SUPPORT SERVICES FOR STUDENTS WITH LEARNING DISABILITIES AT CABRILLO COLLEGE:
A HANDBOOK FOR FACULTY & STAFF

RICHARD GRIFFITHS
2ND REV. ED., 2003
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A story from Jay Leno:

“I got all C’s and D’s in school and I am mildly dyslexic. But I am very persistent and ambitious. When I applied to college, the admissions office said I wasn’t what they wanted. So I sat outside his office 12 hours a day until the admissions officer said he would let me in if I attended summer school. The tuition was $12,000, so I took out my wallet and gave him $12,000 in cash. I was already making good money in nightclubs. I think that having dyslexia is a competitive advantage. Dyslexic people are good at setting everything aside to pursue one goal. Ambition beats genius 99 percent of the time.”

(J. Lerner, 2003, p. 399)
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This handbook is dedicated to the faculty and staff members who have demonstrated true compassion for students with learning disabilities.

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This handbook may be made available in alternative format.
Please contact Disabled Student Programs & Services at Cabrillo to request this accommodation.

This handbook is intended to inform faculty and staff about services for students with learning disabilities at Cabrillo College. While every effort has been made to insure up-to-date completeness and accuracy, this is not a legal document, nor does it purport to offer formal legal advice or opinions.
This handbook will assist faculty and staff to be updated regarding policies, procedures, services, and legal issues related to students with learning disabilities and their educational needs here at Cabrillo College since my 1994 handbook: particularly more recent research on learning disabilities, testing students with English as a Second Language (ESL), dyslexia, ADHD, accommodations, legal issues, resources, and more recent questions or issues raised by faculty, staff, and students.

It should be noted that this handbook is not intended as a comprehensive textbook on learning disabilities, nor as a scholarly work. The topics which are included come from surveying faculty, staff, and students about what information regarding learning disabilities was needed.

Faculty and staff should be aware that a similar handbook, *Learning Differently: A Handbook for Students with Learning Disabilities*, is available to students.

It is hoped that those Cabrillo academic divisions, departments, or staff offices that wish additional information or clarification will request in-service presentations from the staff of the Learning Skills Program and/or the Director of Disabled Student Programs and Services.

Although hard copies of this handbook are available, the handbook may be found online on the Cabrillo College website. The exact location is not available at this time.
LEARNING DISABILITIES:
WHY, WHAT AND HOW?
“They just won’t understand. Sometimes even I don’t understand.”
-Student with a learning disability

What is a learning disability (LD) and why are there special services for students with learning disabilities at Cabrillo College?

**DEFINITION**

“So here we are - adults with learning disabilities... who may have had no choice but to accept the labels ‘dingbat’ or ‘airhead’ to cover the confusion, memory lapses, misread or misunderstood directions, or the dozens of other mean tricks our learning disability has played on us through the years” (Hayes, 1993, p. 11).

California community colleges define learning disability as “a persistent condition of presumed neurological dysfunction, which may also exist with other disabling conditions. This dysfunction continues despite instruction in standard classroom situations. To be categorized as learning disabled, a student must exhibit:

- Average to above average intellectual ability;
- Severe processing deficit(s);
- Severe aptitude-achievement discrepancy(ies);
- Measured achievement in an instructional or employment setting”

(Title 5, California Code of Regulations).
The causes of learning disabilities are still not fully understood - the disorder is complex, and there are still no definitive answers. Sometimes learning disabilities are genetic, sometimes they may be caused during birth-related problems, sometimes they are a result of malnutrition, drug abuse or alcoholism, or sometimes they can be the result of some severe illnesses. There is also a wide variety of kinds of learning disabilities which are individually manifested in different ways.

Since LD-related research began in the 1920's (LD was called “minimal brain dysfunction” at the time), scientists are still seeking explanations as to the origins of this disability. In doing so, they are trying to understand cognitive processes and why and how they are disrupted. Bigler (1992), in his article, *The Neurobiology and Neuropsychology of Adult Learning Disorders*, states that,

...magnetic resonance imaging (MRI) and electrophysiological tests found anatomic irregularities in adults with LD compared to controls. Adults with LD have a variety of underlying neurobiologic irregularities and/or abnormalities that are permanent. (Nolting, 1993, p. 15)

As of 2003, research has not yet brought much clarity as to the etiology of learning disabilities. In addition, theories about how the brain works and about the concept of intelligence and how to measure it are continually being evaluated.

Learning disabilities cannot be “cured,” but there are many different ways to compensate or accommodate for problems caused by learning disabilities (indeed, the major task of the staff of the Learning Skills Program is to help students find these solutions). Moreover, different LD characteristics may or may not appear at different times (somewhat like an intermittently firing sparkplug).
**WHY STUDENTS WITH LEARNING DISABILITIES RECEIVE SPECIAL SERVICES**

“…because it’s the law!”

Well, yes, but hopefully educators supply these services and accommodations because it’s also the righteous and compassionate thing to do, and *because we want our students to learn what we teach.*

Supplemental educational services for students with disabilities came about as a result of the civil rights movement to provide students with disabilities with equal access to educational opportunities. To deny students with disabilities equal educational opportunity is a violation of their human dignity and basic civil rights.

As a result of the Individuals with Disabilities Education Act (IDEA), originally passed as the Education for All Handicapped Children Act in 1975, and the Rehabilitation Act of 1973 (Section 504), legislation was enacted in California under AB 77 (Lanterman Act, 1976) and amendment act AB 2670 (1976) which established funding guidelines for California community colleges with regard to equitably serving students with disabilities. As a result, categorical programs were formally established at California community colleges in 1976, and special funds were provided to help meet the increased costs of educating persons with disabilities. This legislation was implemented by regulations in Title 5 of the California Code of Regulations.

“From 1988 until 1998 the percent of freshman students with disabilities reporting they had a learning disability rose from 15.3% to 41%” (Nolting, 2000).

**THE LEARNING SKILLS PROGRAM**

The Learning Skills Program (LSP) is the part of Disabled Student Programs and Services (DSPS) which is designed for students with learning disabilities. Specific learning disabilities can affect classroom performance, making it difficult for these
students to succeed without supplemental classroom accommodations, particular compensatory techniques, specialized remedial instruction, counseling support, advocacy, and small group labs and classes. The staff of the LSP currently includes two full-time contract faculty and five adjunct LD Specialists and one full-time Program Assistant.

During the 2001-2002 school year 22,011 students with learning disabilities were served in the 108 California community colleges (out of 2.9 million students). In the same year, Cabrillo served 1,605 students with disabilities – 680 (42%) of which were students with learning disabilities - the largest disability group on campus and 5% of total enrollment (14,542). The average number of students with learning disabilities in individual California community colleges in 2001-2002 was 204, making Cabrillo’s LD enrollment one of the largest in the State. (California Community College Chancellor’s Office Website, April 2003).

Many faculty and staff are under the impression that DSPS and the Learning Skills Program cost the college additional funding to provide services for students with disabilities. However, DSPS actually brings into the college additional funds – approximately $3.7 million dollars in 2002-2003 (Lynch, 2003), generated through “regular” and special classes. Program staff and faculty are paid for largely by categorical state funding, not the Cabrillo general fund. In a study completed by Steven Silletti of DeAnza College, Cabrillo’s DSPS was found to be “the most cost effective” of all similar California community college programs in the state. Almost all of the students with disabilities at Cabrillo are enrolled in “regular” classes and are pursuing degree, transfer, or vocational goals. In fact, students with disabilities have generally averaged above average success rates when compared with non-disabled students (Lynch, 2003).

Referral and Assessment

Students are often referred by instructors, counselors, high schools, community agencies, parents, or fellow students. Students may also refer themselves to the Learning
Skills Program. When staff members refer a student, the LSP staff generally recommend that terms such as “learning disability” or “dyslexia” should NOT be used in the initial conversation. Students may have misperceptions about what those terms mean and this might stop them from following through on doing something that may help them to become more successful students. It is better to approach the student with some sensitivity and mention that some sort of learning problems were observed and that this seems to be affecting his or her performance (be specific: for example, “I notice that, when you write, you often transpose letters or parts of words”). Staff members might mention that a referral is only being made to try to find out what may be causing such problems. If the student responds using terms like learning disability, it is recommended that the staff member answer that they don’t know – the staff of the LSP is trained to test in the area of learning problems and may or may not find a learning disability – **the purpose for the referral is to get information which may help the student.**

It is recommended that students make an appointment with a Disabled Student Programs and Services (DSPS) counselor or visit the LSP office to find out additional information about the program and how to qualify for services. If a student has been previously identified as learning disabled or if he or she needs testing, the student is referred to an LD Specialist to review past testing or begin the testing process. Usually, a previous diagnosis must have been within three years, and the LD Specialist must determine if the testing was administered by an appropriate professional.

If the student has been properly diagnosed, the student usually begins receiving services immediately. Cabrillo will accept LD test results and eligibility recommendations from any California community college.

If a student has not been previously identified as learning disabled or previous testing is inadequate or not recent, individual and group screening sessions are held to determine if testing is appropriate. If the screening sessions reveal that testing is indicated, the student should make appointments for testing. For most of the testing
sessions the student meets individually with the LD Specialist. The testing itself is directly associated with the definition of learning disability as stated in Title 5; that is, the testing must reveal:

- average to above average intellectual ability;
- a severe processing deficit (a problem in the manner in which a person intakes information, retains it, or expresses information in written or oral form);
- a severe aptitude-achievement discrepancy (a major difference between what the tests predict the student should be achieving and how he or she are actually achieving);
- average to above average achievement in reading, writing, or mathematics.

The assessment process usually takes about 6 to 8 hours, requiring several appointments. This includes a final session during which the results are explained and recommendations are made.

In order to qualify for LD services, a student must meet each of the criteria listed above or, with substantial additional evidence, an LD Specialist can make what is called a “professional certification” for services.

If a student does not qualify for services, the Learning Skills Program staff try to find other resources which will help the student. If the student does qualify for services, an individualized Student Education Contract (SEC) is formulated with the student, which lists courses, accommodations, and resources to help the student reach his or her educational or vocational goals.

During Fall 2001 to Spring 2002, 178 students enrolled for diagnostic assessment for learning disabilities; 113 received a diagnosis of LD (63%) (Northcutt, 2003).
ASSessment PROCedures

There has been some comment from faculty at Cabrillo regarding the assessment procedures which the LSP is required to use by Title 5. Therefore, a brief history and overview of these requirements follows:

The “California Assessment System for Adults with Learning Disabilities” -the process, tests, and standardization – were developed by the Chancellor's Office in conjunction with a research consortium which also included the California Association of Educators of the Disabled (CAPED) and the University of Kansas Institute for Research in Learning Disabilities. The five-year project, started in 1981, had two main goals:

- to provide an operational definition of the LD construct; and
- reduce or eliminate the inequities, inconsistencies, and biases that have characterized previous eligibility models. (Statewide Learning Disabilities Project Steering Committee, 1988, p. 1).

Subsequent validation studies have indicated that these goals were reached.

The development of this assessment procedure combined the efforts of experts in a broad range of disciplines throughout the country: special education, educational measurement, psychology, policy analysis, decision theory, and speech and language. Stakeholder groups, including practitioners, state agencies, and special interest groups, participated in the deliberations of all of the related educational issues at each significant juncture in the study. The normative database used in the standardization of the eligibility model came from 60 California community college campuses and included 1,800 students. Subsequent studies conducted by the California Postsecondary Education Commission (CPEC) have indicated that this model is one of the most comprehensive, fair, and unbiased eligibility procedures ever adopted in the United States. The eligibility
The model was implemented in 1987, and has been required by Title 5 regulations since that time.

The Chancellor's Office has conducted several updated standardization and review of the eligibility process used for learning disabilities in California community colleges. Revised tests have been added where indicated and there were some procedural changes. Bias issues in this assessment model which exist to some degree in all standardized tests were addressed by a subcommittee of CPEC several years ago. Results indicated that white males were over-identified and Asians were under-identified. These results were consistent with other comparable LD assessment models. The ability to use “professional judgement” within the model has largely ameliorated the bias problem. The overall superior integrity of the model has remained unchanged (more specific data and model review information is available through the LSP or the Chancellor's Office).
COMMON CHARACTERISTICS OF STUDENTS WITH LEARNING DISABILITIES
 COMMON CHARACTERISTICS OF STUDENTS WITH LEARNING DISABILITIES

Learning disabilities are manifested individually; some students with learning disabilities might experience many of the following characteristics, or some might exhibit only a few. Certainly most of these characteristics have been experienced by people without learning disabilities. However, having some or many of these characteristics becomes a legal “disability” when they “substantially limit one or more major life activities,” (Individuals with Disabilities in Education Act - IDEA) and have been professionally diagnosed. Generally speaking, students with learning disabilities exhibit their disability through unexpected differences in academic performance. For example, articulate speaking skills but difficulty with written language or reading skills; superior writing skills but severely deficient mathematical reasoning.

READING

- Slow reading rate
- Poor comprehension and retention
- Difficulty identifying important ideas and themes
- Poor mastery of phonics
- Confusion involving similar words
- Difficulty integrating new vocabulary
- Resistance to reading
- Confusion with written directions
- Misreading letters, words, or sentences (dyslexia)
WRITTEN LANGUAGE

- Difficulty with sentence structure (incomplete sentences, run-ons, poor use of grammar, missing inflectional endings)
- Frequent spelling errors (omissions, substitutions, transpositions)
- Inability to copy correctly from a book or the chalkboard
- Oral expression is better than written expression
- Slow writer
- Poor penmanship (poorly formed letters, incorrect use of capitalization, trouble with spacing, overly large or small handwriting)

ORAL LANGUAGE SKILLS

- Inability to concentrate on and comprehend oral language
- Difficulty in orally expressing ideas which he or she understands
- Oral reversals of words or sentence parts
- Written expression is better than oral expression
- Difficulty speaking grammatically correct English
- Problems telling a story in proper sequence
- Confusion with oral directions

MATHEMATICAL SKILLS

- Fragmented mastery of basic facts (i.e., multiplication tables)
- Number reversals
Confusion of operational symbols (+ and x)
Copies problems incorrectly from one line to another or from a scratch page to a workbook
Unable to line up calculations correctly
Difficulty recalling the sequence of operation processes
Inability to understand and/or retain abstract concepts
Comfortable with verbal reasoning, problems with abstract reasoning
Difficulty understanding word problems
Reasoning deficits
Severe “math anxiety,” mental “blocking,” physical distress when working in math

ORGANIZATIONAL AND STUDY SKILLS

Time management difficulties (consistently late to class, late assignments, poor planning on exams, missing classes, etc.)
Slow to start and/or complete assignments (procrastination)
Repeated inability to recall what has been taught
Difficulty following oral and written directions
Lack of overall organization in written notes and composition
Short attention span during lectures
Inefficient use of campus resources (library, tutorials, etc.)
OTHER MANIFESTATIONS

- Insightful classroom participation, but poor test performance
- Lucid and hardworking, but makes many “careless” errors
- Sharp and “with it” on Tuesday, but scattered and slow on Wednesday
- Excellent with hands-on activities, but poor with academic tasks
- Jokes are often misunderstood

SOCIAL SKILLS

Some students may experience problems with social skills because of perceptual problems or the emotional stress caused by the learning disability itself and years of frustration in the learning environment. Just as a student might have difficulty determining the difference between a “d” and a “b,” he or she might confuse the meaning of a wink, shrug, or grimace, or even miss body language cues altogether. Students with auditory weaknesses may miss subtle oral language cues, or differences between sarcasm and sincerity. Many students with learning disabilities have low self-esteem, little or no internal “locus of control” (feelings related to individual inability to affect positive outcomes in learning), unrealistic expectations, emotional instability and/or extreme anger and, consequently, have a very troublesome time in the educational environment. At times, some students with learning disabilities may be socially isolated or have a great deal of difficulty making friends. Just as the severity of learning disability is on a continuum, so are the social and emotional affects.

Students who have surmounted the emotional problems associated with learning disabilities and who have mostly compensated for them demonstrate a great deal of courage and can be extremely strong individuals psychologically.
Dyslexia
Dyslexia is only one kind of learning disability. Some people falsely believe that all learning disabilities include dyslexia. Therefore, a brief explanation of dyslexia is in order. The term has been thrown around rather loosely and has become the catch-all term to describe many different learning problems, which may not be true learning disabilities. Very few students who have reading problems have dyslexia; it is a severe and persistent reading disability which may include the misreading of numbers (discalculia) and symbols, as well as letters.

The word **dyslexia** is derived from two Greek roots, “**dys**” (not) and “**lexia**” (read). The disorder causes reading problems which can include the reversal of letters, “p” for “d,” mirror imaging of letters or words, transposing letters or words, or even transposing parts of sentences. Some students have reported words or letters actually “vibrating” on a page.

When the inability to read is caused by a stroke, accident, or organic brain disease, neurologists call the disorder **acquired alexia**. When a child is unable to learn the skills of reading the condition is sometimes called **developmental dyslexia**.

Geshwind, 1982; Galaburda, 1983; Duane, 1983; and Critchley, 1970, have found that “...neurological research on this condition suggests that dyslexia has a biological basis: that within the community of poor readers there is a hard core of cases in which the learning defect is inborn (and) caused by neurobiogical factors” (Jones, 1992, p. 65). Some studies have linked dyslexia to abnormalities found in chromosomes or damage in the language area of the left hemisphere (p. 65).

Research as to the etiology of dyslexia is now being published in a wide spectrum of research areas, including linguistics, education, genetics, neuroanatomy, and visual and auditory processing.

At Cabrillo, the Learning Skills Program staff works with students with dyslexia in an educational context, rather than from a clinical approach. There have been many,
many claims regarding special treatment techniques, from “visual tracking” exercises used by some optometrists to the prescription of colored eye glasses (“Irlen Lenses”) for the treatment of “scotopic sensitivity,” and even treatment prescribed by a local chiropractor. Some of these claims appear to have some scientific validity for some students, and others appear to have absolutely none. The treatment of “scotopic sensitivity,” has received mixed scientific review in the *Journal of Learning Disabilities*.

Some of the difficulties experienced by students with dyslexia may be ameliorated by the use of the learning tips and strategies, and the study skills recommended in both this handbook and in the handbook for students with learning disabilities. Some cases of dyslexia are too severe for non-clinical approaches.

The brevity of this section of the handbook is not meant to indicate that dyslexia is not a serious type of learning disability, but rather to emphasize that it is just one kind of learning disability, one which deserves more attention than can be made available here.
“OK, God, if you'll just make this go away, I promise I'll be a good person forever!” (Hayes, 1993, p. 11)

There are a number of emotional problems caused by the fact that a learning disability is not always easily apparent and can be hidden. Many students are concerned about the negative connotation that the label often brings because misconceptions about learning disabilities are widespread (yes, even among educators!). Most students reveal their learning disability only when they must, and sometimes regretfully late in a course. Some wait until after midterms, or even just before finals. This can be very frustrating to both faculty and to Learning Skills Program staff because it may be too late for staff members to effectively help the student. The LSP staff recommends that students meet privately with instructors early in the semester or even before the class has first met in order to discuss their individual needs. However, it is understandable that most students with learning disabilities want to “hide out,” at least part of the time. Those students fresh out of high school often want to “start over” - to be “regular” students - in their new college environment because they may have inadvertently been humiliated or embarrassed by faculty or staff in front of other students. Students report a wide variety of reactions from faculty, but the most common are puzzlement and even amazement:

“But she seems so bright, how can she have a learning disability?”

“He's so articulate and responsive in class; what is he trying to put over on me?” (Garnett & La Porta, 1984, p.14)

Some students with a learning disability also want to achieve success in their classes without special help or accommodations; they may even view accommodations
as “crutches” and, therefore, not want to take advantage of them or identify themselves as learning disabled.

Naturally, the Learning Skills Program staff often hear about the negative experiences of students regarding the lack of understanding or compassion on the part of faculty and staff. The LSP staff know there are many positive interactions between students with learning disabilities and faculty and staff, but we just don't always hear about them. More often than most faculty and staff are aware, discrimination does take place on this campus toward students with learning disabilities – hopefully unintended. Recently, the LSP staff randomly collected comments from students about their learning disabilities. Following are just a few responses:

“On a daily basis I have to endure insensitive remarks and expressions from individuals on this campus.”

“Impatient instructors ignore me when I (have to) ask repetitive questions” “...overworked clerical staff tell me to come back later when I can't fill out a form fast enough” “...my fellow students judge me as being lazy and make comments like, ‘You just don't study enough’” “...I know that most people do not realize that they are being cruel and insensitive” “...They do not conceive that someone who appears ‘normal’ is actually learning disabled.”

This is what we like to hear:

“I could not have made it through this class without the sensitivity and knowledge about learning disabilities which my instructor showed the whole semester.”

And comments from students at other colleges and universities:

“It's like having your eyes and ears speak one language, while your brain speaks another language, and there's no interpreter.”

“We can do just as well as other students given the proper support and accommodations, it's just so frustrating when that doesn't happen.”
“It will take me two or three times the effort and work that it takes another student-and four times as long.”

“I feel like the smallest person in the classroom.”

“I get so frustrated and angry with myself.”

“It's hard, you get depressed. “

“Sometimes failure seems easier to deal with (sic) I'm used to it.”

“Why can't I simply learn like everyone else?”

“Now that I know I have a learning disability, am I using it as a copout or a crutch?” (p. 14)

These are sad words which often reveal years and years of frustration, anger, and low self-esteem.

**Psychosocial Issues**

Aside from the nature of the “hidden disability,” there are other emotional issues which students with learning disabilities must face in order to make the best use of their educational experience. However, it is only in recent years that professionals have dealt with the psychosocial issues of post secondary students with learning disabilities. Some researchers have stated that academic support is not enough without psychosocial assistance (Brinckerhoff, Shaw, & McGuire, 1993, p. 140).

There is little, if any, significant research that deals with the psychosocial issues of students with learning disabilities who are currently enrolled in post-secondary education or who have successfully obtained vocational or degree goals. It might be assumed by many professionals in the field that the majority of students with learning disabilities who have successfully competed with their non-learning disabled peers in post-
secondary education have surmounted the majority of severe psychological disorders listed below. Unfortunately, we know little about those students who drop out.

Brinckerhoff, et. al., suggest several major psychosocial concerns that may face students with learning disabilities. These may include: poor self-concept, ineffective socialization skills (not learning social “rules”), dependency issues, stress and anxiety, negative behaviors and feelings, depression, suicide, and chemical dependency.

It is understandable that low self-esteem is experienced by many students with learning disabilities. Much of the educational experience of these students has been negative. Many students, when interviewed regarding their educational history, relate a constant assault upon their self-esteem: “put-downs” by teachers, classmates, and even parents. The unrelenting educational confrontations experienced by students with learning disabilities may cause anger, frustration, and stress – negative feelings which prompt students to become self-critical and develop poor self-concept.

Adults who suffer from low self-concept often have difficulty maintaining healthy interpersonal relationships. Visual or auditory miscues and/or an inability to properly read body language can lead to misunderstandings and discomfort, resulting in a desire to withdraw from social interaction. Some students with learning disabilities report significant difficulties in their relationships with others or in expressing their feelings in ways that others can understand. Socialization problems experienced in childhood often persist in adults, and studies have shown that this is a problem area for many adults which can worsen without professional attention.

One of the “problems” with high school programs and services for students with learning disabilities is the possibility that students become too dependent upon these support services and fail to become students who can learn independently. Sometimes parents can be overprotective or fail to help their children learn self-advocacy skills. This overdependence may lead to a lack of individual fulfillment and pride - especially in the work world, where there is often no support for adults with learning disabilities.
Many studies have demonstrated unusually high rates of stress and anxiety in students with learning disabilities. In one study, 50 out of 60 LD children exhibited “symptoms of diagnosable psychiatric disorder”. In another study, LD children showed more anxiety than non-disabled children (p. 144). Signs of severe physical distress are often exhibited by post secondary students before exams.

Geist and McGrath described some of their students with learning disabilities as “frustrated, angry, depressed, and dependent,” behaviors that may lead to emotional disabilities which appear “hostile, demanding, and threatening”. Some students with learning disabilities may appear to others as “shy, egocentric, inflexible, immature, and lacking in social skills”. They may show “poor impulse control, excessive frustration, anxiety, denial, projection, anger, depression, strong dependency needs or health problems.” Such students “misunderstand and are misunderstood” (p. 145). However, by observation, most of the students with learning disabilities at Cabrillo remain “hidden”: unobtrusive, and shy.

If the emotional side of students with learning disabilities is ignored, depression, chemical dependency, and even suicide can result.

Researchers have recently begun to focus on the relationship between learning disabilities and high rates of depression. The existence of depression in the LD population apparently ranges between 14 and 64%, a rather wide range – but all of the researchers agree that depression may be a serious side effect of learning disabilities (p. 146). One study found that adults with learning disabilities “...more frequently report more delinquency, problems with drug abuse, and suicidal thoughts than their peers” (p. 146).

It must be stated that the professional interest in psychosocial issues and students with learning disabilities is relatively new and it should be made clear that to generalize may be somewhat dangerous, particularly about post secondary students. Not ALL adults with learning disabilities demonstrate all of the negative psychosocial characteristics. In addition, since students who have managed to survive in the
postsecondary educational environment must, at the least, have some good coping skills, it is probably safe to say that this particular population as a whole probably exhibits fewer severely negative psychosocial tendencies than the larger LD population. Once again, more research is indicated in this area.

If any of these psychosocial issues is a concern to the student with learning disabilities, it is highly recommended that he or she talk to a Learning Disabilities Specialist or a DSPS counselor for support or referral to off-campus resources (see “On and Off-Campus Resources”).

**STAGES OF ADJUSTMENT**

When students discover that they have a learning disability, the reaction is often one of relief: “Oh, that's why I have so much trouble!” “Wow, it isn't my fault after all.” “I always thought I was just stupid.” Sometimes the student simply is receiving confirmation of what they have long suspected. At times, dismay and/or anger are displayed by the student. Whatever the reaction is, there are some commonly experienced stages that students go through after hearing the “news.” The stages may not occur in the order in which they are listed.

**RELIEF-AcCEPTANCE:**

Most LD Specialists at the community college level would cite relief as the student’s first reaction. This is because most undiagnosed adults have suspected that they had learning disabilities for years and years, and their problem is finally being recognized and named. Students may accept the diagnosis immediately, but later undergo denial when they really understand the significance of the label “learning disability” and all of its ramifications.
**Disbelief-Denial-Blame:**

This stage often occurs after a student has experienced continued failure in a certain subject area even with appropriate support services and accommodations. It is not a denial of the learning disability, but rather a denial of the severity of the disability, or of the possible consequences: a student is unable to complete the math requirements that accompany a B.A. degree in marine biology; or the student whose heart is set upon being a special education teacher cannot pass the National Teacher's Exam even with test accommodations, because part of the criteria for becoming a teacher is excellent written language skills. Who would want to face such a devastating “limitation”? A natural reaction might be to deny the consequences of the severity of the learning disability by blaming institutions, or regulations, or other people.

**Diagnosis-Shopping:**

Students or parents may wish to find less painful answers to the problem, so they try to find a “better” diagnosis (“It can't be that limiting!”), or they find out about the newest “cure” for learning disabilities and spend hundreds of dollars on methods which have not been scientifically verified.

**Negotiation:**

A student tries to trade or negotiate their LD: “Well, God, if I study really hard, my learning disability will go away and I can graduate;” or “My reasoning skills are not that strong, so I know I can't be a lawyer, but maybe I can be a legal assistant;” or “I can't go into medicine and make a lot of money, but I can sing well, so I'll be a rock star.”
**ACCEPTANCE:**

Acceptance does not mean lowering expectations, but rather accepting the consequences of having a disability, working on strengths, seeing what is possible, and moving on. Some people with learning disabilities never reach this stage, just as some alcoholics cannot recognize the severity of their problem. However, acceptance means letting go of anger, hurt, and unrealistic expectations that the problems will go away. Acceptance means that moving on is possible.

**MOVING ON:**

This is, again, a stage that some students may not reach. Moving on means that the person has faced up to the challenges of having a learning disability, accepted them, and agreed to take personal responsibility for making the best of a “raw deal” (Hayes, 1993, pp. 71-76).

Usually, when a person makes it through these stages, a whole new world awaits him or her; students are happier and academic progress takes place at a much faster pace.
ACADEMIC ACCOMMODATIONS
A C A D E M I C  A C C O M M O D A T I O N S

“If I had to sum it up, I would say that a learning disabled student’s life is filled with frustration and terrible anxiety. You are always anxious about everything from whether your professor will give you extended time on a test, to whether you will understand the lecture, to whether you will say something foolish or irrelevant in class or to a friend.” (Scheiber & Talpers, 1987, p. 171).

-Student with a learning disability

Section 504 regulations state:

“In its course examinations or other procedures for evaluating students' academic achievement in its program, a recipient to which the subpart applies shall provide such methods for evaluating the achievement of students who have a handicap that impairs sensory, manual, or speaking skills as will best ensure that the results of the evaluation represents [sic] the student's achievement in the course, rather than reflecting the student's impaired sensory, manual, or speaking skills (except where such skills are factors that the test purports to measure)” (104a 44 [c]) (Brinckerhoff, et. al., 1993, p. 230).

According to Title 5 regulations, “…colleges …must…make reasonable modifications in academic requirements, where necessary, to ensure full educational opportunity for students with disabilities. Such modifications may include the …adaptation of the manner in which specific courses are conducted.”
In a position paper, published by the Learning Disabilities Division of the California Association of Post Secondary Educators of the Disabled (CAPED) in 1992, LD Specialists were advised to adhere to the following principles:

- Academic adjustments should be selected cautiously and appropriately and be determined on an individual basis and be made available to all eligible students;

- Accommodations should not compromise the academic integrity of the student's or college's program;

- Accommodations should be pragmatically selected so that the institution can successfully comply;

- Confidentiality should be maintained (information may be shared only on the basis of an educational need-to-know);

- Recommended accommodations should be designed to have maximal effect with minimal intervention.

The ultimate goal of the LD Specialist is to help the student compensate for their learning disability, and, if possible, gain full independence as a learner (and not depend upon “special” services).

**The Question of Equity**

DSPS and LSP personnel use the term **equity** to mean that achievement of equal opportunity for certain groups may depend on providing special support or additional services. Support services do not give students with disabilities any advantage over others; they merely enable these students to overcome the **disadvantages** with which
they would otherwise begin. The process for demonstrating knowledge learned - not changing course content or lowering academic standards - is the focus of accommodations for learning disabilities. Course content should not be changed. Despite a prevalent fear of faculty that the quality of education will be lowered by making accommodations, experience in the field of learning disabilities has shown that this does not happen. On the contrary, many of the techniques for helping these students use their abilities are extremely helpful to other students (p. 94). Issues such as what is a “reasonable” accommodation, when does or does not the accommodation compromise academic integrity, and the concept of equity will be discussed in more detail in the “Legal Issues” section of this handbook.

### Academic Accommodations

Standard academic accommodations for students with learning disabilities include:

**Institutional Modifications:**

- May include priority registration, special classes, and course substitutions or waivers.
- DSPS (Disabled Student Programs and Services) classes
- LS (Learning Skills) classes
- Math classes (Math 154A/B, Elementary Algebra)
**INSTRUCTIONAL MODIFICATIONS:**

- Taped textbooks
- Note-taking modifications: note-takers, lecture notes (instructor provided)
- Tape recorders or laptop computers (student provided)
- Testing modifications: extended time, alternative locations, different formats (alternative demonstrations of mastery), readers, oral exams (or taped answers), use of word processor, use of aids during exams such as spell-checkers, enlarged tests, adapted answer sheets
- Auxiliary aids and equipment including computer screen
- Readers or voice recognition
- Adapting or modifying methods of instruction

**PROCEDURES**

Students who wish to continue to receive special services are required to meet with LD Specialists and DSPS counselors at the end of each semester to review progress and complete a Student Education Contract (SEC) for the next semester. The SEC includes classes and, if needed or recommended, appropriate accommodations. Students may not receive special services unless they complete and sign the SEC. The LD Specialist also completes the “Accommodations” form, copies of which are sent to appropriate instructors. Student progress is also reviewed with the student. If progress is unsatisfactory, the SEC may be changed (different accommodations) or services suspended.

The Learning Skills Program staff strongly urge the student to meet early and privately with instructors to discuss the accommodations. When students meet with faculty it is appropriate to ask:
“What is the nature of your learning disability?”

“How does it affect you?”

“What do you do to compensate for your problem?”

“What accommodations do you need for this course?”

“If you need an alternative location for exams, how will security be handled?”

Unfortunately, some students make accommodations requests after they are already failing a course.

Students are advised to request accommodations in a timely fashion so that LD Specialists, LSP and DSPS staff, instructors, and support personnel can have sufficient preparation time to provide the accommodation.

Accommodations are legally required only for students with verified disabilities. Students who request an accommodation without the “Accommodations Form” may not have a verified learning disability.

Instructors with questions should contact the LD Specialist immediately. It is the LD Specialists who decide upon the appropriate accommodation (based on assessment results - see “Legal Issues”). If an instructor feels the accommodation is not appropriate, he or she should contact the LD Specialist. The decision of the LD Specialist may be currently appealed through the Director of Disabled Student Programs and Services (DSPS). If the student requests an accommodation which the LD Specialist feels is not appropriate, the student may also appeal to the Director of DSPS and through the normal college grievance procedures (“appropriate” and/or “reasonable” accommodations are further discussed in “Legal Issues”), which would include, in the next step, appealing to the ADA coordinator.

Note-takers, extended time on tests, alternate locations, and test proctors are all procured through the DSPS office.
During spring 2001 and 2002, only 28% of the students with learning disabilities at Cabrillo received extended time on tests (140 of 500 identified students) in the DSPS office. Of those students with disabilities who use extended time, 70% have learning disabilities (Northcutt, 2003).

In rare instances, course substitutions or waivers may be obtained as an accommodation through a student appeal process to a subcommittee of the Cabrillo College Academic Council. College policy in this regard has been in place since 1992 (the Chancellor's Office has insisted that all community colleges have such a policy in place).

Since 1992, course substitutions or waivers have been requested by only about fifteen students. Some two-thirds of the requests were granted. The substitutions/waivers were granted only in majors where the course was deemed by the department as not essential to that degree and only to students who followed college procedures. The Cabrillo College Board Policy regarding substitution is included in the Appendix.

VOCATIONAL ACCOMMODATIONS AND THE WORKPLACE

Although this is an educational institution it seems appropriate, in this 2nd edition, to add a section on workplace accommodations, particularly as they may appear in Cabrillo’s Voc-Ed programs. Issues of accommodation for health and safety in the Allied Health and other departments where dangerous materials are used, as well as disclosure of hidden disabilities, continue to cause some complications. “The decision to disclose or not disclose a disability is faced repeatedly by every person with an invisible disability” (University of Kansas, 2002). Disclosure is a problem for the student with a learning disability when entering a Voc-Ed Program, taking a licensing exam, and when applying for a job.

“Will I be discriminated against?”

“Will they misunderstand my disability?”
“If I don’t disclose, I won’t get accommodations if I need them.”

These are the concerns raised by many of our students with LD as they enter Cabrillo’s Voc-Ed programs and later, when successful, as they apply for jobs.

Under the ADA, a person with a disability can choose to disclose at any time, and is not required to disclose at all unless he or she wants to request an accommodation or wants other protections under the law.

Students with disabilities should be able to understand their strengths and weaknesses relative to the job requirements and work with an LD Specialist to determine which, if any, accommodations may be needed to perform the job successfully.

**DISCLOSE OR NOT DISCLOSE?**

If the disability will require the Voc-Ed instructor to provide an appropriate accommodation, the student should disclose. If the disability is not obvious and will not negatively affect job performance, the student should not disclose. In the end, the decision of whether to disclose is up to the individual.

Participation in Allied Health programs, Culinary Arts, Criminal Justice, Welding and in other programs that involve the health and safety of others should be seriously considered. In class, accommodations such as extended time on tests may be appropriate. However, extended time to administer an injection as a nurse may result in death. Obviously, essential job duties and responsibilities which involve health and safety of self and others cannot allow for accommodations.
INSTRUCTIONAL TIPS FOR STUDENTS WITH LEARNING DISABILITIES: HOW FACULTY AND STAFF CAN HELP
“He not only taught me (the subject), he taught me to believe in myself.”

-Cabrillo student referring to an instructor at Cabrillo

The following includes a list of study skills, tips, and learning strategies which faculty, teaching assistants, and tutors can use in the classroom to assist students with learning disabilities. The staff of the Learning Skills Program do not presume to tell instructors how to teach. However, our staff have had many inquiries from faculty over the years as to what kinds of specific strategies or tips instructors can use for students with learning disabilities. Please be advised that no one strategy will work with all students, since each learning disability is uniquely manifested with each student. The recommended skills and tips are generalized for certain characteristic learning weaknesses.

“...many college faculty members are not optimistic about the academic abilities of students with learning disabilities or about their (own) ability to work with them” (Brinckerhoff, 1993, p. 257).

The keys to helping a student with a learning disability are flexibility and a continuing teacher/student dialogue. What follows are recommendations for all students. Most instructors use them naturally. For the student, these tips may be critical in order to achieve success:
As early as possible, gently ask the student what will help him or her
Maintain confidentiality for the student
Encourage participation and questions (some students won’t ask
questions because they feel that is being “stupid”)
Avoid expressing annoyance when a student asks a question which was just
answered
Assist the student with selecting a note-taker
Permit the use of a tape recorder (see legal issues)
Provide lecture guides or notes before the next lecture
In lectures, identify the topic and how it fits in with previous and future
lectures
Outline the lecture topic on the chalkboard ahead of time
Put key words on the board
Stress major points both orally and visually
Explain steps slowly and sequentially
Stick to the syllabus
Remind students of office hours when they can get extra help
Allow students to demonstrate their knowledge of the subject through
varying methods
Discuss other campus resources
Encourage formation of study groups
Encourage students to start papers and projects EARLY
Provide explicit, periodic feedback about strengths and weaknesses
Follow accommodations that are recommended by LD Specialists and
counselors for the student.

If an instructor disagrees with the recommendation, he or she should contact
the LSP office and discuss the issue with staff; avoid arguing with the student (see
Accommodations section).
TIPS FOR READINGS PROBLEMS

_Today [sic] my day got off to a bad start when I was made a lot of fun of by a guy in my dorm for reading out loud. He told me that I was weird and slow for doing it because nobody does that...I could not get up the nerve to explain that I was learning disabled._

_Stanford LD student_

- Refer the student to the LSP office for possible use of the Books on Tape Service
- Refer the student to the library to learn about the Kurzweil Reading Machine and to screen reader computers in Learning Skills or the Computer Center
- Refer the student to the Reading Center
- Repeat essential directions orally
- Use pictures or diagrams to accompany new material
- Allow extended time on exams
- Allow oral exams
- Teach the student to read in smaller, more manageable units of text
- Encourage the use of highlighters
- Recommend the use of 3x5 cards while reading (focuses attention on one line at a time and blocks out extraneous print)
- Encourage the student to discuss what has been read with other students
- Do **NOT** ask a student to read aloud in class
- Encourage the student to visualize what is being read (not all students with learning disabilities do this)
- When possible, allow the student to watch the video or listen to the audio tape versions
- Allow the use of large print reading material
“Ashamed... writing can make me feel so ashamed. I don't understand why I reverse letters, why I can't spell after all this work, why it looks so infantile, why it's so hard for me and easy for them” (Garnett & La Porta, 1984, p. 9).

? Student with a learning disability

- Understand that it may take two or three (or more) times longer to finish a writing project
- Realize that, because of the greater effort, fatigue sets in more easily
- Encourage the use of word processors and spell checkers
- Teach “clustering” techniques
- Recommend oral proofreading
- Recommend the Writing Center to help with proofreading
- Refer the student to the LSP for instruction in proofing strategies developed specifically for students with learning disabilities
- Help the student to use error analysis to determine if mistakes form patterns that he or she can learn to look for while writing
- Give the student a personal checklist to use when proofing
- Allow the student to write out ideas before worrying about mechanics
- Avoid timed writing activities
- Repeat and rephrase directions
- Model appropriate writing techniques
- Suggest recording what the student wants to write and then have them write out what they've said
- Adjust length of writing assignments according to ability
- Refer student to DSPS for use of Voice Recognition computer hardware
Allow the student to use non-white paper for assignments

Demonstrate revision techniques and show the students how much effort it takes to revise (they sometimes think that writing is easy for other people)

Have the student experiment with improving spelling using computer assisted instruction (CAI)

Do NOT use “Bad Spellers Dictionaries,” where students look up misspelled words

**“WRITING BLOCK” AND STUDENTS WITH LEARNING DISABILITIES**

Some students with learning disabilities who have difficulties with spelling, punctuation, grammar, and/or composition, experience “writer's block,” perhaps even to a greater degree than other students. And although “math anxiety” is often a topic in discussions about learning problems, “writer's block” in students with learning disabilities is not usually dealt with.

These students' writing problems primarily come from visual processing weaknesses, the inability to auditorily discern differences in the sounds of letters, or reasoning difficulties which make organization and composition extremely difficult. Most students, after good instruction in these areas, can break through the “writer's block.” However, students with learning disabilities will sometimes not write or compose because the disability may cause so many problems with the mechanics of writing - no matter how many basic English classes they may take.

There has been much writing and research which demonstrates how word processing and “spell checkers” can assist students to write more effectively. There have even been some studies on how much word processing has helped students with learning disabilities. The LSP staff highly recommends that students with learning disabilities who have difficulty writing take word processing classes before or while they take English classes (or any class which requires writing).
“I’m good in algebra and geometry, but terrible in basic math. I don’t line up numbers well; I reverse numbers and even fractions; I leave out decimals. I get lost.” (Garnett & LaPorta, 1984, p.11).

- Student with a learning disability

Students with learning disabilities who have problems in mathematics might experience these symptoms:

- Difficulty doing the actual calculations (but understand the concepts)
- Difficulty following sequential steps
- Difficulty applying concepts to word problems
- Severe “math anxiety”

These symptoms can be the result of weaknesses in visual processing speed, auditory processing, non-verbal abstract reasoning skills, or in “linear learning.” Most of the time, the visual and auditory weaknesses are much easier to deal with than weak reasoning.

“Students with visual processing disorders will have difficulty learning mathematics,” according to Batchelor (1990), because they have trouble visually tracking numbers, symbols, and words (Notting, 1991, p. 4). These students will also have problems copying from the chalkboard. They may misread what they see in their own work, as well, especially under time constraints. An “x” can be easily confused as a “+,” which can lead to all sorts of frustration when obtaining an answer to an expression such as $4x + 2x + 1$. 

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FOR STUDENTS WITH VISUAL PROCESSING PROBLEMS:

- Recommend that the student use auditory strengths
- Support peer discussion of materials being taught
- Encourage group problem solving
- Use clear, uncrowded copies of handouts
- Try to keep information on chalkboards uncluttered, clear, and well organized
- Use different colors on white boards
- Encourage students to orally recite new concepts and formulas when studying
- Encourage students to use tape recordings for learning rote material
- Recommend that students orally proof their work
- Have students block out printed information that is not immediately needed to solve a problem by using 3x5 cards
- Recommend the use of “magic markers” to highlight symbols
- Ask students to limit the number of computations on each page of both scratch paper and finished work
- Suggest that the student use a proofreader before handing in work (proofreaders should point out possible mechanical errors, not correct them - this helps train students to focus on error analysis)
- Request enlarged copies of tests from the DSPS office
Encourage students to learn as much as possible about their learning disability and how it interferes with their math skills.

Students with short-term auditory (or visual) memory will have difficulty remembering basic mathematical facts such as the multiplication tables, formulas, proper sequencing; they may have trouble understanding lectures. Students with short-term memory weaknesses may have problems reading math textbooks because facts read in one paragraph may not be remembered in the next. Students with auditory processing deficits can also miss words, sentence beginnings, or sentence endings so that lectures make little sense.

**FOR STUDENTS WITH AUDITORY PROCESSING PROBLEMS:**

- Recommend that the student use visual strengths
- Use concrete and pictorial examples to clarify explanations
- Allow students to tape lectures
- Suggest that students talk silently to themselves while doing problems
- Reduce the length and number of oral directions
- Back up oral directions with written instructions
- Have students use flashcards for basic facts and formulas
- If available, suggest that students watch lectures which have been videotaped
- Recommend the use of computer assisted instruction (CAI)
- Allow the use of calculators by students with weak rote memory
Students with learning disabilities who have weaknesses in visual or auditory memory will probably have difficulty in subjects which require linear learning. Mathematics is a highly linear discipline, with bits of information building upon other bits. Other subjects areas, such as the social sciences, can be less linear, and therefore short-term or long-term memory weaknesses are of less concern (Notting, 1990, p. 31).

What about the student with a learning disability who earns A's and B's in other classes, but not in mathematics? Waldron and Saphire (1989) studied the cognitive skills of students with learning disabilities and “regular” students, and found that the “gifted” students with learning disabilities performed significantly more poorly than the other students in the perceptual areas of visual and auditory discrimination, visual and auditory sequencing, short-term auditory memory and visual-spatial skills (p. 26). Waldron and Saphire (1990) also found that gifted students with learning disabilities were strongest in the areas of “verbal comprehension, reasoning in processing information, and thinking skills” (p.27). This may explain why some students with learning disabilities understand and can explain particularly abstract mathematical concepts, but fail tests because they can't remember facts and details or correctly read or write mathematical symbols (this might include the student who can't understand why a test was failed when he or she understood the concepts).

Weak non-verbal abstract reasoning is a particularly difficult area for some students with learning disabilities, and is probably the hardest area for an instructor in mathematics to deal with because so much advanced math understanding occurs in this area of cognition. Hessler (1984) correlates low mathematics achievement with students who performed poorly in areas of non-verbal reasoning. Bley and Thornton (1981) reported that students with poor reasoning skills have more difficulty with mathematics than any other subject. Conversely, high scores on reasoning tests are an “excellent” predictor of student success in algebra (p. 28).
FOR STUDENTS WITH REASONING DISORDERS:

- Teach new concepts in small steps
- Teach students to break down problems into small steps
- Encourage students to use pictures and diagrams
- Urge students to use estimating as a proofing check
- Include the use of good study skills in the curriculum
- Reassure the student that the process, as well as the results, will be given credit when solving problems

Students who have abstract reasoning problems but are strong verbally may be extremely frustrated by “... ‘multiplying’ fractions which results in smaller numbers; ‘dividing’, which gives you larger numbers; ‘adding’ positive and negative numbers, when what you are actually doing is ‘subtracting’...The answers don't just seem logical” (Immergut & Smith, 1994, p. xiv).

“MATH ANXIETY” AND STUDENTS WITH LEARNING DISABILITIES

Some research indicates that “math anxiety” is more prevalent among college students who do not suffer such anxiety in other subjects, occurs more often in women than in men, and that “students who have an inadequate high school mathematics background exhibited the greatest anxiety” (Nolting, 1991, p. 35). Research into psychosocial issues and learning disabilities indicates that these students suffer much lower self-esteem and less internal locus of control than other students (Binckerhoff, Shaw, and McGuire, 1993, pp. 137-167). This being the case, when math anxiety exists it should be expected that it will be more severe in students with learning disabilities.
than others (however, research in this area was not extensively reviewed for this handbook).

In his review of "math anxiety" research, Nolting (1991) indicates that stress reduction techniques, although they often reduce stress, do little to improve academic success in math. He suggests using more comprehensive strategies in addition to stress reduction, building in study skills and learning strategies into the math curriculum and recommending that students take advantage of tutorial services. Pattie Tomnitz, DSPS Counselor, however, has demonstrated some success with visualization techniques and self-hypnosis, which have both reduced stress and improved grades for students with learning disabilities in math classes.

It is presumed that test accommodations help, in some degree, to reduce anxiety among students with learning disabilities (although there is no empirical data from Cabrillo College to support this.) Anecdotal reports from many Cabrillo students demonstrate that when a student is assured of appropriate accommodations for their learning disability, stress is reduced and they earn higher grades because they are no longer penalized for their learning disability. Immergut and Smith in their text, Arithmetic and Algebra ...Again (1994), speak of the "math mind myth:" "No teacher of history ever told a student who handed in an inadequate term paper that he or she did not have a `historical mind'. Yet with mathematics, people assume that having some sort of genetic predisposition is the only way to survive at any level" (p. xiv). Well, they may be correct in that there is no genetic predisposition in people who succeed in math, but there may be a genetic predisposition in people with learning disabilities who don't succeed in math. Understand that with some students with learning disabilities all of the skills required to do well in math just might not "be there"; that is why they must learn to work harder to compensate, and why, at times, accommodations for this disability are necessary.
FOR THE STUDENT WITH LEARNING DISABILITIES: LEARNING TIPS AND STUDY SKILLS

Although each learning disability appears to be unique, different learning strategies and study skills can be generalized for certain characteristic weaknesses. The following information includes recommendations for strategies that may be used effectively for certain types of learning disabilities. Remember that these are rather broad recommendations and only through trial and error will teachers, tutors, and students find the most effective strategy for a specific problem. Often, it is the student with a learning disability who is the most creative at devising his or her own successful strategies. Instructors and staff can help students with learning disabilities by sharing the strategies for success that are specified below:

TIPS FOR SPECIFIC COGNITIVE AREAS

As an instructor, teaching assistant, or tutor, you can help the student with learning disabilities in the areas specified below by passing on the following information if he or she mentions a particular cognitive weakness, rather than an academic one (the information is also included in the handbooks for students with learning disabilities):

FOR VISUAL PROCESSING PROBLEMS

(Processing what is seen, accuracy, attention to detail, speed, visual closure, visual sequencing, visual-motor coordination), the student may:

- Ask for oral information and directions
- Plan for additional time to complete written work
- Learn good proofreading skills
Use graph paper for mathematics when lines must be kept straight
Experiment with colored plastic overlays or non-white paper
Use charts, index cards, colored pens to track visual information
Request extended time in order to carefully proofread work
Sit near the front of the classroom to limit visual distractions
Use a finger or 3x5 cards to track lines while reading
Use “spelling checkers” and word processing
Take advantage of Books on Tape for severe reading problems
Study areas should be neat and uncluttered
Request enlarged copies of tests from DSPS

FOR AUDITORY PROCESSING PROBLEMS

(Processing what is heard, listening comprehension and accuracy, short-term memory, long-term memory, receptive language), the student may:

Use a tape recorder to listen to lectures more than once
Request a note-taker so that you can listen more carefully
Break up directions into smaller units
Sit near the front of the classroom
Take classes from instructors who use visual materials or hands-on projects, rather than strictly giving lecture
Ask for repetition of oral directions or for written directions
Repeat information back to verify details
Write as you memorize
Use memory “hooks” or “pegs”
Recite material aloud
Spread memory work over several sessions
Review class notes as soon as possible (maximum 24 hrs.)
Use visualization techniques to recall information

**FOR REASONING PROBLEMS**

(Non-verbal abstract reasoning, problem solving, cognitive flexibility, math concepts), the student may:

- “Talk through” non-verbal work with a friend or tutor and write down steps involved
- Practice non-verbal reasoning skills with books, computer software, and games
- Break down word problems into small steps
- Draw pictures and diagrams when possible to help understand concepts or problems
- Use group problem solving
- Use free writing, clustering (mind-mapping), or list-making to get ideas down and organized before writing

**FOR VERBAL ABILITY PROBLEMS**

(Receptive & expressive vocabulary, verbal reasoning), the student may:

- Develop written and oral vocabulary (take reading classes, speech classes, participate in clubs, use computer software and programmed workbooks)
Ask for information in short sequences

Use complete sentences

Encourage friends and relatives to allow time for you to respond in discussions

FOR ATTENTION PROBLEMS

(Distractibility, “hyperactivity”, inability to focus), the student may:

- Use earplugs to reduce noise distractions
- Use study carrels or empty rooms for study
- In some instances, use non-distracting audio-tapes (“white noise”)
- Break down tasks into small units and work through them one at a time
- Plan the most difficult tasks during peak energy periods
- Make lists and prioritize work
- Use calendars and time management techniques
- Take study breaks
- Underline key words or phrases in directions
- Use visual organizers such as different color-coded notebooks for each class
**TIPS FOR OFFICE PERSONNEL AND ADMINISTRATORS**

Sometimes students with learning disabilities become especially nervous when dealing with the “bureaucracy,” the procedures, the rules, and the paperwork which all institutions generate. Some students with learning disabilities lacking self-esteem or confidence may be afraid they are going to “mess up” because they miss oral instructions, misread printed material, or don't see body language communication (see also “Common Characteristics,” “Social Skills” and “The Hidden Disability – Emotional Impact”). This is particularly unnerving for them when dealing with financial aid, registration, or some kind of grievance procedure.

The staff of the Learning Skills Program does its best to help students deal appropriately with office staff and procedures. The LSP staff members also realize that most offices at Cabrillo are understaffed and very busy and when faced with stressed or angry students with learning disabilities, patience may wear thin. (And, how do you know a student may have a learning disability, unless you are told?) However, empathy, sensitivity, and using the following tips may help a student with a learning disability:

- Try to give the student extra time to listen, read, and ask questions.
- Do NOT talk down to the student.
- If it is known that the student has a learning disability, keep it confidential.
- Use “active listening” techniques.
- Try to understand the student's problem.
- Re-state what your perception of the problem is.
- If the student is extremely nervous or agitated (but non-threatening), try to take them to a private room and help calm them down or request the help of an LD Specialist, counselor, or your supervisor.
LEGAL ISSUES
LEGAL ISSUES

There have been many legal questions which have arisen in regard to the rights of persons with disabilities. What follows is merely a brief overview of those issues which touch upon services for students with learning disabilities in California community colleges, and which are of primary concern for the faculty and staff at Cabrillo. Most of the following citations are from attorneys who specialize in disability law and postsecondary education. Undoubtedly, this section of the handbook will spur further debate (but hopefully, fewer student complaints).

There is a middle ground between those students who believe their learning disability gives them the right to anything they want in the way of accommodating their needs, and those faculty members who believe that students with learning disabilities should be allowed no accommodations (or, that there is no such thing as a learning disability). The fact is, like it or not, we are all dealing with legal requirements and, unfortunately, some of those requirements are stated in rather vague language (what is a “reasonable” accommodation?). In addition, faculty and staff have the right to know what sorts of violations might put the College and themselves in legal jeopardy.

Once again, the information here is offered as guidance for faculty and staff. The handbook is not intended to be a legal document, nor does it purport to offer legal advice or opinion.

“...whether or not an accommodation is to be made is not negotiable. How an accommodation is to be made is negotiable.” (Brinckerhoff, et. al., 1993, p. 247).

What is a “reasonable” accommodation for a learning disability?

This rather vague term “reasonable” originated in Section 504 of the National Rehabilitation Act, and its use has dominated language used in all manner of publications, on and off campus, about services for the disabled. This is unfortunate.
because the word “reasonable” gives rise to discussions about what is reasonable from a particular perspective: What is a “reasonable” accommodation from the student's perspective, the instructor's, the LD Specialist, the administrator's? Each one may have their own definition of what is “reasonable”! In order to avoid such unproductive discussions, it is recommended that instead of using the term “reasonable” accommodation, a more practical term be used: “appropriate” academic adjustments, or “appropriate” accommodations. What is an “appropriate” service may, therefore, be based upon the nature of the learning disability and upon LD assessment results (Jarrow, 1993, p. 36). An example of an inappropriate accommodation might be requesting the use of an English-Spanish/Spanish-English dictionary for a Spanish exam. If the curriculum requires that the student learn to spell correctly in Spanish, then the request could most likely be denied. Of course, such answers are not always so clear-cut. What about the use of calculators for mathematics exams for students with learning disabilities who, because of a long-term memory problem, cannot recall the complete multiplication table? Is memorization of the multiplication table “essential” to the math curriculum? What about the use of spell checkers and word processing for English exams? With word processing and spell checkers available is good spelling “essential” to obtaining a degree in English? Such questions are difficult, but one point in the law helps: that each accommodation is to be determined “individually” (Brinckerhoff, et. al., 1993, p. 232).

In Wynne v. Tufts University School of Medicine, 932 F2d 19 (1st Cir, 1991), the court listed factors which would help make a determination of “reasonableness.” The court recommended that several relevant and factual questions be asked:

- Does the institution provide for alternative means of testing?
- Were adjustments feasible?
- Is the cost feasible?
- What would be the effect upon the academic program?
- Would available alternatives result in lowering academic standards?
- Would the adjustments result in substantial program alterations?
All of these questions lead to the decision as to whether an academic adjustment places “undue hardship” upon the institution (Latham & Latham, 1993, p. 82).

**Who determines the appropriateness of the accommodation requested?**

Appropriate accommodations are determined by the institution's designated “expert(s)” on disability-related issues. At Cabrillo, the designated experts on students with learning disabilities, are the Learning Disabilities Specialists who determine appropriate accommodations. Faculty members may not, by themselves, decide an accommodation is not necessary. (Office of Civil Rights – OCR Western Division, San Francisco 5/16//02). As stated earlier, if an instructor disagrees with the appropriateness of an accommodation, he or she should first contact the LD Specialist. If agreement is not reached, an appeal should be made to the “Director of DSP&S” or to the Division Chair. To avoid legal liability of the institution and the individual faculty member it is advisable that the instructor provide the requested accommodation until a decision is reached (p. 36).

**Can I refuse to allow “spell checker” on tests or assignments?**

This depends on the essential nature of the spelling. For example, a medical dictionary would not be an appropriate adjustment because a nursing student must be able to spell medications correctly – this is a health and safety issue. However, if a student often misspells non-technical words, such as “tub” for “but” this is most likely caused by a visual processing error caused by a learning disability and is not essential to what must be learned – thus, an accommodation here would be acceptable.

By the way, we have often seen students with LD spell essential technical words correctly because they have studied them so diligently, but miss the easy, short words.
Can I forbid the use of tape recorders in my classroom?

No, not if a student with a verified learning disability has made the request and it is deemed the most appropriate accommodation for that student's learning disability. Tape recorders are one of the accommodations specifically listed in Section 504 that help ensure equal access.

Some instructors feel that the use of tape recorders interferes with academic freedom and the right to privacy regarding what is discussed in the classroom. Although some students might feel that a tape recorder is the best accommodation for their disability, this is not always the case. Transcribing tapes or playing them over and over may be less effective than obtaining the services of a note-taker. Therefore, if a student requests the use of a tape recorder it would probably be best to contact the LD Specialist to make sure if the request is the only appropriate accommodation possible for the student.

The student should make sure that the tape recording process is as unobtrusive as possible.

Can I forbid the use of calculators in math classes?

The key issue which needs to be analyzed to come to an appropriate conclusion is whether the ability to perform the arithmetic calculations without the stated accommodations is a fundamental academic requirement of the class. If it is a fundamental academic requirement, then the college would not be required to provide the accommodation under either Section 504 of the 1973 Rehabilitation Act or the Americans with Disabilities Act (ADA). Critical factors to determine this include: Is the ability to perform the arithmetic calculations with aids included in the course outline of record maintained by the college? If the ability to perform these functions, specifically without aids, is in the approved course outline of record, then the college may consider asserting that it is a fundamental academic requirement. It is not obligatory that they take this
stance, but it may be an indicator of whether or not the function is a fundamental academic requirement. One caution to be made is that the course outline should have been reviewed in both the self evaluations required by Section 504 and the ADA to assure that all requirements listed are true fundamental requirements rather than traditional ones. In addition, the course outline should not be outdated when compared to current practice of the faculty teaching that class.

If the ability to perform the function without aids is not listed, what is the practice of other instructors of the same class at the college or of instructors of similar classes or other colleges? If the practice regarding the use of aids such as a calculator and multiplication tables differs between instructors, it is difficult to assert that it is a fundamental academic requirement.

It is important to note that a generalization about the use of aids as an accommodation should not be made across all classes in a given subject. For example, it may be a fundamental academic requirement to be able to perform the calculations for an arithmetic class but not for an algebra, geometry, or calculus class which teaches other aspects of mathematics.

It should be remembered that the intent of disability regulations is to provide students with equal access to educational opportunity, and that students should not be discriminated against by testing them in their area of disability. An obvious example of this is administering a written test, not in Braille, to a blind student. Again, for students with learning disabilities, it is more difficult to understand the nature of this “hidden” disability. Typical characteristics of learning disabilities have been discussed earlier, so that it is hoped that instructors now understood, for example, the need for a student with dyslexia to request extended time on tests. The accommodation is not giving that student unfair advantage, but rather adjusting for the disability.
In her study related to extended time, M. K. Runyan at the University of California, Berkeley, found that “...extended time makes a significant difference in the performance of students with disabilities but does not significantly impact on the performance of non-disabled students - in other words, it is NOT true that ‘everyone would do better if they had extra time’” (p. 31). Fortunately, Ms. Runyon is currently extending her research in this area. For those interested, see M. Kay Runyan, *Journal of Learning Disabilities*, Vol., 24 (2) (February 1991), pp. 104-108).

In more recent research Alster (1997) supported Runyon in that students with learning disabilities made significant gains in scores with extended time, while their peers without LD did not. Weaver (2000) substantiated the Runyon and Alster findings (Ofiesh and Hughes, 2002).

The American Disabilities Act (ADA), Title II, Subpart B, Regulation 36.309, states that: “Required modifications to an examination may include changes in the length of time permitted for completion of the examination and adaptation of the manner in which the examination is given.”

### How much extra time on a test is appropriate?

Some instructors at Cabrillo have said they will allow five extra minutes on a test and some instructors have allowed exams to be taken home and told students with learning disabilities, “Take as long as you want.” Both extremes are usually inappropriate and do students no good. The first instructor has not allowed an appropriate accommodation (too little), and the second instructor is not helping the students to be as efficient as they can with their proofing skills.

While it is extremely difficult to determine what amount of extra time is appropriate (particularly on the first exam), standard practice is to request time-and-a-half on the first exam, and then adjust up or down as needed, on subsequent
exams. For some exams, double-time may be the most appropriate adjustment (but for a final exam, this might mean six hours...).

“Results of analysis of time use suggest that the range of time-and-a-half to double time as a basis for decision making is a good place to start and provides enough time for most students with LD to finish a test (Alster, 1997; Hill, 1984; Jarvis, 1996; Ofiesh, 1997; Runyon, 1991a: Weaver 1993).” (Ofiesh and Hughes, 2002).

It is recommended that, once again, the amount of extra time should be individually determined by the LD Specialist. In a landmark ruling, OCR Region II, (1993) Complaint No. 12-93-2027, the Educational Testing Service (ETS) was ordered to discontinue limits on the amount of extra time allowed for their tests. In this case ETS based the amount of time allowed on the disability: Blind students were allowed up to triple time, while the policy for some other students with disabilities allowed only time-and-a-half. The ruling was based on rulings and regulations that all appropriate adjustments be *individually* determined (Kincaid, 1994, p. 9).

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**Do not course substitutions and waivers violate the academic integrity of the college?**

In rare cases, a learning disability might be so severe that it may prevent the student from completing specific degree or program requirements. In such a case, a substitution or waiver could be an appropriate academic adjustment, but this should only be one accommodation among a broad range of accommodations which have also been used (i.e., special classes, tutorial support, extended time on tests, etc.). Substitutions or waivers should be the last appropriate accommodations considered. Because substitutions or waivers are often seen by others as “watering down the curriculum”, they tend to undermine the emphasis upon equal treatment that is the basis for the regulations.

“Section 504 does not require that the institution make substitutions (or waivers) in course requirements on request, only that it be willing to consider
substitution as a possible form of academic adjustment on a case-by-case basis” (Jarrow, 1993, p. 38).

A substitution or waiver cannot be granted if the course is deemed essential by the College to a major or program requirement. For example, an English major would not be successful attempting to have English 1A substituted for or waived. However, “While the institution has the right to set and maintain reasonable academic standards, the burden of proof falls on the institution (p. 16).” In City University of New York (NY) 3 NDLR 104 (1992) (OCR Region II), a student with a learning disability was denied a waiver because the college had offered a variety of appropriate academic adjustments for the student (which he refused) and was able to prove that the required class was essential for the completion of the degree (Kincaid, 1993, pp. 5 & 6).

Cabrillo’s policy does allow for substitutions or waivers at times when the disability is so severe that, no matter the accommodation, excellence of the curriculum or instruction, or support services, a student is unable to pass the required course. At these times, research may support that the learning disability is of an organic neurological dysfunction so severe that the ability to benefit from any adjustment is most likely impossible (Nolting, 2000, pp. 29 & 30). As more and more students with learning disabilities are going to college, faculty and administrators are facing problems regarding the substitution or waiver of course requirements in the areas of foreign languages, mathematics, and English composition. This issue touches the core of the academic world. “The legal obligation to make college education accessible to all who are qualified, regardless of the handicap, conflicts with the concern of administrators and faculty that changing requirements for degrees or majors or bypassing certain courses will dilute the meaning of a diploma. These are very difficult questions, and answers will be debated for a long time” (Scheiber & Talpers, 1987, p. 102).
As an instructor or staff member, am I personally liable for violation of the rights of students with learning disabilities?

“...it appears that a faculty member could be held individually liable if the failure to receive accommodations was the direct result of this one's individual actions, in opposition to institutional policy and practice... Dinsmore v. University of California at Berkeley (settled) serves as a warning to faculty and administrators that they may be held accountable if they defy institutional rules and regulations in the offering of accommodation or in the guarantee of nondiscrimination.” (Jarrow, 1993, p. 32).

It is specifically stated in the Americans with Disabilities Act (ADA) that individuals can be held personally liable for violating disability regulations (Jarrow, 1992, p. 21). These citations should be viewed as notification to faculty, and they apply to LSP and DSPS staff as well. Since LD Specialists are the first to make a judgment upon what is an appropriate accommodation, they need to take special care with these kinds of decisions.

What about my rights to academic freedom?

Disability regulations do not tell faculty what to teach, but rather require the possibility of appropriate accommodation - usually in the manner of presentation or testing. However, academic accommodations may, at times, appear to be a restriction upon the academic freedom of faculty. “How dare these LD Specialists recommend that I do something special for a student - it's my classroom and I can do whatever I want!” LD Specialists are instructors, too, and also have some strong feelings about measures which would seemingly limit instructor rights. However, faculty cannot do “whatever we want” in the classroom; there are some restrictions. Instructors can't beat students who are enrolled in their classes, students cannot be graded down because they are of a
different race than the instructor, nor can faculty date students currently enrolled in their classes.

However, a professor at the University of California (Dinsmore v. UC Berkeley) did maintain that no one had the right to dictate what would be done in his classroom. The professor refused to allow extra time on an exam for a verified student with a learning disability, despite the recommendation of DSPS personnel. The Office of Civil Rights eventually found the accommodation to be appropriate, and found that the professor, by not allowing the appropriate accommodation, caused the institution to be out of compliance with Section 504. As a result of this case UC Berkeley was ordered to develop a policy to assure that “...no single individual through his/her actions, could again put the institution in the position of violating a student's rights by denying accommodation...” (p. 32).

In Wynne v. Tufts University School of Medicine, the court also found that “...we cannot allow presumed academic decisions to mask discrimination on the basis of disability...”: “…the right to academic freedom does not interfere or supersede the right of the individual to accommodation” (p. 34).

In this case, a student with a documented learning disability in the area of visual processing had requested an alternative to multiple choice testing (presumably because he had difficulty matching answers from the test to the separate “Scantron” form) because this kind of testing was an inappropriate means of assessing his knowledge and skills. However, the University argued that multiple choice testing was “essential” to its curriculum. The case was lost because the University could not prove that this kind of testing was critical to the curriculum. What was critical to the school's program was the requirement that students have the ability to reason deductively. The University erred because it insisted that the multiple choice format was the only way to test that ability and did not allow for an alternative test format which could successfully measure that ability in the student (p. 33).
<table>
<thead>
<tr>
<th><strong>Laws that Protect the Rights of Adults with Disabilities</strong></th>
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<tr>
<td><strong>Title VI</strong></td>
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<tr>
<td><strong>Civil Rights Act of 1964:</strong></td>
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<td>Prohibits discrimination based on race, color, or national origin in all employment situations involving programs or activities aided by federal financing.</td>
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<td><strong>Title VII</strong></td>
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<tr>
<td><strong>Civil Rights Act of 1964:</strong></td>
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<tr>
<td>Prohibits job discrimination based on race, color, religion, sex, or national origin in all employment practices: hiring, firing, promotions, compensation, and in all other terms, conditions and benefits of employment, including vacations, pensions, and seniority.</td>
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<tr>
<td><strong>Section 504</strong></td>
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<tr>
<td>“No otherwise qualified handicapped individual in the United States shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance…”</td>
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<tr>
<td><strong>Americans with Disabilities Act of 1990:</strong></td>
</tr>
<tr>
<td>Extends universal civil rights protections to individuals with disabilities, covering public and private sector employment, public accommodations, transportation, and telephone communication.</td>
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ATTENTION DEFICIT DISORDER (ADD)
Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD) is a widely accepted and recognized problem in children, but it has only recently been recognized that ADD problems continue on into adulthood. For this reason, community college students with ADD have probably not received full and appropriate services until the last few years. At Cabrillo, students with ADD have been served similarly to students with learning disabilities. Some ADD characteristics may be similar to those exhibited by people with learning disabilities, but ADD is diagnosed by other professionals and may be treated medically. Educators can help students with ADD to compensate for some of their difficulties. Legally, ADD is not considered a learning disability.

**DEFINITION**

In 1988, the U.S. Department of Justice issued a ruling which included the following definition:

“ADD (officially named Attention Deficit Disorder with hyperactivity ADD/H - and sometimes simply called ‘hyperactivity’) is a developmental disorder in which children find it difficult to sit still and pursue attentional tasks for any length of time. ADD, which affects boys more than girls [some, more recent research, indicates no significant differences in prevalence among boys and girls - author's comment - Monroe A. Gross, M.D. “Questions and Answers About Attention Deficit Disorder “ – a handout], is characterized in schools by frequent out-of-the-seat behavior in the classroom ... ADD children commonly are unable to complete academic assignments, have attention problems in the classroom, and often are unable
to write legibly ...most lack appropriate social skills ...are frequently unmanageable at home ...ADD in children, while not necessarily a life threatening disorder, is a very disturbing handicap which, if untreated, will affect the child for his entire life” (Latham & Latham, 1992, p. 9).

The following is also defined by the American Psychiatric Association in its Diagnostic and Statistical Manual of Mental Disorders (4th Ed. Rev. 2002) which is commonly referred to as the DSM-IV-R, as:

“A. Either (1) or (2):

(1) six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Inattention
(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
(b) often has difficulty sustaining attention in tasks or play activities
(c) often does not seem to listen when spoken to directly
(d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
(e) often has difficulty organizing tasks and activities
(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
(g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
(h) is often easily distracted by extraneous stimuli
(i) is often forgetful in daily activities

(2) six (or more) of the following symptoms of hyperactivity-impulsivity have
persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity
(a) often fidgets with hands or feet or squirms in seat
(b) often leaves seat in classroom or in other situations in which remaining seated is expected
(c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
(d) often has difficulty playing or engaging in leisure activities quietly
(e) is often “on the go” or often acts as if “driven by a motor”
(f) often talks excessively

Impulsivity
(g) often blurts out answers before questions have been completed
(h) often has difficulty awaiting turn
(i) often interrupts or intrudes on others (e.g., butts into conversations or games)

A. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.
B. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).
C. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
D. The symptoms do not occur exclusively during the course of a Pervasive Development Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).
### Code based on type

<table>
<thead>
<tr>
<th>Code</th>
<th>Disorder Type</th>
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<tbody>
<tr>
<td>314.01</td>
<td>Attention Deficit/Hyperactivity Disorder, Combined Type:</td>
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<tr>
<td></td>
<td><em>If both Criteria A1 and A2 are met for the past 6 months</em></td>
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<tr>
<td>314.00</td>
<td>Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type:</td>
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<td><em>If Criterion A1 is met but Criterion A2 is not met for the past 6 months</em></td>
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<tr>
<td>314.01*</td>
<td>Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type:</td>
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<tr>
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<td><em>If Criterion A2 is met but Criterion A1 is not met for the past 6 months.</em></td>
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### Common Characteristics of ADD in Adults

The American Psychological Association (APA) definition of ADD obviously describes children. What about adults? While adults are included in federal and state regulations regarding educational equity, adult characteristics are not separately specified in the law. Some ADD behaviors which appear in children frequently modify with adulthood. However, adult college students with ADD often exhibit the following characteristics:

- problems of consistency
- chronic lateness
- disorganization
- procrastination
- difficulty meeting expectations that are not well defined
- impulsivity
- excessive talking
- inattention or lack of focus
- impatience
- high anxiety
- tendency to worry needlessly, endlessly
- low self-esteem
- boredom
- depression
- mood swings
- restlessness
- relationship problems
- substance abuse or addiction
- employment problems

As with learning disabilities, people who do NOT have ADD may experience some of these difficulties - again, this is a matter of persistence and severity.

The percentage of children and adolescents diagnosed as suffering from ADD is approximately 5 - 6%, although the frequency of diagnosis has increased dramatically as physicians and educators have become aware of the problem (Fowler, p. 10). Approximately two-thirds of the ADD population continue to have problems in adulthood. ADD occurs across all socioeconomic, cultural, and racial backgrounds, and affects children and adults of all intelligence levels. (p. 3).

**DIAGNOSIS**

Generally a diagnosis of ADD may be made by physicians, psychologists, psychiatrists, and educational and licensed therapists. The diagnosis is based upon symptoms observed in a variety of settings, and documented by multiple sources. However, some states only recognize a diagnosis by a physician or a licensed psychologist. It requires “differential diagnosis” to substantiate or rule out the presence of
disorders such as Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), and Learning Disabilities (LD). These disorders can accompany ADD, but ADD is not the same as any of these disabilities.

Recent criticism that AD/HD is over diagnosed is not supported by research conducted by the Council on Scientific Affairs (CSA) of the AMA (American Medical Association). The CSA’s research did find that minority students may be disproportionately identified for special education in some categories, including behavior disorders and mental retardation. The AMA has raised concerns that African-American children are being over diagnosed as having AD/HD (Herowitz, 2003).

However, Biederman and Farone (1996) suggest that “possible over diagnosis of AD/HD may be more of an issue of comorbidity: of those children diagnosed as AD/HD, 49% actually clearly have it and 51% have some comorbidity with anxiety disorder, conduct disorder, and/or depression (C. Watkins, 2000).

My own professional opinion is that AD/HD may sometimes be diagnosed too early (as with LD), and does not take into account natural differences in brain growth and maturation among children.

**Cause**

The exact cause of ADD is still not definitive. However, it is often genetic and passed on through families. It may be caused by prenatal toxemia, as well as through the use of drugs and/or alcohol during pregnancy. ADD has a strong neurobiological base. Heredity seems to be the largest contributor. Other causes may include difficulties in pregnancy, prenatal exposure to alcohol and tobacco, premature delivery, excessively high lead levels, and postnatal injury to the prefrontal regions of the brain. Research does NOT support current popular beliefs that AD/HD arises from excessive sugar intake, food additives, excessive viewing of TV, poor behavioral management by parents, or social environmental factors such as poverty or family chaos (Herowitz, 2003).
**TREATMENT AND SUPPORT SERVICES**

While there is no cure for ADD, there are a wide variety of treatments available to psychiatrists, physicians, and educators. Physicians have prescribed several different kinds of medications for ADD. Ritalin has long been the drug of choice. However, the U.S. Food and Drug Administration (FDA) approved a non-stimulant drug – Strattera (atomoxetine) – for the treatment of symptoms of ADHD. This is the first new drug developed in three decades specifically for ADHD (FDA Talk Paper, 2002). Psychologists and educators often use behavior management and cognitive therapy to moderate negative ADD behaviors. At Cabrillo, many of the academic accommodations used for students with learning disabilities are available to students with ADD and can be very effective educational interventions. Extended time on tests and “quiet rooms” are particularly useful to the student with ADD. It is often very beneficial to meet regularly with DSPS counselors in order to deal with the emotions that may be raised by an ADD adult who is attending college. DSPS counselors and the LSP staff may also refer students with ADD to private sources for therapeutic treatment.

**LEGAL ISSUES REGARDING ADD**

Legal interpretations of regulations included in the National Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA), and Title 5 regulations agree that ADD should be included as a legally recognized disability. At this point in time, a separate disability category of ADD has not been adopted. Students with ADD are covered under the “other health impairment” category and thus qualify for all of the appropriate educational accommodations that the other disability categories receive. In addition, if students meet the criteria, they may also qualify under “seriously emotionally disturbed” or “specific learning disability.”
Although the rights of students with ADD are recognized by regulations in Title 5 (under the “other disability” category), the question of who is the appropriate professional to diagnose ADD has not been adequately answered. Until recently, it has been legally proper to accept only a physician's or licensed psychologist's diagnosis in order to serve the student.
TESTING THE ESL STUDENT FOR LEARNING DISABILITIES
With increasing enrollment of linguistically diverse students, LD Specialists at Cabrillo and most other community colleges have noted a much higher percentage of these students referred for LD diagnosis than in past years. This includes more students who come to us speaking languages other than Spanish. Although the California Community College LD Assessment Model includes some tests, or portions of tests, that limit language involvement so that we may distinguish between a learning disability and limited English proficiency, they are inadequate for precise assessment. We also have some tests with Spanish translations. Research indicates that we “…could unify and improve our (testing) and provide more, appropriate assessments.” Shulman (2002) based on her 2002 research, recommends that LD Specialists:

♦ “insure more appropriate referrals using the LD Symptomology Checklist;
♦ administer a quick, appropriate language proficiency test;
♦ (and) determine the suitability of cognitive ability subtests and utilizing dynamic assessment techniques”

With the addition of these procedures, LD Specialists at Cabrillo can insure a more unbiased, less language and culturally loaded diagnosis.
RECOMMENDED READING, LISTENING AND VIEWING

“ADD file” - A file of research articles, newspaper stories, & personal stories about ADD. Available at the LSP office.


Disabled Student Programs and Services (DSPS). (1991) ABLE: Ability beyond limitation through education. Aptos, CA: Cabrillo College. An instructor's guide to disabled student services at Cabrillo. Available at the Learning Skills Program (LSP) office or the Disabled Student Programs and Services (DSPS) office.

Embry, Pam. (Spring 2003) Journal of Postsecondary Education and Disability. 16,2.


Personal stories of LD college students with learning disabilities. A file of writings by Cabrillo and other students with learning disabilities about their feelings and struggles. Available at the LSP office.
Shreve, J. (1993). Square peg in a round hole: coping with learning differences at home, in school, and at work. San Diego: Square Peg Enterprises. Jimmie Shreve is now a successful consulting Civil Engineer, Jr. College Instructor, author & lecturer. Diagnosed at age 36 with learning disabilities, ADD, and Tourette syndrome, this is Jimmie's story, written to share his difficulties and to educate parents, teachers, counselors, and employers. Available at the LSP office.

**Listening Materials**
(available on audiocassette at the LSP office)


**VIEWING MATERIALS**
(available at the LSP office)


A very highly recommended video about college students with learning disabilities. Presentations from professionals and students on the nature of LD, college support services and accommodations, emotional effects, employment.


In addition to the resources listed above, there are many learning materials which are available in the LSP tutorials room.
**WEBSITES**

Attention Research.
www.attentionresearchupdate@ADDhelpforadd.com  2003

California Community College Chancellor’s Office (for statistics on disability enrollment and services at 108 California community colleges). 2003
www.ccco.edu

California Association on Post-secondary Education and Disability (CAPED). 2003
www.caped.net

Children and Adults with Attention Deficit/Hyperactivity. (CHADD). 2003
www.chadd.org

Equal Opportunity Publications, Inc. 2003
http://eop.com/cccwd/homepage.html

International Dyslexia Association (IDA). 2003
www.interdys.org

The Job Accommodation Network. 2003
http://janweb.icdi.wvi.edu/english/homeus.htm

Learning Disabilities Association of America (LDA)
www.ldnatl.org. 2003

National Center for Law and Learning Disability (NCLLD) 2003

National Center for Learning Disabilities (NCLD) 2003
www.ncld.org.

Office of Disability. Employment Policy. 2003
www.dol.gov/dol/odep.
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REFERENCES


Adelman & Olufs. (1986). Ways in which a learning disability manifests itself in college. Columbus, Ohio: AHSSPPE, currently Association on Higher Education and Disability (AHEAD).


Embry, Pam. (Spring 2003) Journal of Postsecondary Education and Disability. 16,2.


INTERVIEWS

Halliday, Karen, Dean of Student Services Unit (DSPS) California Community College Chancellor’s Office October, 1993.

Lynch, Frank. Director, Disabled Students Program and Services, Cabrillo College, April, 2003.


Selected students, staff, faculty, administrators, Cabrillo College, October 1993 and 2002.
# Laws that Protect the Rights of Adults with Disabilities

## Title VI
Civil Rights Act of 1964:
Prohibits discrimination based on race, color, or national origin in all employment situations involving programs or activities aided by federal financing.

## Title VII
Civil Rights Act of 1964:
Prohibits job discrimination based on race, color, religion, sex, or national origin in all employment practices: hiring, firing, promotions, compensation, and in all other terms, conditions and benefits of employment, including vacations, pensions, and seniority.

## Section 504
“No otherwise qualified handicapped individual in the United States shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance…”

## Americans with Disabilities Act of 1990:
Extends universal civil rights protections to individuals with disabilities, covering public and private sector employment, public accommodations, transportation, and telephone communication.
The Accessibility Support Center offers many services to assist students with disabilities in achieving academic, vocational and personal success at Cabrillo College. This edition of "Policies and Procedures" was written so students with disabilities will know how to get and keep services in meeting their personal and educational goals.

Applying for Services:
- Students entering the Learning Disabilities Program (Learning Skills) must complete diagnostic testing prior to qualifying for support services. This testing must be administered by a certified Learning Disabilities Specialist; or provide verification from testing performed within three years at another community college; or a professionally acceptable diagnosis outside of the California Community College system. Consideration for services can also be given to transferring high school students with proper documentation.
- All students are required to complete an intake interview with a LD specialist.
- All medical, registration and disability verification forms must be completed prior to participation in classes, or receiving services that are provided by counseling and/or support staff.
- Students must possess the ability to comprehend questions, follow directions, and demonstrate the potential to profit from special programs. Minimum reading levels in academic classes are required; students unable to meet designated reading levels can be denied enrollment. Students must demonstrate annual measurable academic progress. Failure to do so may result in termination of services.
- Students must meet with either a LD specialist or ASC counselor each semester for accommodations and to update their AAP (Academic Accommodation Plan).
- Students are required to attend all college wide Academic Policies and Procedures.
- Students are responsible to notify the ASC office or Learning Skills if they are unable to meet scheduled service times (transportation, LD testing, interpreting, counseling appointments, test-taking appointments). Failure to do so could result in the termination of services.
- All college students should refer to the college catalog with issues of attendance. If a student must, for medical reasons, miss many classes he/she should contact the ASC office for assistance.

Alternate Media Materials:
Alternative Media Materials (etext, braille, enlarged print, books on tape, etc.) are provided to students with a documented visual or learning disability. After securing an accommodation form from a ASC counselor or LD specialist, the student must meet with the Alternate Media Specialist.

How to get Alternate Media Materials:
- Complete a new student file with the ASC or the Learning Skills office.
- Discuss alternate media accommodations; receive an accommodation form, if appropriate, from an ASC counselor or LD specialist.
- Contact the Alternate Media Specialist.
- Complete the Alternate Media Request Form.
- Provide the Alternate Media Specialist with a copy of class schedule as soon as student has registered for classes.
- Provide the Alternate Media Specialist with syllabi from all registered classes.
- Provide the Alternate Media Specialist with proof of purchasing textbooks.

Note Takers:
After securing an accommodation form from a ASC counselor or LD specialist, students will recruit their own note-takers from their classes or ask their instructors for assistance in obtaining note taking assistance. If funding is available, note-takers will be paid a flat rate determined by the ASC office. NCR paper will be provided by the ASC for all note-takers. Students utilizing note taking services must attend class. How to get NoteTaking Services:
- Complete a student file with the ASC or Learning Skills office.
- Discuss note taking assistance, receive an accommodation form, if appropriate, from an ASC counselor or LD specialist.
- Students can either make an announcement themselves in class, or after a "confidential" consultation with their instructor, the instructor can make an announcement to the class.
- Students can also ask a friend for assistance.
Equipment Loans:
Equipment will only be loaned to students with an accommodation form and who are officially enrolled in classes with ASC/LS staff approval. Students will forfeit their rights to future equipment loans if equipment is abused or equipment is not returned at the appropriate time. The ASC/LS office can loan tape recorders, assistive listening devices, some calculators and Franklin Spellers.

How to get Equipment:
- Complete a student file with the ASC or Learning Skills office.
- Discuss the use of specialized equipment; receive an accommodation form, if appropriate, from an ASC counselor or LD specialist.
- Contact the ASC/LS office to check out equipment and to complete the “Equipment Loan Contract”.
- If equipment is not returned, student will forfeit rights to future equipment loans, have grades delayed, and be unable to register for future semesters.

Tutoring Services:
Qualified students must apply for tutorial assistance through Tutorial Services located in the college Learning Resource Center. If formal arrangements cannot be made through Tutorials, alternative arrangements may be made through the ASC.

How to get a Tutor:
- Complete a student file with the ASC or Learning Skills office.
- Request tutoring assistance; receive an accommodation form from an ASC counselor or LD specialist.
- After qualifying for services, students must contact Tutorials and follow Tutorials guidelines for receiving services. ASC/LS students must follow the same rules established by the Tutorial program as all other students.

Test Taking Accommodations:
Test accommodations are individually considered and might include extended time, alternate test locations, computer access, assistive technology and quiet/reduced distraction free area.

How to get Test Taking Accommodations:
- Complete a student file with the ASC or Learning Skills office.
- Discuss test proctoring accommodations; receive accommodation form, if appropriate, from ASC or LD specialist.
- Sign Cheating Policy and receive copy of Student’s Information & Procedures for Exam Proctoring.
- Student must ensure that their Instructor has the “Accommodations” form prior to requesting test accommodations.
- Students should contact the Proctoring Center at (831) 479-6369 or, visit proctorrequest@cabrillo.edu to schedule tests.
- Students must be on time for scheduled tests.
- New accommodation forms are required each semester.
- Accommodation forms and appointments for finals MUST be in place two weeks before finals week starts.

Other Services:
Other services may be provided by the ASC/LS office when determined appropriate by an ASC counselor or LD specialist.

Student’s Rights and Responsibilities:
Students with concerns regarding services should seek a remedy through the 504 and/or ADA coordinator. This process should be initiated through a counselor. Qualified ASC students should follow prescribed college procedures as outlined in the "Student’s Rights and Responsibilities at Cabrillo College—Working Together Toward Positive Solutions" manual. This manual can be located in the Student Services office. Student Activities Center – East building and online.
Accessibility Support Center
Academic Accommodation Plan

Name: ___________________________  Student ID#: ___________________________

<table>
<thead>
<tr>
<th>Disability</th>
<th>Deaf / Hard of Hearing</th>
<th>ASD</th>
<th>Learning Disability</th>
<th>Vision</th>
<th>ABI</th>
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<td>Mobility</td>
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<tr>
<th>Duration of Condition</th>
<th>Permanent/Chronic</th>
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<tr>
<th>Educational Limitations</th>
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<tbody>
<tr>
<td>Traditional testing (time/location)</td>
</tr>
<tr>
<td>Produce written materials</td>
</tr>
<tr>
<td>Complete registration</td>
</tr>
<tr>
<td>Hear or process oral info</td>
</tr>
<tr>
<td>Physical access/mobility</td>
</tr>
<tr>
<td>Develop basic skills</td>
</tr>
<tr>
<td>See or process classroom visuals</td>
</tr>
<tr>
<td>Need to stand/move</td>
</tr>
<tr>
<td>Limited stamina</td>
</tr>
<tr>
<td>See or process text or print</td>
</tr>
<tr>
<td>Behavioral/social interactions</td>
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<tr>
<td>Other:</td>
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Approved Academic Adjustments, Auxiliary Aides, Services, and Accommodations

<table>
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<th>Testing Services</th>
<th>Assistive Technology</th>
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<td>□ Alternate location</td>
<td>□ Adapted equipment</td>
<td>□ Listening device</td>
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<td>□ Note taker</td>
<td>□ Extended exam time</td>
<td>□ Adapted software</td>
<td>□ Recorder</td>
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<td>□ Computer station</td>
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<td>□ CCTV</td>
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</tr>
<tr>
<td>□ Preferential seating</td>
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<td>□ Alternate media</td>
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<td>□ LD Assessment</td>
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<td>□ Braille</td>
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<tr>
<td>□ Service animal</td>
<td></td>
<td>□ Frequent breaks</td>
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<td>□ Frequent breaks</td>
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<td>□ Calculator</td>
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<tr>
<td>□ Tutorials</td>
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<td>□ Assistive software/WP</td>
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<td>□ Cart service</td>
<td></td>
<td>□ Reader</td>
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<tr>
<td>□ (Staff) Parking pass</td>
<td></td>
<td>□ Scribe</td>
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<td>□ Other:</td>
<td></td>
<td>□ Spell check/dictionary</td>
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<th>Specialized Instruction</th>
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<td>□ Academic counseling</td>
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<td>□ Electronic text</td>
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<td>□ Captioning</td>
<td>□ Vocational counseling</td>
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<td>□ Reduced course load</td>
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<td>□ (Staff) Parking pass</td>
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Progress Measured By: □ College Progress Policy  □ Educational Assistance Class Measurable Progress

Student Signature ___________________________  Date ___________________________
ASC Faculty Signature ___________________________  Date ___________________________
Educational Assistance Class measurable progress will be determined based on the following criteria:

Additional Notes/Comments/Updates:
According to the U.S. Department of Education, Office for Civil Rights, the tape-recording of classroom sessions as an accommodation for students with disabilities is required under Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ADA). The legal reference, found in the Code of Federal Regulations 34CFR104.44 (b) for Section 504 reads as follows:

Sec. 104.44 Academic Adjustments

❖ Other rules. A recipient to which this subpart applies may not impose upon handicapped students other rules, such as the prohibition of tape recorders in classrooms or of guide dogs in campus buildings, that have the effect of limiting the participation of handicapped students in the recipient’s education program or activity.

While students with disabilities who need it as an accommodation must be allowed to tape classes, they may be required to sign an agreement which indicates that the tapes will not be sold or used for any other purpose than their own education needs. Some colleges even require that the tapes be turned into the ASC office after the student has completed the class. A sample of such an agreement follows.

SAMPLE STUDENT AGREEMENT FOR TAPING LECTURES

I, __________________________________, agree that I will not copy or release the tape recording or transcription or otherwise hinder the ability of __________________________________________ to obtain a copyright on lectures I have taped in _______________.

________________________________________ (Student’s Signature)

________________________________________ (Date)
Cabrillo College

Board Policy 3010

VI. Procedure for students with documented disabilities to substitute or waive graduation requirements.

Cabrillo College recognizes that a disability may preclude a student from demonstrating required math, reading, and writing competencies or from completing course requirements necessary for an AA or AS degree in the same manner that non-disabled students are expected to. The college also recognizes the need to accommodate students with documented disabilities to the greatest extent possible without compromising a disabled student’s course of study and without compromising the integrity of any student’s degree.

Cabrillo College intends all of its graduates to master the competencies required by Title 5 of the California Education Code and to complete the courses required for graduation. The college recognizes that most disabilities that preclude a student from completing a course can be overcome by altering the method of course delivery and providing a combination of appropriate accommodations. Therefore, for most students with documented disabilities, the first level of accommodation will involve an attempt to complete the course with extra help: tutorial assistance, auxiliary aids, test accommodations, and a slower-paced version of the course are examples of the kinds of assistance Cabrillo College will extend to the student. For some students with a disability, such accommodations and alterations of course delivery will not be enough to enable him/her to complete the course. For these students, a course substitution will be individually considered under the conditions described below. Only in the most extreme cases will a course waiver be considered.

If a student with a disability has discovered that receiving extra help with a required course or altering the means of delivery of that course is insufficient to enable him/her to complete it or if the student can show that his/her disability is of such magnitude that any attempt at completing the course would be futile, that student may submit a petition to the chair of the Academic Council who will arrange for that student to meet with a sub-committee of the Academic Council to determine whether a course substitution or, in the last resort, a course waiver is more appropriate. A course substitution is permissible only if the committee determines that the course in question is peripheral to the student’s course of study and that the student has no chance of completing the course even with all the accommodations the college can offer. A waiver will only be considered when there is evidence that the student has met the requirement for substitution and there are no viable alternatives determined by the subcommittee. (“Academic requirements that the district can demonstrate are essential to the program of instruction being pursued by the student or directly related to licensing requirements, will not be regarded as discriminatory.” 34. C.F.R. 104. 44(a)). Note: Students will be informed that a substitution or waiver granted by Cabrillo College may not be recognized by a subsequent educational institution.

Administrative Regulations:

1. A student seeking accommodations in completing a course due to a documented disability shall request assistance from the appropriate disabled student services (DSS) specialist. The student may present to the DSS specialist a previous assessment of his/her disability from an appropriate specialist (as determined by a Cabrillo College disability specialist) outside the Cabrillo College DSS staff and may or may not choose to participate in the college DSS program.
2. The DSS specialist will assess and document the extent of the disability (considering whatever evidence, if any, the student presents from prior assessments of his/her disability). Depending on the severity and educationally related functional limitations of the assessed disability, the specialist shall recommend appropriate accommodations, auxiliary aids, or alternative versions of the course in questions. If the specialist concludes that the severity of the disability warrants a course substitution, or, in the most extreme cases, a course waiver (or, if the student believes he/she is sufficiently disabled but the specialist does not), he/she submits a petition to the chair of the Academic Council and the case is brought before a subcommittee of the Academic Council.

3. This subcommittee, entitled "The Academic Council Subcommittee for Special Academic Appeals," shall have the following constituency:

   a. An instructional administrator from the concerned academic area
   
   b. A contract instructor (preferably one who teaches the course in question) from the concerned academic area
   
   c. The Cabrillo College DSS specialist involved in the case
   
   d. If desired by the student, an advocate of the student's choice (nonvoting)
   
   e. Cabrillo College's articulation officer (as needed for information and nonvoting)
   
   f. Cabrillo College's registrar (as needed for information and nonvoting)
   
   g. A representative from the Academic Council (preferably from the concerned academic area and not-voting).

This committee shall hear cases brought by disabled students seeking course substitutions or waivers under these conditions:

   a. The student, having made an earnest effort to complete the required course in question and having availed him/herself of the accommodations recommended by the specialist, has been unable to satisfactorily complete the course
   
   b. The student and the appropriate Cabrillo DSS specialist agree that, due to the severity of the disability, even beginning the course with its accommodations is futile
   
   c. The student desires to appeal a Cabrillo DSS specialist's assessment that his/her disability is not sufficient to warrant a substitution or, in the most extreme cases, a waiver.

4. If the condition is "c" above, the first business of the committee will be to resolve the dispute. If the condition is "a", the committee must first decide if the student has made an earnest effort to complete the class. If the committee decides that the student has made an earnest effort, or if the condition is "b", the committee will determine if the course in question is essential to the
student's individual course of study. If the committee decides it is, the substitution (or, in the
most extreme cases waiver) request shall be denied to protect the integrity of the program and to
protect the student's best interests in pursuing that program. If the course in question is found to
be peripheral to the student’s plan of study, the committee will seek to provide an appropriate
course substitution. If no appropriate substitute course can be found, or, in the most extreme
cases, if the committee concludes that a substitute course is inappropriate due to the severity of
the disability, a waiver may be recommended to the subcommittee, again only if the course is
found to be peripheral to the student's course of study. The committee's decisions will be
determined by a simple majority vote.

5. The subcommittee will forward its decisions in writing to the student and to the Academic
Council within two weeks of receiving the original written petition.

6. If the student with a documented disability is dissatisfied with the committee's decision,
he/she may appeal first to the Academic Council itself, to the Cabrillo Faculty Senate, to the
superintendent/president of Cabrillo College, and finally to the district governing board. Barring
unforeseen circumstances, the appeals timeline will be as follows:

   a. Upon receiving an appeal, the Academic Council chair will ask the council to affirm
      or deny the appeal at its next meeting.

   b. If the council rejects the appeal, the student may request the chair to forward it to the
      Academic Senate President, who will ask the Senate to affirm or deny the appeal at its
      next meeting.

   c. If the Faculty Senate rejects the appeal, the student may ask the senate president to
      forward it to the Cabrillo College president who will act on the appeal as promptly as
      possible.

   d. If the president rejects the appeal, the student may ask that he/she forward it to the
      Cabrillo College District Governing Board, who will act upon it as soon as possible.
Confocal Microscopy of Whole Mount Embryonic Cartilage: Intracellular Localization of F-actin, Chick Prolyl Hydroxylase and Type II Collagen mRNA

Written by a doctoral candidate with a LD, diagnosed at Cabrillo

Department of Anatomy and Neurobiology, Boston University, School of Medicine, 80 East Concord Street, Boston, MA 02118, U.S.A.

(Received 17 May 1993: Accepted 3 August, 1993)

Abstract—We show that whole mount preparations of embryonic chick sterna can be analyzed with confocal laser scanning microscopy (CLSM). This technique replaces the traditional sectioning of cartilage or culturing of chondrocytes. Whole ‘chunks’ of cartilage can be stained with dyes, used (or immunohistochemistry or in situ hybridization. Although other stains have been used, the stains presented include phallolidin and propidium iodide which stain filamentous actin (F-actin) and the DNA and RNA of cells, respectively. Collagen secreting endoplasmic reticulum (ER) was localized with a primary antibody to chick prolyl hydroxylase (CPH) that was detected with a secondary antibody conjugated to FITC. The intracellular localization of type II collagen mRNA was analyzed using in situ specific for the C-propeptide region ache type al (II) collagen mRNA was nick translated and labeled with biotin-16-dUTP. Biotin labeled probes were visualized with avidin-FTTC. Depending on the intensity of the stain, we were able to analyze approximately 3-10 layers of chondrocytes. Stains penetrated into the cartilage better than antibodies and biotin-avidin labeled cDNA probes. The F-actin was located as bands of filaments in the superficial layers of the cartilage and was associated with the membranes that marked cell boundaries as deep as 10 layers of chondrocytes. The ER stained with anti-chick prolyl hydroxylase is prominent in perinuclear regions of the eras, but the antibody is only able to penetrate cell layers. Single label in situ hybridization studies show that chondrocytes are positive for type II collagen mRNA. Similar to the immunohistochemistry, in situ hybridization probes are only able to penetrate 4-5 cell layers. The type II collagen mRNA appears perinuclear in the chondrocytes, similar to the ER staining pattern.

Key words: Confocal microscopy, chondrocytes, F-actin, chick prolyl hydroxylase, type II collagen mRNA.

INTRODUCTION

Cartilage is a specialized form of connective tissue composed of chondrocytes and their extracellular matrix (ECM). Chondrocytes produce and secrete the proteins that form the ECM. The solid, but pliable matrix accounts for the special resilient properties of cartilage. Some of the molecules that form the ECM include types II, IX and XI collagen fibrils (Mendler et al., 1989) and glycosaminoglycans joined to a core protein to form proteoglycan monomers that are linked to hyaluronic acid by link proteins (Verte and Dorfman, 1979).

The study of chondrocytes usually involves culturing the cells or sectioning the whole tissue. Culturing chondrocytes in an environment that maintains their phenotype has been difficult (Aultbouse et al., 1989). In the whole tissue, chondrocytes secrete types II, IX and XI collagens (Mendler et al., 1989), whereas the chondrocyte precursor, mesenchymal cells, secrete type I collagen (Upholt et al., 1979). In cell culture, chondrocytes often change shape, dedifferentiate and begin secreting type I collagen instead of types II, IX and XI. This change in phenotype does not allow the study of normal chondrocyte histochemical characteristics in vitro.

Attempts have been made to simplify the study of cartilage. Traditionally, the organization of cartilage was studied with either electron or light microscopy. Processing the tissue for traditional microscopy involves fixation dehydration and embedding of the tissue prior to sectioning. This method, although useful for determining the ultrastructure of the cartilage, may affect the morphology of the tissue due to the dehydration steps. Frozen sections of cartilage which have not been embedded also have been obtained for light microscopy. Stockert and Del Castillo have shown that the study of cartilage can be simplified one step further by directly sectioning the cartilage without embedding or freezing the tissue (Stockert and Del Castillo, 1990).

We have asked: can chondrocytes be studied in situ without physically sectioning the cartilage? We have developed procedures to study cartilage cells with confocal microscopy. This microscope optically sections whole pieces or chunks of cartilage without disturbing the normal cell cytoarchitecture. This technique allows the examination of chondrocytes in their normal environment after using either specific organelle- or protein-stains, immunohistochemistry or in situ hybridization, quickly and simply.

MATERIALS AND METHODS

Cartilage preparation

White Leghorn chicken eggs were obtained from Spafas (Norwich, CT) and incubated for 14 days at 39°C. Whole
Writing Sample of a student with a learning disability diagnosed at the University of California, Santa Cruz. He has an I.Q. of 150.

Dear Dick

I never had the chance to formally thank you for all the attention you gave me last spring. The D.S. here put me in touch with a super person who not only helps with this hand usability, but is a nifty typist. This quarter has been, if not less chaotic, more normal than any before. I know primarily not the presentation, but the content, well...

Also, not totally with out embarrassment, I apologize for standing you up, and the rest of the students who enrolled for the special class. As you can tell by this letter, lord knows I still need it, but to tell you the truth, I'm somewhat suspicious of my prospects of ever becoming competent with this language. Regardless, I told you I would attend, and I wanted to let you know, please accept this belated note as a somewhat half-assed, but sincere apology.

As I understand it, the very nature of your occupation is somewhat controversial and in all honesty, I've always been a doubting -tomato when it came to intelligence testing. However, I remember that one particular test with the colored squares and how the varying patterns of decoding were constantly altered. That damn thing really got me down. Well, I'm taking an English course, wholly concentrating on James Joyce, Ulysses, is without a doubt the most difficult work I've ever attempted, but the 15th chapter particularly.

In 40 pages, he writes in every English prose style imaginable, from Chaucer to T. S. Eliot, to turn of the century American slang. The constant shift of styles through different approaches - sometimes switching in mid-paragraph. Our lectures to gether. As an insight into what was going on. The best six books I ever spent. Thank you.

Take care.

5/28/86
Following is a letter written by a young man, Steve Herrick, seeking admission to college. His name is fictitious, but his problems in writing this letter are indicative of the written language difficulties of a college-able learning disabled student.

Dear Admissions Officer,

Let me introduce you to Steve Herrick. I want you to know that I have tried college and failed for the past five years. I have worked on construction crews. The money is adequate, but I find my work tedious. I really want to pursue my goal of becoming a CPA. But I have trouble understanding what I read and writing papers. I am afraid to go back to school and fail again. School has always been really hard for me, but I never understood why. Some courses like algebra and history were easy, but I always got D's in English. Teachers always told my Mom that I was lazy and manipulative. Some of my classmates called me dumb. But I knew I'm not dumb. In tenth grade, my science project took first place. I want to learn, but I've always hated school. Last year, my girlfriend's mother asked me to be her helper. She said I had a learning disability. I passed all my classes. The school suggested I get tested. The doctor diagnosed my problem as dyslexia and recommended your program. I really think that with your help I can achieve my goal. My parents are both doctors and my brother is an electrical engineer. Please give me a chance.

Sincerely,

Steve Herrick
Dyslexia 1, 2 3
by Kari Sutton

Words shimmer and shake
Across angry paper’s flashing glare.
Letters pulsate back and forth
From black to grey
And back to black
A, B, See oscillate.

Words jitterbug crazily.
Letters tango together.
M’s waltz with W’s
O’s hip-hop with C’s
B’s twist with P’s

Words flurry – blur my vision.
Letters scramble – induce confusion.
Accidental anagrams – unbidden
Transform with the blink of an eye:
EAST, SEAT, TEAS, SATE, EATS me alive.

Will the letters in the next word
Please stand at attention?

*With the help of Lisa Gustafson

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"Professor Jones does not believe that there is such a thing as learning disabilities. After all, he has been teaching at his institution for more than 30 years and he has seen a lot of students with poor academic preparation who, through hard work and effort, were able to achieve their goals and graduate successfully. At the beginning of Fall term, Jennifer Smith, a student with a learning disability, identifies herself to Professor Jones and requests accommodations in the form of extended time on tests. She also indicates that she will be seeking assistance from other students in the class in receiving copies of their class notes, since note taking distracts from her ability to concentrate on class lectures. Jennifer also provides a letter from the office for Disability Services verifying the appropriateness of these accommodations based on the documentation made available to the office. Professor Jones is irate. Not only would giving extended time on tests to Jennifer be unfair to the other students in the class, but his experience has led him to believe that students must learn to take notes in class, just as they must learn material he is teaching, if they are to survive in the "real world." Professor Jones refuses the request for extended time in testing, but is informed by his Department chair that he MUST make this accommodation. The next day, in class, Professor Jones explains to the class as a whole that he is being forced to provide an unfair advantage to Jennifer by giving her extended time on the test and that he apologizes to the other students. Moreover, he suggests that they not compound her unfair advantage by sharing with her their class notes.

Professor Jones is clearly guilty of harassment. Under the ADA, he can be held personally liable for his actions and statements in violating Jennifer's right to accommodation, to privacy, and to integrated access to the programs and activities of the institution. Recent court cases have indicated that similar action against a private individual may be taken under Section 504, but it is specifically stated under the Americans with Disabilities Act." (Jarrow, 1992, pp.20-21)
PEOPLE WITH LEARNING DISABILITIES

Cher
Singer & Actress

Sylvester Stallone
Actor & Producer

Bruce Jenner
Olympic Track Star

Henry Winkler
Actor & Producer

Dustin Hoffman
Actor

Robin Williams
Actor & Comedian

Tom Cruise
Actor

Danny Glover
Actor

Mariel Hemingway
Actress

Greg Louganis
Olympic Diver

Russell White
UC Berkley football & pro-football star

Harry Belafonte
Singer

Tom Monaghan, Founder Domino’s

Whoopi Goldberg
Actress & Comedian
There are a number of other people, who some people have said have characteristics of learning disabilities, but who were never formally diagnosed, including:

- Albert Einstein
  Nobel Prize Physicist

- Woodrow Wilson
  President of the US

- Thomas Edison
  Inventor

- Agatha Christie
  Mystery Writer

- General Patton
  Four Star General
  World War II

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