further, employers are 6 times more likely to turn down a person with a disability for an interview even if their qualifications and experience are identical to those of a non-disabled applicant (Smith 1992). Indeed, British people with disability fare far worse than their

European counterparts in the vocational marketplace (Grammenos 1993).

A new scheme entitled 'Access to work' (Employment Service 1994) has only recently been introduced. From the 6th June the range of services to both people with disabilities and their employers was extended and simplified. Under the 'Access to Work' scheme £14,000,000 ($21,000,000 Assuming a rate of exchange of£l = $1.5) has been set aside this year to provide equipment, help in terms of support, adaptations to cars and transport costs, and alterations to premises or working environments for individuals registerable as disabled. Each individual is entitled to help up to the value of £21,000 ($31,500) over a five year period. This appears to be a fairly flexible figure (a case may be made for further funding, and it does not appear to have to be evenly spread over the five years) and the figure may be renewed after the first five years. The 'Access to Work' scheme is run by local PACT teams (Placement, Assessment And Counselling Team) and the ADCs (Ability Development Centres) which are evenly spread throughout the UK. However, this new scheme has already been severely criticised by disability groups. A RADAR spokesperson is on record as stating that the scheme "amounted to little more than £2 (3$) for every person with a disability"! (Therapy Weekly June 2 1994)
Some existing grants are however "a standing joke" (Therapy Weekly August 6 1992). For example the 'Disability Working Allowance' which was designed to help disabled people with disabilities in employment had 13,000 applications in 1992 but only 1,000 were successful. A Benefits Adviser quoted in Therapy Weekly (op. cit.) said "We have yet to find anyone who can claim it who would be better off.

TABLE 2: STATISTICS FOR UK	
Number of people with disabilities	6,000,000
Number of people with disabilities of working age	3,500,000
Number of people registered disabled (1994)	371,734
Number of people with a severe communication impairment	800,000
Number of people of working age with a severe communication impairment	320,000
Number of people in UK without speech as result of development disorder	225,000
Number of people to the age of 19 with a serious communication impairment requiring an AAC system	75,000
Number of children born every year with a motor handicap and a serious communication impairment requiring an AAC system	600
Number of people to the age of 19 with a motor handicap and a serious communication impairment requiring an AAC system	11,900

After talking with a number of DEAs (Disability Employment Advisers) from PACTs and the Technical Officers at the ADCs I am reasonably convinced that should any person require the provision of an Augmentative Communication Aid in order to gain or to maintain employment there would be no problem with finance even of an aid costing in the region of £8,000 ($12,000). The cracks start to appear when it is asked how many such aids have been supplied under the present and previous provision for equipment. In 9 ADCs surveyed (there are 9 in Britain) only one had ever (to

their knowledge) supplied a dedicated system of Augmentative Communication under any scheme allowing for the provision of equipment. In the one instance the Technical Officer concerned was unable to confirm the details and did not know if the lady had a congenital or acquired disability.

As the PACT teams operating within each ADC area have a certain amount of autonomy with regards to the provision of equipment (providing the costs involved do not exceed a specified amount) the ADCs did not know if the local PACTs had supplied an AAC system to a person seeking employment. Although I was only able to talk to some of the DEAs in PACTs around the country, again the picture presented was bleak - no one could remember ever having provided such a piece of equipment. I was able to find two people who had been funded for a VOCA by the Employment Service, one of these was in full time work, the other was an unknown factor. Head Office, situated in Sheffield, politely stated that there were no records of this sort available for analysis and they were sorry they were unable to help me further but did suggest some alternative sources for enquiry. One of these sources led to the discovery of the PSS (PACT Support System) which is a database of all the equipment provided to clients at a local level. However, this is a new scheme and all the relevant data has not yet been entered by many of the PACTs (perhaps by 1995). Further, it does not appear that the information will be correlated centrally such that to discover the UK picture one would have to approach all the 72 PACTs! Even more disheartening was a comment made by a senior member of staff that the individual databases probably would not be able to provide a field search of information on type of employment, nature of disability, and provision of equipment!

The situation appears to be that there would be no problem in providing funding for AAC systems, but only very small numbers of people (2) have ever come forward needing or requesting one. This would seem to be a rather bleak scenario, however, it could be argued that, provision of an AAC system must come BEFORE an individual enters the vocational marketplace. In the few cases where I was able to find people using AAC in full or part time employment the equipment was provided by alternative sources at an earlier date.

The Case of E: An interesting situation came to light in my investigations concerning a lady who had been provided with both an electric wheelchair and a VOCA by the Employment Service. However, these were seen as items for use at work and she was not allowed to take them outside the office unless on an official errand. Thus, the ridiculous situation was that E was expecting to have to purchase an identical wheelchair and an identical VOCA for use outside of office hours. She would arrive at work in her own chair and leave it in reception and transfer to the 'office' chair. The VOCA would be swapped for an identical system during office hours but removed before she went home with her own VOCA. A number of people had tried to point out the ludicrousness of this situation but to no avail. These items were provided by an employment grant specifically for work and not for leisure or home use.

Specialist Groups and Centres

There are a number of Groups, Charities, and Centres specialising in Augmentative Communication throughout the U.K. (Henceforth, I will refer to these as GCCs). Many of these were contacted in the hope that they would be able to furnish me with further information on the statistics involving people in employment or, at least, point me in the direction of research and data. One slightly worrying aspect that came out of these phone calls was a seeming lack of continuity of vision from childhood through to adulthood. Three GCCs reported that they were specialising in work with children and thus would not have such information. As children become adults and as adults face an equal, though perhaps different, range of problems, would it not be beneficial for an young individual to be viewed as a person and not as a child? In providing for children is the future possibility of work taken in account? Are the vocabulary needs of the person at 18 taken into account when recommending a system for a child of5? That is not to say that the GCCs that work with children and those that work with adults do not cooperate and exchange information - they do, but does the assessment based on the needs of a child take into account the needs of the adult many years into the future? Indeed, how

can any person predict such needs? One person told me that as the technology changed so rapidly this was not an important issue as the needs of the child/adult then (in the future) would very likely be met by a system that presently does not exist. However, decisions made today have important consequences for the future. It is an awesome responsibility to have to make such decisions and the possibilities for future growth and development ought to be taken into account.

All the specialist groups were helpful, but much information was anecdotal and other information fell into the category of 'I am not sure but I think X is using one and I think X has a job at least part time'. I was told that one GCC commissioned a report on the preferences of adults in higher education and employment for AAC systems but was unable to find a large enough corpus of people to study! However, no one at this particular GCC could confirm or deny that the study ever took place - 'Must have been before my time'! What then of the research that does exist? The final number of people using AAC in employment from the GCC source amounted to 2 with 2 working for family concerns and 1 in part time employment.

Data and Research

There are 6,000,000 people with disabilities in the UK of which approximately 800,000 have a severe communication disorder (See Table 2) which would warrant the use of some form of AAC system (Enderby & Phillipp 1986). Of these approximately 320,000 are of working age.

A number of research documents did come to light (there is no pretence that these are all that exist) and although some didn't specifically address the topics of AAC and employment they contained information which was of use:

Ingram, Jamcson, Errington, & Milch ell (1964) A follow up study of 200 young adults with cerebral palsy in Scotland found that the less severe the level of disability the greater the likelihood of open employment. Factors adversely affecting employment chances included any speech impairment.

Pollack and Stark (1969)

A follow up study of 67 children into young adulthood in Scotland. The study found that while the severity of the disability was a major factor in gaining employment, speech impairment directly affected the chances of open employment in people who did not have a severe disability.

Wilson (1970)

A study of 343 people with cerebral palsy from the age of 9 to the age of 18. 31 went into open employment and 23 into continuing education. The study found that the more severe the disability the less the chance of entering open employment.

Hirst M. (1987)

A study of 274 young adults with a physical disability. Only 11 people in the survey had achieved open employment by the age of 21 with the majority in Adult Training Centres. Those who gained employment were the least disabled in the survey. No one with a speech impairment achieved employment status. Indeed 'those without speech .... were more likely to have been wholly unoccupied at some time during the post-school period' (Hirst 1987 pp. 8)

Thomas A.P. (1988)

A survey of 107 young adults with physical disabilities in the London area. No mention is made of any of the people in survey having any form of employment.

Murphy, Markovd, Moodle, Scott, & Boa (1992)
Comprehensive Scottish survey of 225 people with cerebral palsy who already used AAC. Of these 104 were of working age with 32 of these using two systems (high & low tech). The majority of the sample (162 people) had only been using a system of AAC for under three years. The study found only one person in employment part time.

Masterson & Morris (1994)
A small survey of just 9 people with cerebral palsy between the ages of 15 - 24 detailed two people in full time employment in England and one person in part time employment in Scotland. The two people in full time employment in England were both employed by the same marketer of Augmentative Communication Aids and would have not been in employment had these positions not arisen.

Barnett (1994)
A study of 33 young adults with cerebral palsy in the London area aged between 18 and 33. None of the study who had gained employment (5 people) used an AAC system.

Jones (1994)
I have been involved with the education and training of people who need Augmentative Communication since 1986. In that time, at the College were I previously worked, some 45 students have acquired AAC skills to varying degrees of ability. However, only one is now in full time employment. He is working for a company that markets communication aids.

Fast Track (1994)
Not a study but a scheme administered by the Spastic Society to get people with cerebral palsy into work. Although in its infancy of the 52 people so far successfully involved not one has used any system of AAC.

The Communication Aid Marketers and Manufacturers

A source of information on the matter of employment is the companies throughout the UK who either manufacture or market (or both) AAC systems. I am particularly keen not to make this a competitive issue so that no false claims can be made about one system over another regarding employment. This would oversimplify the situation when many factors are involved. Some systems, for example, are based solely on literacy skills and the literate person may have a greater likelihood of achieving employment than the person who is pre-literate. One would expect therefore that such systems would form a higher population in the vocational marketplace especially among people with acquired conditions. All the companies contacted were most helpful. A number said they had records of many people with acquired disabilities who were already in employment at the time of onset but, overall, there were very few who knew of anyone with a congenital speech impairment using an AAC system in employment. The companies were only able to point to 4 people in the UK in full time employment and 2 in part time employment. Of the four, two were employed full time by one of the companies itself. Further, the same company employed several people using AAC on a temporary basis one day at a time as and when necessary.

Conclusions and Comments

The situation appears to be that there are very few people in the United Kingdom with a congenital disability using a system of AAC in open ernloyment. The total figure may be as small as ten. Of course, there may be people not yet discovered and I am continuing my research through some new

avenues of inquiry that arose during this preliminary investigation.
It is difficult to say why the findings were so poor. Indeed I would hesitate to make any substantial claims at this point. However, I feel that the following are important factors in employment:

Expectation Money Psassivity Legislation Obstructions Young Market Education Norm Training

Expectation

The expectancy of work for people with disabilities is low among potential employers, people who use AAC systems, and the Significant Others who live and 'work' (though not in the employment sense) with them. I was recently told that children with physical disabilities and accompanying learning difficulties only need four items of vocabulary: 'May I have a drink please?', 'May I have something to eat please?', 'May I go to the toilet please?', and 'I am unhappy'. When asked if this was a starter set of vocabulary the reply was, 'Oh No! For ever. Let's face it, these people are going to remain in care all of their lives'. This was a special educator! Sadly, attitudes similar to this are not uncommon.

Money

While finance and funding does not appear to be problematic (through the 'Access to work' scheme) if a person can find or as hope of employment, for many aided forms of communication, which require support and tuition in order to develop the skills necessary for their use, this is too late! Systems which rely on literacy skill may have a virtually immediate transparency but, of course, the support and training of the education .system is directed primarily at the development of such skills. Those who are pre-literate are at an obvious disadvantage if the provision of a suitable aid has to wait until there is a glimmer of a hope of employment. Steven Hawkin summed it up when he told the press at the opening of the Science Museum exhibition on communication in London in October 1993;

"People can only get synthesizers if they can raise the cash. That's not good enough. People should not be condemned to be just vegetables. People should campaign top get these devices on the National Health Service."

Further, it should be made possible to gain open employment without the loss of the grants and allowances that people receive. No one should be worse off by entering employment. No one should feel that they will more comfortable financially by not looking for work. However, this should A'Wbe achieved by reducing the present grants and allowances.

Passivity and Learned Helplessness

Learned helplessness and passivity are also a major obstacle in encouraging people to seek work. People aren't born passive they learn to be passive in their interactions with others. Attitudes and practices must change.

Legislation

The new regulations concerning the disabled and employment and the changing face of education for those with 'special needs' may serve to alter the situation in the future. However groups concerned with lobbying for a better deal for the uk's di.sublud community are sceptical about progress. The Government's sabotage of the Civil Rights (Disabled Persons) Bill recently adds strength to their claims. Indeed, this is not the first time that this has happened, the Government was responsible for the 'talking out' of Alt Morris's Civil Rights (Disabled Persons) Bill in 1992.

Obstruction Of Occupations On Offer (physical and psychological)

One of the proposals of the new Civil Rights (Disabled Persons) Bill, which did not manage to become law, was the requirement that workplaces should be accessible to people with disabilities. While grants are available through the 'Access to Work' scheme to adapt offices and provide access these are limited to £21,000 per person over a five year period unless there is appeal to a higher authority.

Young field

AAC in the VK is still in its infancy. Many people, who are of a working age have had a system of AAC for under three years (Murphy et al 1992). Others who use AAC are still working their way through the education system. Hopefully, there will be more opportunities open to them in the future and the situation will begin to slowly improve. However, there is no room for complacency, there must be action now to ensure that the situation does not stagnate.

Market Place

It would be foolish to ignore the current state of the vocational marketplace as a factor in the equation of gaining employment for people using AAC systems. The larger the number of people who are unemployed the more difficult it will be to find employment. However, there should be equality of opportunity. A person with similar skills should not have a lesser chance simply because s/he is disabled or uses a system of AAC.

Further, M stands for Mobility in the Market place. In order to have greater potential to achieve employment a person may have to move areas. If a person with a disability is tied to a particular location through housing, grants, and services then this will lower the range of options available for employment.

Education

The educational system itself is also at fault There is difficulty in finding funding for a system of AAC such that there is no guarantee of provision of a system on recognition and assessment of need. Indeed many years may pass. Further, implementation practices leave much to be desired with staff untrained and often unaware of the potential (See, for example, Miilar 1990). Often, expectation of, and time allocated to Augmentative Communication is poor. Typically, strategies that were in use before the provision of an aid are continued after the aid has been supplied and have the effect of negating the development of AAC skills.

Education also includes the education of the employers. Worman (1989) lists 20 'blockages and barriers' which may prevent people with disabilities from obtaining employment. With a raising of awareness of the issues involved the majority of these barriers could be eradicated.

Need New Norms Now

It appears that it is not the norm for people with a severe disability who have a speech impairment to be in employment. Champions of this issue such as Stephen Hawkin, Anthony Robertson, and Stuart Meredith, to name but three, may slowly begin to raise public awareness of the issue and attitudes will hopefully change over time.

Technology

The advent of new technologies with increased support for communication, ease of access, clarity of voice, potential for growth with an individual, the capability of storing a typical adult vocabulary, and greater portability should help people to make their voices heard.

In a recent survey often people who used VOCAs (SUTTON 1994) eight out often people said that the three most important things about their VOCA were;

Being able to communicate with anybody
Being able to use the telephone
Being able to find or look for employment

"This paper concludes by considering a possible set of indicators of adult status. In doing so, the paradox of advocating employment within a context of reduced employability for those marginalised by virtue of their handicaps is raised" (WARD, THOMSON, & RIDDELL 1994)

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THE ACADEMIC INFRASTRUCTURE NEEDED TO ENCOURAGE SCHOLARSHIP ON EMPLOYMENT FOR THE AAC COMMUNITY

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When the two of us first started discussing how to approach this presentation, there were many questions. Should we focus on issues of professional preparation or issues of research. We decided to touch on both because: (a) there are major problems with both issues, and (b) the two are symbiotic. There were many questions about orientation, but we had two basic approaches to consider: (1) How does employment fit into AAC?, or (2) How does AAC enhance employment? Unfortunately, most people are addressing the first question. We felt, to be meaningful, the approach to follow must relate to the second line of inquiry. We must first address issues related to employment and then discuss AAC. However, before we address employment, we must consider professional preparation. One of the major problems with the question of how employment fits into AAC is that it ignores the importance of context for most of our teaching activities.

Professional Preparation Issues and Needs

One of our basic academic infrastructure problems is the tradition and culture of professional preparation programs in fields such as occupational therapy, physical therapy, special education, and speech/language pathology. Traditionally training programs have had major emphasis on areas such as mobility, seating, manual dexterity, color identification, counting, addition, subtraction, toilet training, sorting, articulation, linguistic forms, reading, writing, etc. Most (but not all) of these skills may be useful in employment but the problem has been a tendency to assess and teach such skills out of the context of employment. Professional programs have frequently focused on impairments or disabilities. There are few speech pathologists who have not had a course (or major module of a course) on cleft palate, aphasia, laryngectomy, and stuttering. Most special education programs have also focused on areas such as mental retardation, learning disabilities, visual impairment, hearing impairment, cerebral palsy, and attention deficit disorder. We would acknowledge that it is important to understand abilities and limitations of an individual, but again the focus on disabilities and impairments has tended to be taught out of context.

Both time limitations and our lack of in-depth knowledge about some professional preparation programs requires that we not address these issues for all types of professional preparation programs. Our experience has been primarily in areas such as Special Education and Speech-Language Pathology. In Speech-Language Pathology we have a major problem. We are still debating the arguments of at least a decade or two about the virtues and values of a pull-out model versus an environmental model or the clinical model verses the consultative model. Some Speech-Language Pathologists still do not understand what consultative and collaborative may mean. Special Education seems to be ahead of Speech-Language Pathology in some of this debate in that more and more programs are emphasizing contextual and community-based teaching. However, Special Education continues to have professional preparation programs which focus more on skill prerequisites and developmental hierarchies out of context.

Specifically, when we turn our attention to the issues of employment, we find it difficult to identify many Speech-Language Pathologists who have had a course, and/or practicum experience related to career, transitional and/or vocational issues. Many Special Education programs have coursework and practicum in community-based education. However, even in Special Education you can find many certified special education teachers who have not had coursework or practicum specific to secondary and post-secondary education. Special Education is beginning to make a programmatic shift from school-based to community-based assessment and instruction.

In summary, the major professional preparation issues are: (1) teaching skills out of context; (2) little, if any, academic and/or practicum in career, transitional, and/or vocational areas; and (3) limited community-based assessment and instruction.

There are also broader professional preparation issues, not the least of which is that most professional preparation programs have little, if any, AAC coursework or practicum (Koul & Lloyd, 1994). It seems strange that each year we are spending millions and millions on the "Tech Act" and developing consumer advocacy for more technology, but very little to prepare service providers with AAC knowledge and skills. This is a pervasive problem that needs attention but is beyond the time limitations we have in our 21/2 brief days to focus on employment.

Another professional preparation issue which warrants brief mention is that many professional preparation programs with AAC are rather superficial. Frequently, little attention is given to the basics (e.g., theory, underlying assumptions and research base, taxonomic and other conceptualizations). Most clinicians/ educators do not have a good working knowledge of more than a half dozen of AAC symbols | shown in Appendix A. They rarely have a good understanding of an AAC symbol taxonomy considering 1 such dimensions as aided-unaided, iconic-opaque or static-dynamic (see Lloyd & Fuller, 1986; Fuller, Lloyd & Schlosser, 1992). Likewise, few clinicians/educators have an understanding of a broad communication model which provides a framework which encompasses the major aspects of AAC assessment and intervention. Lloyd, Quist and Windsor (1990) proposed such a model which is illustrated in Appendix B. We will briefly discuss a few features of this model which specifically relate to employment: (a) contextual or communication environments, (b) transmission environments, (c) multimodality, and (d) the AAC transmission processes and interface.

Although time will not permit an extensive discussion of such an AAC model or the many details of AAC professional preparation issues, we feel it is critical to mention a few of these issues which relate to employment. They are important to improving clinical/educational practice and the research base. With this background, we turn our attention more specifically to employment issues.

AAC Research Issues and Needs

For over a decade several of us have been encouraging the AAC community to develop a research agenda and place more emphasis on both basic and applied research. During the 1985 meeting in Florida relative to the ASHA book, a small number of us had hoped to spend one evening discussing AAC research issues and needs. However, within ten minutes that relatively open meeting evolved into a discussion of funding needs with no further reference to research. Since that debacle, there have been other more valiant attempts at two- to three-hour discussions (e.g., 1990 & 1993 ASHA sessions, and the 1988 ISAAC Conference) and at larger efforts (e.g., the Purdue AAC Think Tanks, the ISAAC Research Symposia held in conjunction with the recent biennial meetings, and the 1990 Visions Conference). During the first author's editorship of ***Augmentative and Alternative Communication*** several attempt! were made to encourage the field to develop a research agenda and emphasized the research agenda. There were several calls for greater attention to developing a research base and some of the issues which should be addressed. In 1989 the June editorial indicated several critical research issues and needs (see Appendix C for an excerpt of these issues). Vocational and quality of life considerations was one of the 11 issues and needs specifically mentioned. Almost all of the other 10 issues could also be of major relevance to employment, but four of them warrant special mention. During this presentation the following five issues/needs will be briefly discussed: 1) Use of multiple symbols/systems, 2) Development of successful social facilitation of communication (e.g., communicative competence and interaction), 3) Involvement of staff, parents, and significant others, 4) Literacy, and 5) Vocational and quality of life considerations.

In attempting to develop a research base we need to consider some broad questions such as those outlined in Appendix E. As was pointed out in the first author's final editorial (Lloyd, 1993) for ***Augmentative and Alternative Communication,*** and the recent Zangari, Lloyd and Vickers (1994) paper it is imperative that we know our written and oral history. In professional and scientific endeavors written history (especially that in refereed journals) is much more important than oral history. The oral history is more susceptible to change and abounds with folklore and mythology. However, it should not be completely disregarded. We must know our current knowledge base and what of that knowledge base is well documented in the refereed journals and other archival sources. In addition research-oriented papers it is important to be cognizant of position papers and practitioner-oriented material. We should also

remember that non-archival sources are of value. However, in general they should not be considered as critical as archival sources.

As we review our knowledge base we need to determine what are the most critical issues related to employability, quality of life , vocational rehabilitation, etc. It is obvious that communication is a critical area. Therefore, we must ask what are the most critical research questions related to improving AAC assessment, intervention, and service delivery. As we ask these questions we must caution against being expedient and/or superficial. We are often tempted to ask only those questions that are directly related to application. Unfortunately, we frequently fail to consider basic research needs. Although many of us consider the modern era of AAC to be 3 to 4 decades old, it would still be classified as a professional area still in its infancy. Fields or disciplines which are in their infancy are primarily practitioner-driven. We often borrow our knowledge from other areas. However, if we are to mature we must establish our own research base. This means that we support research which may not have practical application today, or tomorrow, or even next week or next year. The AAC community has not yet matured to that state. We are growing and developing, but we are still preoccupied with the here and now. A common myth in AAC is that professionals feel that unless the research is conducted using subjects with impairments/disabilities then it is not valid. As time permits we will try to further develop the need for a greater emphasis on basic or fundamental questions. Considering the basic to applied research continuum, there is a need for a much greater emphasis on basic research. For those who may having difficulty with this, we should employ the "shoes test." Put youself in the shoes of an individual who has 80 to 90% blocked arteries. With this cardiac problem what would your view be of the importance of basic research? Would you like your surgeon to take you into the operating room without the benefit of the basic research that developed the heart-lung machine, the altering of body temperature, and all of the anesthesiology drugs and medication which are necessary for open-heart surgery? Most of us in the shoes of an individual with a serious cardiac problem are quite thankful that individuals spent years and years involved in rather basic research to develop the knowledge base for practical clinical procedures. Open-heart surgery is a matter of life and death. Is communication important enough to warrant some basic reasearch?

Issues Related to Quality Employment

Salzberg, Lignugaris, and McCuller (1988) have suggested that employment competency consists of three general areas: (1) job responsibility, which includes punctuality and work consistency, (2) job productivity or performance, and (3) social-vocational competency. Social-vocational competency can be further defined as: (a) task related, which includes such skills as following directions, requesting assistance, and requesting materials, and (b) personal, which includes using language in a social context and maintaining appropriate behavior.

Because quality employment requires more than just on-the-job, skill-specific competency, a second, and critical area in employment, is job satisfaction. Job satisfaction can be identified as (1) work related, which suggests "quality work for fair pay," (2) site related, which includes knowledge of the host company and benefits (e.g., health care coverage, promotion policy, maternity leave) and (3) personal, which includes co-worker friendships and social activities related to the job and company. Therefore, when we begin to address and discuss quality employment, we must develop an agenda that encompasses both employment competency and employment satisfaction.

As we consider these factors and the role of communication in employment competence and satisfaction, it seems appropriate to consider Light's (1989) suggestions about four types of communicative competence. A brief summary of these four types of communicative competence was prepared by Lloyd and Kangas (1994) for a major speech-language pathology introductory text and is provided in Appendix D. As time permits, we will discuss a few aspects of such a communicative competence taxonomy relative to the symbol taxonomy mentioned earlier, and make specific reference to employment issues.

Mythology

One of our other major problems is that the topic of employment in AAC is not immune to mythology and folklore such as: (a) Mastery of basic job skills is the most critical factor in job retention;

(b) Pre-requisite skills, such as a vocabulary of more than 50 words, independent dressing, and independent eating are essential prior to community-based employment; (c) Unaided symbols are most appropriate for individuals with cognitive impairments; (d) Graphic symbols are most appropriate for individuals with essentially normal cognitive abilities but severe physical impairments; (e) Assistive

technology is synonymous with AAC; and (f) Technology is always best, or the more technology the | better. We could spend the day discussing these and other myths but for the purposes of this meeting we I would like to provide a brief vignette or actual case study about the myth that technology is always best or ;the more technology the better. A worker with multiple disabilities (mild mental retardation, severe cerebral palsy) operated an electric wheelchair with a chin activation switch and a Prentke-Romich Light Talker attached to his chair. In a social community, and a residential context, this technology was very useful because the worker could access social interactions and engagements. Within an employment context, this AAC technology was extremely nonfunctional. The worker could not operate the AAC device and maintain job performance. Our current solution was to remove the device while he was engaged in paid employment. Other options available to use at the time were: (a) locate a new job that was non paid, or (b) adapt the job to be less functional.

Consumerism

The past decade has seen major improvements in consumerism and self determination. Most AAC professionals advocate the involvement of AAC users and parents/significant others as part of the AAC team. Most professional preparation programs with any offerings in AAC present this point of view. It enriches our professional preparation programs. Consumer involvement is also important to improved research and development. However, professionals must not abdicate their responsibilities. Likewise, researchers must not abdicate their responsibilities for conducting the highest quality applied and basic research. There are many reasons why we need greater consumer support for basic research. Within this presentation we will discuss two such reasons. First, without basic research and a clear understanding of the mechanisms of clinical/educational practices we are limited in our ability to adapt our practices and procedures to new contexts and to appropriately repair the practice when it fails to meet the needs of our clients. Second, basic research is the foundation of all future developments and growth. For example, where would we be today in terms of assistive communication devices without the early basic Bell Telephone Labs research on intelligibility, speech analogs and the transistor? Likewise, where would we be without all of the basic research that went into the space program? Frequently, in our rush to meet day to day needs and problems we forget that what we are able to do today is dependent upon the basic research that was previously conducted ,or as stated by William Shakespeare, "History is prolog."

We must enlist the support of consumers to advocate for more basic research (as well as applied research) and for improving preservice and inservice professional preparation. Education and the behavioral sciences have done a rather poor job of promoting basic research in recent years. There has actually been a major trend toward "if it ain't useful yesterday, don't bother funding it." Most of the federal agencies supporting employment and/or AAC activities have adopted a primarily practical application orientation with little attention to basic research. In our attempt to elicit consumer support for research and improved professional preparation programs we should learn some lessons from the biomedical areas and bench sciences. When one considers biomedical developments such as bypass surgery and heart transplants it is difficult to envision the practice today without a considerable amount of basic research. Can we make the same analogies with employment and AAC practices today? Unless we have a resounding "yes" we will fail to make the progress needed to eventually provide improved clinical/educational services and have individuals with disabilities reach their maximum employment potential. For a further discussion of the need for basic research and how the physical and biomedical sciences have garnered the basic research support of the government and other sources conference participants are referred to a recent article by Mace (1994) in the *Journal of the Experimental Analysis of Behavior.*

Recommendations

Although considerable progress has been made in AAC during the past three decades, there is still much which needs to be done for improving professional preparation and establishing a research base for improved services. We propose, with specific reference to employment that some of the following recommendations need attention from the AAC community:

1. We need to increase the AAC academic and practicum coursework in Speech-Language Pathology, Special Education, and other professional preparation programs.
2. We need to increase academic and practicum exposure on career, transitional, and/or vocational aspects of Special Education personnel preparation programs. Likewise it would be desirable to increase content and practicum exposure in these areas for Speech-Language Pathologists and a

number of other professions. However, it may more practical to recommend greater emphasis specialisation, clinical fellowship years, specially recognition, and in-service career trelnir opportunities.

3. We need to focus our attention on the basic foundations for professional preparation Clinicians/ educators should be expected to know the research base (or their actions and when the research base is limited, they should at least fully understand the assumptions upon which the assessment and intervention activities are based,

4. We need to provide more funding for research and especially for basic research.

5. We need to place greater emphasis on teaching skills in appropriate contextual environments (e.g community-based programs).

6. We need to place greater emphasis on teaching skills within contextual routines that enhance natural cues and consequences.

7. We need to consider system preference as it relates to performance. Informed decisions (choices) made by the worker regarding the communication system to use ehould enhance the performance of the worker with that system.

Acknowledgments

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APPENDIX - A: Aided and Unaided Symbols/Systems
(From Lloyd and Kangas, 1994, p. 614 as modified from Lloyd and Fuller, 1986.

AIDED

Objects

Pictures, i.e. photographs & drawings including simple (or basic) rebus

Sigsymbols

Pictogram Ideogram Communication

Picsyms

Blissymbols

Graphic representations of manual signs and/or gestures, e.g. HANDS, pictures of signs. Sign Writer, Sigsymbols & Woridsign

Synthetic or animated "manual signs and/or gestures*

Complex (or expanded) Rebus

Other logographs with referent relationship

Modified orthography and other symbols

Abstract logographs, e.g. Lexigrams; and shapes, e.g., Premack-type

Traditional orthography (TO)

Graphic representation of fingerspelling

Synthetic "fingerspelling"

Braille and other static tactile codes

Electronic vibrotactile codes

Electronic-cued speech

Linear printing

Digitized Speech

Electro-Larynx generated Speech

Synthetic speech

UNAIDED

Gestures, e.g., pointing, yes/no head shakes, mime, Amer-Ind, Generally Understood Gestures, esoteric signs/ gestures

Natural sign language, e.g., ASL, BSL, CSL, FSL, JSL, KSL, SSL, & TSL

Gestuno

Manually Coded English, e.g., Signed English, PGSS, SEE-I, & SEE-II (or manual coding for other spoken languages; e.g., manually coded Swedish)

Fingerspelling or manual alphabet

Eye blink, gestural, and/or vocal alphabet codes, e.g. Morse Code

Tadoma and other vibrotactile codes

Hand-cued speech, e.g.. Cued Speech & Danish Mouth Hand

These are formal, or conventionalized, symbol sets and systems; informal nonverbal behaviors or ritualized behaviors have not been included.

ASL. American Sign Language; BSL. British Sign Language; CSL; Chinese Sign Language; FSL. French Sign Language; JSL Japanese Sign Language; KSL. Korean Sign Language; PGSS. Paget-Gorman Systematic Sign; SEE-I. Seeing Essential English: SEE-II. Signing Exact English; SSL Swedish Sign Language;TSL. Taiwanese Sign Language.

APPENDIX - B: Proposed AAC Communication Model
(From Lloyd, Quist & Windsor, 1990, p. 176)

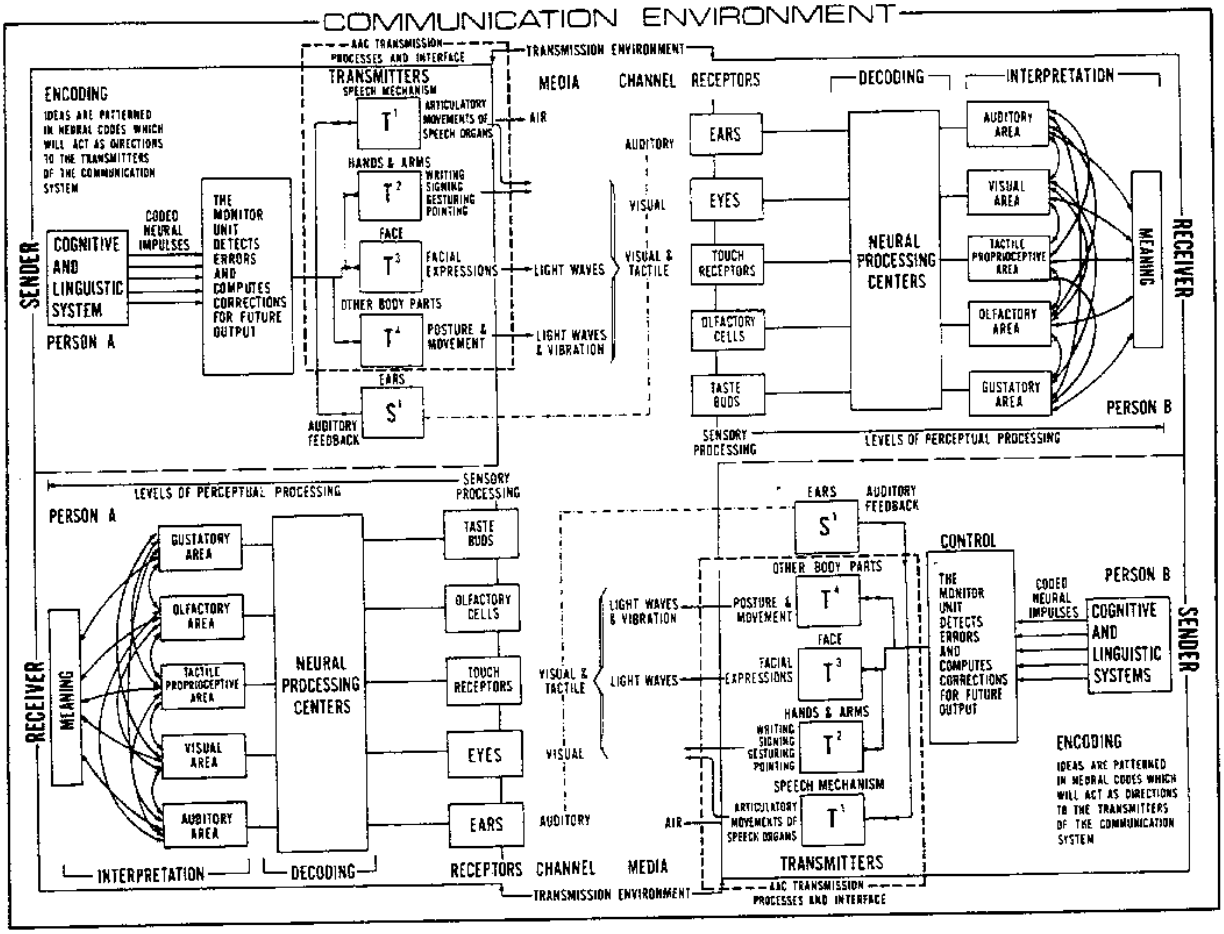

Figure 2. AAC communication model (modified from Sanders, 1971, 1976, 1982).

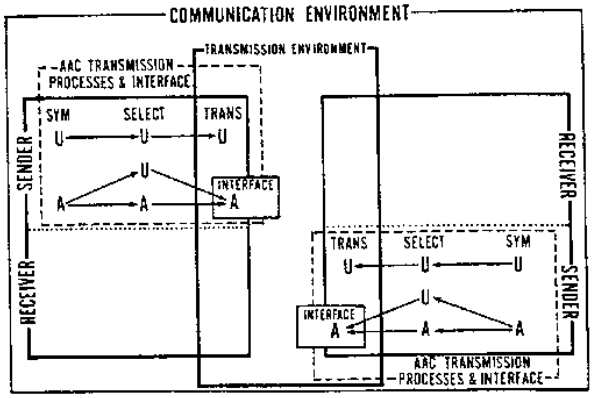

Figure 3. AAC transmitters and interface of the AAC communication model.

Key to Initials
In Figure 2
S = Sensors
T = Transmitters

In Figure 3
A = Aided
U = Unaided

APPENDIX-C: Research Issues and Needs

This appendix provides a direct quote (rom Lloyd's June 1989 Editorial in ***Augmentative and Alternative Communication*** *as* follows:

Although much progress has been made in AAC, as a new field we are still operating from a limited empirical base and a number of critical issues remain to be addressed. In other words, the educational and clinical applications of AAC approaches have far out-distanced our knowledge about AAC symbols and systems. Some of the most critical research issues and needs that must be addressed in AAC during the next decade are related to: (a) selection of symbols/systems (and symbol/system characteristics); (b) modification of symbols/ systems; (c) symbol/system acquisition and generalization; (d) use of multiple symbols/systems; (e) development of successful social facilitation of communication (e.g., communicative competence and interaction); (f) selection of initial lexical items; (g) involvement of staff, parents, and significant others; (h) application of microcomputer and other technology (considering factors such as intelligibility, preference, and speed/rate); (i) artificial intelligence; (j) literacy, and (k) vocational and quality of life considerations. Other statements of AAC research issues and needs which have

typically included one or more of the above.

(Lloyd, 1989, p. 83)

APPENDIX • D: Communicative Competence

In 1989 Light published a paper in the forum of Augmentative and Alternative Communication proposing four types of communicative competence for AAC. This appendix provides a summary of the four types of communicative competence developed by Lloyd & Kangas for an introductory text for speech pathology. During the conference presentation we will attempt to relate several of these areas of communicative competence specifically to employment.

Linguistic competence refers to knowledge of the language, or linguistic code. According to Chomsky (1965) , linguistic competence refers to the internal abilities of the individual. It includes everything the person knows about the language and how the units can be combined. Light (1989) points out that for the AAC user, linguistic competence may include knowledge of both the native language used in the environment (e.g., English or Spanish) and special AAC symbols (e.g., Blissymbolics or Minspeak icons).

Operational competence is a unique concern of AAC, especially for aided communication. Operational competence refers to the user's ability to manage the specific devices or techniques that are used in the communication process. This might include the ability to turn a device on or off, adjust the volume, operate a scanning system, and so on. This is, perhaps, the competence Chat most people focus on first when communicating with an AAC user, mainly because it represents an aspect of AAC that differs from typical spoken communication.

Social competence refers to the broad communication skills addressed by sociolinguistics (Hymes, 1971). This includes discourse strategies, interaction functions, and pragmatic adjustments to context. Examples of abilities that relate to social competence include maintaining a topic, using transitions to change topic, adjusting the type of language used to the ability of the listener, gaining someone's attention before giving information, and giving appropriate indications of maintaining interest and or understanding the communication partner. Social competence may be a serious issue that is easily overlooked for an AAC user. It is not unusual for AAC approaches to be introduced to an individual who has had extremely limited communication abilities for many years. Social competence abilities that are developed quite naturally for typically developing children may be problematic for AAC users, simply because AAC users have not experienced successful communication to facilitate these abilities.

Strategic competence (defined by Canale, 1983) refers to adapted strategies that are called into play when there is some breakdown in the communication process. Examples include asking for additional information, recognizing when the listener has not understood, and repeating or changing a message to clarify the error. As pointed out by Light (1989), this is especially important for AAC users. AAC approaches remain imperfect replacements for the ability to use speech easily and effectively. There are probably a greater number of difficulties and barriers to achieving efficient communication when AAC strategies are being used. The ability to adjust and respond to these problems will be critical to the overall success of an AAC user.

(Lloyd & Kangas, 1993, pp. 23-24)

I. What is our folklore and mythology in this area?

II. What is Our Current Knowledge Base?

A. What is our research base as available through refereed journal articles or other archival sources?
B. What service delivery and other practicioner oriented information Is available through refereed journal articles or other archival sources?
C. What information is available from non-archival sources (e.g., newsletters, bulletins, conference proceedings)?
D. What would the answers to the above questions (especially A & B) be in the literature ir areas such as vocational education, special education, and other professions?

III. What are the most critical research needs and issues related to employability quality of life, vocational rehabilitation, etc.?

IV. How important is communication to employability?

V. What are the most critical research needs and issues in AAC which specifically relate to employability?

VI. What are the most critical research questions related to improving assessment intervention and service delivery in general in AAC?

EMPLOYMENT REALITIES FOR PEOPLE WHO USE AUGMENTATIVE AND ALTERNATIVE COMMUNICATION

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Introduction

Working is a highly prized American value. Often a job helps define the type of person someone is. One realizes the importance of having a job, whether the job is enjoyable or not;
because, without employment an individual may not feel part of the fabric of society. American culture does not have many rites of passage into adulthood and obtaining a full time job could be viewed as a rite of passage in American culture. However, for a person who has a disability obtaining a job is extremely difficult, especially if one is unable to speak.

In America there are approximately 750,000 to 1.5 million Americans who do not possess functional speech and communication capabilities, including the use of their hands for sign language (Tatenhove, 1993). The Americans with Disabilities Act (an Act that aids people with disabilities to participate in all aspects of society more easily) was passed by the U.S. congress and signed into law by President Bush in 1990. At that time he said, "[llet the shameful wall of exclusion finally come tumbling down" (Meers, 1992, p. 36). However, this wall of exclusion has not come down for all, for those with severe speech and communication problems the wall still stands. Baker (1993, p. v) stated that there are "fewer than 25 individuals with severe speech and multiple impairments that have community-based employment in the United States." To date, the reasons for this are just beginning to be thoroughly researched.

Statement of Purpose

This study was developed to uncover the barriers which have hindered the employment of people using AAC devices. It was also designed to offer some possible ways for people who use AAC to find successful employment. To accomplish this, a review of the available literature was conducted of existing employment and employment barriers for people who use AAC devices as well as existing federal laws which aid people with disabilities in obtaining successful employment. Interviews were then conducted with human resources representatives of companies, and with employed and potentially employable people who use AAC to identify the existing barriers and some possible solutions.

Brief History of the Workforce in the U.S.

Understanding how America's workforce has developed will help the employment of people who are disabled become a reality. Opportunity, immigration, new labor pools, legislation, and changing technology have been the hallmarks of the workforce since the U.S. was founded and developed. Attitudes about who should be employed have changed over time. The United States has employed children in time of need and after the Civil War new factories enabled former slaves to be employed in the north. Because of new technology and new jobs, women entered the workforce, especially during the world wars and they continued to work after the wars. With the Civil Rights Movement of the 1950s and 1960s, women and minorities entered the labor force to stay (Tarr, 1993).

What will the workforce be by the late 1990s? Technology is changing rapidly, there is international competition for products and employers, and companies are using cheap foreign labor to manufacture goods sold in the United States. Also, on average, people in the workforce are older than they have ever been, meaning that more people are beginning to retire at approximately the same time. This opens up jobs for the unemployed in the U.S. posing an interesting challenge to employers: finding "qualified, energetic, and dependable employees" (Tarr, 1993). Some of these workers can be people with disabilities and those who use AAC devices.

Summary of Literature Review

Unfortunately, space does not permit the author to conduct an indepth discussion of her literature review. The main points discovered for the barriers and solutions follow and the majority of the article will focus on the results of the study.

Barriers to Employment for People who Use AAC

• The myths that surround people with disabilities hinders their chances for employment, including ideas that people who are disabled are unable to hold a job and if they do, they are less productive, absent more often, have higher turnover rates, create safety risks, raise

insurance rates, would not be accepted by their co-workers, or it would be too costly to hire them (Hearae, 1991, Frierson, 1992, and Tarr, 1993). These same researchers dispelled these myths.

• Acquiring the most effective communication device.

• Having multiple disabilities and being seen as ugly in the eyes of society (Leslie, 1993).

•The age at which a person learns what it means to work, such as household chores, baby-sitting, mowing lawns, delivering papers, or raking leaves. Many people with disabilities never get to have these experiences (Tatenhove, 1993).

•The lack of proper job training (Golinker, 1993).

• Vocational rehabilitation counselors who have little experience with AAC (Stump, 1993).

• Many people who are disabled have not had a good education (Erickson, Koppenhaver, Pierce, and Steelman, 1993).

• The cost of purchasing equipment and training the employee.

• Ensuring that communication is a two-way process between co-workers, supervisors, and the person using the AAC device (Light, Stoltz, and McNaughton, 1993).

•Not having an appropriate job match (Light, et al., 1993).

•The slower rate of communication by people who use AAC (Light, et al., 1993 and Callahan, 1993).

Possible Solutions

• Utilizing existing federal laws such as the ADA and Public Law 94-142 (guarantees education for children with disabilities) (Golinker, 1993).

• Using a team approach in finding a job. A multitude of factors affect a person who is disabled and using a team approach will help to make an appropriate job match (Stump, 1993).

• Stump (1993) also expressed the need for cautious interpretation of school records and test scores of academic or mental functioning. He stated "[p]eople with great communication challenges often do not reflect their true abilities on standardized tests (p. 19).

• Educate employers in the myths and realities of employees who are disabled and teach them not to immediately scorn failure. Any new employee, whether disabled or not, makes mistakes (Leslie, 1993).

• Having follow-up consultations by the vocational counselor to ensure the accommodations are appropriate and the vocabulary of the device is still accurate (Stump, 1993).

•Network!

•Teaching people who use AAC how to use their "voices" socially and politically through classes, seminars, and other organizations (Bryen, 1993).

• Learning compensatory strategies for communication in the event the person using AAC is unable to communicate in a familiar way (Light, 1989)

Results of the Study

The results of this study are consistent with what was found in the literature about the barriers and solutions to employment for AAC users. Employers want people who will perform the job efficiently and to their expectations. Businesses, companies, and factories exist to fulfill the need for goods and services in society, and to make a profit; this is a right of these facilities. People using AAC want to be part of that employment picture; they have a right to employment. We are at the beginning of a process that is trying to ensure that everyone's rights are fulfilled. Competitive employment is presently but a dream for some people. A path must be taken to help those dreams become reality.

The solutions that the author is suggesting may sound simple to some, impossible to others, or simply too idealistic; but the suggestions are validated by the research. As stated, this is the beginning of a process in which there is some hesitation as to where to begin. This project may take years to perfect and many ideas will be attempted and disregarded while people try to make employment dreams a reality.

Solving the employment picture for people using AAC is much like beginning a college class. On the first day one receives a syllabus that explains the goals of the class and the steps that will be taken to reach an understanding of the material. Also on the first day, the professor gives an overview of what the course is to cover. Students experience a mixture of excitement and anxiety. The excitement is looking forward to learning and discovering new material.

However, there is also uncertainty about what the final outcome of the class material will be. Will the conclusions drawn reach the desired expectations? or Will there be a realization that the way the student previously thought about something has changed? There is an enormous amount of material and questioning which occurs inside the mind of a student on the first day of class. The professor understands this and starts the lecture slowly, laying out the groundwork needed to understand the material and to reach the goals of the class. Somewhere in the first month of class the basics have been given to the student and the class discusses. Through disagreements, voicing opinions, fears, and hopes a clear picture of the material emerges.

Individuals involved with the employment of people using AAC, the users, caregivers, rehabilitation counselors, device manufacturers, employers, and others are all at different stages in the class. Some are at the first day, feeling a little overwhelmed and without the basics, still unsure about the real possibilities and limitations of employment. Others are discussing, trying new ideas, voicing.opinions, overcoming fears, and making the employment dream a reality. Other people, as was the case with the majority of company representatives interviewed for this study, are simply unaware that AAC systems exist, what they are capable of doing, and what the population that is using them is like. And unfortunately, there are always those who drop the class.

The First Steps in Employment: The Basks

We have come far enough in this process to know that people who are severely disabled and using communication devices are capable of competitive employment. It must be taken a step further, but to do this society needs to go back to the basics. This author is arguing that the first solution must be to conquer the myths and stereotypes about people who use AAC devices and people who are disabled in general. It is important that AAC is put into the public eye. Society needs to see these people in the community to know that they are capable of contributing positively to society. This change in perspective is occurring, though slowly. Mick Joyce (a participant in the study) stated that doctors are on record as saying "[h]e'll never go to school; might as well put him in an institution."

Children with disabilities are now mainstreamed into typical classrooms. It is important for children who use AAC to be mainstreamed also. By doing this, 1) the student is receiving the same education as their peers, 2) students are learning how to interact with people unlike oneself, 3) the typical student is also learning that utilizing a communication device does not mean one is not capable of learning and achieving, 4) and, many years later when the student who is not disabled is employed and a person with an AAC device enters the workforce, the typical student will know that this person is capable of employment. The student without the disability will remember the classmate who used an AAC device really was not as different as first appeared.

Person Perception Theory, states that we match perceived characteristics of communicators to general characteristics we believe are acceptable in communication partners, and Labeling theory, states people are labeled as deviant in society and treated as such (Trenholm, 1986 and Macionis, 1991). By having people who use AAC in the public eye, society will not label them as deviant. When not labeled deviant people who use AAC will believe they are capable of competing in the workforce, therefore canceling out the effects of secondary deviance (accepting the label as part of the self-image and fulfilling the prophecies of others). When communicating via an AAC device is considered acceptable, it becomes easier for a person to interact with people who use AAC devices in positive ways, i.e. choosing them for a communication partner, asking them to a social event, or offering them an opportunity to do a job. Mick Joyce explained it wonderfully:

When one is rejected for most of his life, called a "retard," and generally treated like mud, it feels good to have a little respect once in a while. I receive much respect when I speak. People address me as Mr. Joyce; they ask if they can take my picture; they clap, laugh at my jokes, and ask me the most profound questions. Through the years, all this attention has done a lot for my self-image. When persons feel better about themselves, their whole outlook on life changes. Psychologically speaking, my well-being has improved greatly. If society can cancel the effects proposed by Labeling theory, new worlds will open.

Another way of doing this would be to share news stories of people using AAC when appropriate. Again, this shows the public what people using AAC are capable of accomplishing. The video of the Pittsburgh Employment Conference (Tarr, 1993) was an excellent way of doing this. It showed an employee using AAC in his work setting and how he is able to carry out the

tasks of his job. This also aids in eliminating the fears that some individuals hold towards people with disabilities (Tarr, 1993 and Frierson, 1992).

How to Make the Dream a Reality

Once the basics are learned, society can move on to active solutions for employment. The author understands that the first step of eliminating the prejudice is not a simple, overnight occurrence. This section deals with specific ideas about obtaining employment for people using AAC. It is necessary to understand that employers are unsure of hiring a person who relies on AAC to communicate. One company representative stated "I talked with someone who worked in the Human Resources department when the ADA was passed and he said there were a lot of human resource people who had a fear of a thousand people in wheelchairs showing up at the door with resumes and wanting jobs."

The purpose of the ADA is "to provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities" (P.L. 101-336, p. 1160). It is hoped that government regulators and businesses will follow the provisions of the ADA and aid in the employment of people who use AAC by finding reasonable accommodations that enable them to perform the essential functions of the job. If this does not occur the burden of proof and the administering of justice is given to the courts to protect the rights of employment.

The results of this study showed a positive response to the employment of people who use AAC. Many of the companies were fascinated by the device and anxious to see how it worked. This led the author to wonder why are there so few competitively employed people using AAC? The problem: a majority of the company representatives had never seen an AAC device before. The company representatives did not know that people needed such devices or employment. This author understands this and is not blaming the people of the workplace for the low number of competitively employed people using AAC.

This puts the burden of obtaining employment on others. Jim Prentice (a participant in the study) stated

> I really don't think it's up to the workplace to accept a person using a communication device, I feel it is up to the user to make the other employees feel comfortable ... If they could show how well they can communicate it makes it easier for a manager to ask them questions to find out if they are capable to do a job or just to show how intelligent they really are.

This brings up the need for empowerment courses to teach people using AAC how to use their "voices" socially and politically, giving them the power to make a difference. The users will also learn necessary compensatory strategies for communicating with unfamiliar partners when prestored vocabulary is not sufficient. A good skill to know is how to put the communication partner at ease. Several participants in the study stated they tell a joke to help others understand they are not as different as they may appear. Speech-Language Pathologists, rehabilitation counselors, and caregivers can also aid in this learning.

Advocacy groups can aid in the employment of people using AAC in several ways: 1) Sending letters and pictures of employed people using AAC to various companies describing the device and the possibility of employing people who use AAC. By doing this, companies will know that AAC devices exist and have an idea about the different types of jobs held by people using AAC. Jenny Lowe (a participant in the study) made a similar suggestion. She would like companies that advertise to show a person using AAC in the advertisement.

Though the author and several participants in the study believe that it is the responsibility of the person using AAC to prove they are capable of employment, it cannot be overlooked that two of the study's participants found their jobs because the company made a commitment to hire a person utilizing an AAC device. This is an important step, but should not be discarded as a solution to employing people who use AAC. If company representatives have a position to be filled, and know about AAC, the possibility of contacting a person using AAC (through advocacy organizations) to apply for the job should be considered. This would be an excellent way for more people utilizing AAC to find employment and show other companies how it worked. When companies realize they have such productive employees, other companies may consider hiring a person who uses an AAC device. If a company does make a commitment to research the hiring of a person using AAC, it is important to remember that an appropriate job match is essential (Light, Stoltz, and McNaughton, 1993 and Sweeney, 1993). One company representative interviewed stated, "js]ee if you can find a job fit [for the applicant]. If you can't find a job fit, that's okay too ... Don't hire them because you feel sorry for them."

The importance of networking has been discussed (Tatenhove, 1993). This was mentioned by the study's participants also. This is an important job search strategy for anyone

who is trying to obtain employment, but for people using AAC it becomes even more important. Since there are so few people employed, meeting employers and letting them know your qualifications, your interest, and that you are capable can become the path to employment. As stated, people become intrigued by the device. A participant in the study, Carrie Woodbury, stated (with the help of her mom) "[i]n the past people have been accepting of the device. They find it fascinating and ask questions about the device." This goes back to the discussion about how many people do not know such devices exist or are needed; it appears as if employers are willing to consider a qualified applicant who uses a communication device. However, the employers in this study did not know about AAC devices or the people who use them.

This author's next solution could be called a "Career Center." The center's purpose would be to link people who use AAC to an appropriate job. The center would keep applicant's resumes on file along with a list of the qualifications and possible jobs the applicant would like to hold. The center would keep track of applicants and job openings via computer. By doing this, certain key words could be typed into the computer and find qualified applicants. The applicant and the Career Center could then work together in the interview process by: 1) writing letters of reference and informing the potential employer about the applicant's qualifications, 2) teaching the applicant interviewing skills and giving practice interviews, and 3) aiding in the process of possible accommodations needed by the applicant. When the applicant receives a job, the center would then receive a percentage of the person's first few pay checks as compensation. The center should be staffed both by people who use AAC and typical communicators and financed on a regional basis. Several of the study's applicants voiced their desire to work with individuals who use AAC systems, in therapy, counseling, and advocacy. People with these aspirations could help start the center and work there, thus fulfilling their career goals.

It is extremely important for the person who uses AAC to have marketable skills, such as computer skills (word processing or programming), bookkeeping or accounting. The company representatives interviewed stated that it would be easier to hire any employee who had such skills, making the author's argument seem simplistic; however, it is not. It has not been until recently that people believed that those who use AAC are capable of becoming productive members of society. These skills can be taught by vocational rehabilitation specialts, Speech-Language Pathologists and the implementation of school's Individualized Education Plans (IEP) and Individualized Transition Plans (ITP). Even as negative images begin to fade, overcoming them is still difficult, especially when the disability goes beyond communication. Carrie Woodbury has cerebral palsy which has limited her communication and physical abilities. Her school teachers have never had a student with a disability as severe as Carrie's and they were unsure what provisions to make for her. The school teachers and her parents arranged for a school psychologist who specializes in disabilities to come to her school to assist in procuring employment for people with disabilities like Carrie's. He will also be training the personnel at her school how to best teach Carrie these skills and how to get "the most" from her classes.

The need for a good education is also important. Again, this may seem simplistic, but ensuring that people who use AAC receive the same education as their peers is not .simplistic. Four of the study's employed participants utilizing AAC have at least a Master's Degree. One cannot overlook the implications of this. All employers want someone who is educated and the proof of that education is a diploma or degree. This is no different for people who use AAC. Applicants with degrees have a better chance of finding employment. The people who set the goals for the ITP plan should also aid in the job search process. The author wants to assure the reader that she is not advocating for other people to do all the "grunt work" for people who use AAC, but since we are at the beginning of a process, as discussed, help is needed at the initial stages.

One of the major limitations to employment discussed by company representatives and by people using AAC is the time it takes to communicate with an AAC device. Company representatives in this study generally believed that accessing a word-based system would be more efficient than a sentence-based system. Utilizing icons to communicate has been found to be extremely time efficient (Baker, 1993); however, it is not as quick as typical conversations and the time it takes to convey a message varies for every person. It is important that AAC device manufacturers continue researching ways for the communication to become even faster. The business world is fast paced and this time lag in communication can be a hindrance. It is important that the people using the AAC systems are operating them as quickly as they are able, but it is also important to teach employers to be tolerant. An employee who must use a cane may not be able to walk as fast as the other employees, but adjustments are made. When walking with this person, the other employees probably slow their pace. It is also important to know that

many AAC devices can be customized by programming often used sentences and phrases under few keystrokes, therefore increasing the speed of communication.

Even though the study found that word-based systems are preferred, those who use sentence based systems cannot be discarded. Customizing the device becomes more important in this case. It is also more important to teach the person more compensatory strategies, i.e. having one of the messages state, "please ask me a yes or no question." Another way to make sentence-based systems successful is to do a complete assessment of the person's activities throughout the day. Brainstorm with the person using AAC what types of statements might be needed and programming them into the device is a way to make communication faster.

The final suggestions that the author would like to make is to dream big and begin early. It is much better to aim slightly higher than lower when considering what a person is able to accomplish. This combats the effects of learned helplessness and gives the person using the AAC device a goal to aim for and self-confidence. It is important to think about possible employment opportunities early, involving the person using AAC in that decision. It is also important to treat people who use AAC like anyone else. People using AAC do not want special treatment, but just to be treated as everyone is treated and given a fair chance. This author believes that accommodations are not special treatment, buf are modifications that make it possible for the employee to carry out the essential functions of the job.

Employment for people using AAC is not an impossibility. What is needed most is an open mind to start the process. It is necessary to make sure that people who use AAC are in the public eye, are able to empower themselves, and that employers are willing to take a chance. AAC is not the limitation to employment, but the vehicle for those who are unable to speak in obtaining employment. It can be done.

The participants in the study who use AAC made powerful comments during the interviews and on the questionnaires which summarize the ideas put forth in this Thesis. Their comments follow:

~ I found that by using my communicator I was able to communicate clearly, quickly, and intelligently with the general public and in this way I gained my confidence. I felt that I could hold and do a productive job if such situation arose. (Jim Prentice)

~ Make up your mind on what you would like to do. If it requires more education, go for it and get as much education as possible. Then pursue a job in line with what your major was and keep trying until you meet your goal. It's out there, all you have to do is go for it and use your communicator constantly. (Jim Prentice) ~ This is a practical problem I've noticed. I have to stop what I am doing to talk to people. People may get the wrong impression of someone who uses a device if they walk by and you don't talk to them, they might think you're pissed off or something. I get more work done from 5-10 at night because... there aren't as many people around. (Pete Tinucci)

~ My experience hasn't been much in the employment world, but I think determination, a good personality, and hard work is essential. (Jenny Lowe) ~ I remember back in high school before voice synthesizers were around, I would have to wheel in front of the class and give speeches. It was part of the curriculum. Everybody had to do it. I would get up there and no one would understand. Other students would laugh at my speech, the teacher would make a terrible face which indicated he wanted it over as quickly as possible, and I'd come out of class feeling rejected and frustrated. In contrast, in the past few years, I have been working on a second master's in Health Services Administration. This means I have classes with doctors and lawyers. For some classes, a presentation is required. Unlike my high school teachers, some college professors, hoping to spare me of some embarrassment and them some time, ask me if I would rather write a paper instead. Some of them blink their eyes when I tell them, "No, I'll just use my speech synthesizer." (Mick Joyce) ~ By far the most powerful application of this technology is advocacy. Public officials need to know what programs are helpful or harmful to people with disabilities. They need to hear it directly from persons who use the programs. People with disabilities need to become active consumers, if they want better and more responsive government programs. Advocacy speaking is one way to get the message sent and received. With the increased concern for "consumer

involvement," there will be the added need and demand for people with disabilities to speak. (Mick Joyce)

Capitalize on a person's strengths in finding ways for them to perform the essential job functions and know that it may take a person who uses AAC a little longer to say their message, but what they have to say is just as important. Also, realize that the barriers to employment will not be overcome quickly, but can be overcome. Just as African-Americans and women have struggled, and still do, for equal rights and opportunities in employment, people who use AAC are moving forward in the struggle for their employment rights. With an open mind and tolerance to difference, not deviance, they will overcome.

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Practical Problems of Employment: A Personal View

Richard D. Creech

This paper is divided into two distinct sections. The first is a colloquial summary of recent reflections about communication disability and employment. The second is an outline largely intended for perusal by my colleagues who experience significant speech and multiple impairments (SSMI). Although intended for people with disabilities, I do not mind if the temporarily able-bodied (TABS) read it It may do them good.

In defense of the folksy style, let me say that I believe my primary contribution to our collective deliberations about employment is highly personal. I speak from the point of view of a person with substantial, developmental disabilities, who, through the grace of God, his family, friends, and augmentative communication technology, is now in economic control of his own life. It has been a long road, one filled with many surprises.

I have had people tell me that I am lucky. Now, you might think that is a bit unusual — though, in fact, I think I am pretty lucky — because, most people I meet view me as being unfortunate. So, I asked why did they say that These people say, "Why, because you don't have to work. You can just collect checks from the government." The first time I heard that, I thought I was hearing things. Then I started searching for an escape route, because the person was obviously nutty. Since then, I have realized a significant proportion of the population is nutty. They view having disabilities as a legitimate reason not to work.

So I asked myself, "Why work?" I quickly came up with Rick's Top Ten Reasons to Work. If David Letterman wants them, he will have to pay me royalties! Number ten, it's cheaper than going shopping with my wife. Number nine, forces someone to get me out of bed in the mornings. Number eight, stops me from watching soap operas in the afternoons. Number seven, easier than reading the newspaper with a so-called automatic page turner. Number six, able to use a national computer bulletin board without paying. Number five, don't get unrelenting telemarketing while at work. Number four, better than being bored at home. Number three, the paychecks, despite paying taxes. Number two, important to self-worth, "I work, I am productive, therefore, I am of value." And the number one reason to work, drum roll please. It reduces dependence on government agencies.

And, if you question that as a motivator, you have never been on government assistance. What gets me is that, when you are accepting checks from the government, social workers treat you as if you are taking money directly from their pockets. And when you try to work, they count every penny you make. When I was receiving SSI, my employer sent monthly reports to Social Security on my income. I made annual disclosures, of taxes. After doing this for five years, I received a letter from Social Security stating that they had overpaid me $11,000 and directing me to send them a check for the full amount!

I fired a letter to them stating my employer had sent them monthly reports on my income, I had sent them my tax forms and bank statements, and I had been on the PASS Program, and any overpayments that I might have received was their fault, and to get anything from me, they would have to take me to court and pay my attorney's fees, and by the time it got through the court system, I might not even have $11,000 to pay them. But I reminded them that by that time, they would have spent over $11,000 in court costs. I haven't heard from Social insecurity since. Oh, I imagine that I will, eventually, but, hey, I am going to resist paying for their miscalculations.

The essential ingredients in getting and keeping a job for a person with SSMI are motivation, job skills, and the Americans .with Disability Act (ADA). People with disabilities have to be, and remain, highly motivated. There are a million potholes, obstacles, and barriers on the road to employment. People are all too understanding if a person with disabilities loses motivation to work. In the end, a person with disabilities has to have the internal spring of motivation that doesn't require external nourishment. Many, many people are very accepting when a person with disabilities does not quite succeed, because they have low expectations of what a person with SSMI can do. Acceptance is a wonderful thing, but sometimes people with SSMI do not need people who accept us as we are. We need people who accept us as we can be, and will not accept anything less, even when we feel like accepting less ourselves.

Independent economic control of your own life may not be a realistic or a desired goal for everyone with SSMI, but if it is, you must have job skills. If you are physical unable to speak or use your hands and are given a choice between education and marketable job skills, I would choose job skills — although the two are, of course, inextricably linked. But, for the longest time, I thought education and job skills were pretty much the same thing. Boy, was I wrong! Even for average students, what they learn in the process of education is only indirectly related to some of the most important skills needed on the job. I have several things in mind here.

The first is communication. I have my present job large because of my ability to communicate. I am very proud of my expertise in the use of augmentative communication equipment. Yet no one in my university experience ever said beans about it to me. I know other university graduates with SSMI who may, in fact, have more knowledge and more job skills than I have, but are unemployed, because they have never learned to use their communication systems interactively. It is very hard to get the kind of job you need to get economic control of your life without the ability to interact casually and professionally with your colleagues and co-workers. University programs for people with SSMI should, in my opinion, offer credit courses in communication aid fluency.

In addition, college and university students with significant, developmental speech disabilities often need to be given special assistance in perfecting their literacy skills. This must be a major focus for many of us. By literacy skills, I mean reading and reading comprehension, non-fiction and fiction, writing, and grammar. On most jobs that people want, the better a person's literacy skills, the better the person's chances for advancement.

Students with SSMI need basic math skills. Auditing Calculus I will not help the student, if he or she cannot balance a checkbook. Students need to be trained to use computers with business applications. There are lots of job opportunities for people who know how to operate business software, such as data entry, inventory management, database management, and accounting softwares. People with SSMI who are timely, interactive communicators and know these computer applications have a good shot at a job. Such jobs do not require a four-year degree at a college or university. Not that I have anything against a university education, except if a student is not careful, he or she may leave there able to quote Shakespeare, but without good communication and practical job skills.
I do not like being cynical, but without the ADA, I am afraid that many employers would not hire persons with SSMI. Right now people with disabilities are where African-Americans were just after the passage of the Civil Rights Bill of 1964. We now have the law behind us, but we still do not have the regulations for enforcing that law, nor do we have a department in government especially charged with enforcing the ADA. And you

believe me, employers will not hire people with SSMI just because a law has been passed in Washington DC. The ADA must be enforced by regulations, and a justice department, willing and able to enforce those regulations. The war for the ADA is not won. We won the first battle, yes, but whether we win or lose the war for equality, will be decided by our actions now, and in the next few years.

When people with SSMI find employment and start on a job, we had better recognize the practical problems we will face. And we had better make plans for dealing with them in advance. We have to preplan; we have to foresee the problems. If we wait to react to problems, we are going to use our work time dealing with problems, and our employers will not like that. We have to make physical preparations that will prevent or lessen potential problems. This takes perspiration. I tell people nothing that I do is easy. When I say that something is easy, I am really saying that I did it before and I know how to do it without too much difficulty. When your body doesn't move to your commands, nothing you do is easy.

A large part of recognizing potential problems at work is acquiring realistic solutions. More often than not, a realistic solution is a solution that does not require employers' time or money. Do not expect employers to install automatic doors, but do expect employers to install door chines, and adapted handles on doors that you will be using. We must know what is the limit in reasonable accommodation.

A lot of what I have been saying deals with a certain kind of employment, that is employment which leads to economic independence, but the world of work is much broader than that. Many members of the augmentative communication community will be exploring other avenues. People whose multiple impairments include cognitive impairments but do not necessarily include physical impairments may enter the world of work in the service industry far removed from data bases and accounting software. Nevertheless, some of the same principles apply. First, become the best communicator you can be. A communication wallet can be a wonderful thing if you know how to use it interactively. Second, master a job skill with all the energy and attention at your command. Don't kill yourself, but don't be satisfied until you have really tried.

For some of us, the world of work may not mean getting a job but getting control of our own lives. Moving from an institution to a group home, making decisions, and taking responsibility is very stressful and can be confusing. This kind of activity is a tremendous service to society, and needs to be recognized for the important contribution that it is. Independence and decision making are also dependent upon being able to communicate. Thus I would like a broad definition for the world of work, and I think that communicative competence is at the root of a lot of it for people with SSMI.

The second part of this paper is an outline. When you read it or have it read to you, think of how it relates and does not relate to your own personal situation. You might use it as an outline for planning or perhaps even fantasizing.

Practical Problems in Employment:

I. Introduction
    A. Why work
        1. important in self identity
        2. monetary
        3. prevents boredom

4. Reduce dependence on government agencies

B. Essential ingredients

1. motivation
2. job skills
3. ADA

C. Recognize practical problems
1. preplanning
2.physical preparations
3.perspiration

D. Require realistic solutions
1. knowing the limitations
2. innovative thinking
3. limited partnerships

II. Transportation
A. If you can drive
1. getting a vehicle
2. paying for customization
3. time between getting a job and getting a vehicle

B. Public transportation
1. unreliable
2. physically stressful
3. limited service area

C. Private paratransit
1. expensive
2. large service population, few vehicles

D. Rent-a-driver
1. getting a vehicle
2. car pooling
3. co-workers
4. Personal Care Assistant (PCA)

E. Transportation alternatives
1. work from home
2. split work between home and office
3. flexible hours

III. Personal Care
A. Necessary
1. if working more than 4 successive hours
2. to maintain physical health and work quality

B. Co-workers
1. should not be asked
2. not their job
3. employer owns their time
4. not trained

C. Who pays
1. employer, no
2. Vocational Rehabilitation (VR), not long-term
3. employee with disabilities

D. Alternative financing
1. dependent care deduction
2. government subsidized
3. tax shelters
4. non-profit co-operation

E. Innovative employment
1. work from home

2. employer incorporating PC and secretarial dudes into another employee's job

IV. Office Space
- A. need larger work space
  1. wheelchair
  2. assistive technology equipment
  3. expensive
- B. Different office equipment
- C. Sound resistant
  1. speaker phones
  2. confidential conversations
  3. AT equipment feedback
- D. Easy access
  1. not easily found in office buildings
  2. employer's problem?
- E. Assisdve technology friendly environment
  1. throughout building
  2. doors
  3. hallway
  4. equipment

V. Working Hours
- A. Regular 8 hour shifts
  1. physically demanding
  2. may not be most productive B. Set one's office hours
  1. recommended
  2. hours to meet needs of employer and employee C. Work from home
  1. very feasible
  2. equipment provided
  3. Employee owns equipment
  4. minimum transportation
  5. telecommunications, scanners, faxes, direct connection with employer
- D. Split work time between office and home
  1. most recommended
  2. advantage of working from home
  3. personal contact employer and co-workers
  4. reduced transportation needs
  5. reduced supportive employment
  6. reduced employer's costs
  7. tax deduction

VI. Commitment Limitation & Time Management
- A. Learn when to say, "No"
  1. Just say no ain't easy
  2. trained to say yes
  3. overextend ourselves physically, mentally, and emotionally
  3. jeopardize health, jobs, and lives
- B. Judge the time necessary for tasks
  1. analyze time played
  2. analyze how fast you can work

3. analyze task size

C. Keep a work log
   1. record time spent on
   2. keep log brief
   3. analyze each week

D. Keep a To Do list
   1. simple list
   2. prioritized
   3. estimate time required

E. Know when to quit
1. set a stopping time
2. budget time
3. burnout danger

Struggling with SSI, Medicare, Medical Assistance, & other demons

A. when a job is not worth it
B. SSI & PASS
C. medicare & Medical Assistance
D. OVR & post employment
E. paying for assistive technology

VII. Concluding statements

A. innovative employment
B. continuing support of agencies
C. supportive tax credits
D. continuous training and educating in job skills

AUTH OR'S INDEX

Badrman, Arlene Lubroff

Baker, Bruce R.

Barry, Robert F. 49

Belfiore, Phillip J. v

Blackstone, Sarah 90

Carlson, Faith 109

Creech, Richard 39

Demasco, Patrick 32

Elder, Pamela 126

Golinker, Lewis 74

Hobson, Douglas 56

Hollman, Dennis 18

Huer, Mary Blake 41

Jinks, Andrew Jones, 15

Tony Joyce, Mick 82

Krezman, Carol 67

Lloyd, Lyle 97

Lowe, Jennifer 3

Malagodi, Mark 61

Miller, Amy Lynn *109*

Trefler, Elaine *15*

Vanderheyden, Peter *41*

Williams, Michael *119*

41

74

39