



*Employability
Competency
System*

ECS for Learning Disabilities Monograph

*Using the CASAS Employability
Competency System (ECS)
to Assess Individuals who have
Learning Disabilities:
Findings from a Three State Study*

CASAS

Using the CASAS Employability Competency System (ECS) to Assess Individuals who have Learning Disabilities: Findings from a Three-State Study

Educational agencies must meet multiple challenges of establishing performance standards related to basic skill assessment in a real life context, providing employment opportunities, and serving individuals who have learning disabilities. Recent legislation such as the Americans with Disabilities Act (ADA) of 1990 (PL 101-336) and the reauthorization of the Individuals with Disabilities Education Act (IDEA) Amendments of 1997 (PL 105-17) have brought representation in standardized testing and provision of reasonable accommodations to the forefront (Yell & Shriner, 1997).

In addition to district and state accountability concerns, educators are also considering the content or subject matter of the assessment. Functional skill assessment helps learners identify their strengths and instructional needs in academic, vocational, community living and in personal-social contexts, and is considered vital when building successful school-to-work transition programs (Benz & Lindstrom, 1997). School reform efforts suggest that we move on to a newer assessment and instructional methodology that identifies real-life skills and yields information which is useful in designing, monitoring, evaluating and revising interventions.

Successful entrance into the work force is looked upon as one measure of the effectiveness of a person's education (Harrington, 1997). Traditional academic basic skill testing for district accountability systems may be viewed as removed from the goals of career and vocational education and other school-to-work instruction. Significant numbers of learners who have disabilities are presently excluded from existing state and national reporting systems for academic basic skills, making it impossible to describe the status of transition and reform efforts for learners who have disabilities. In order to describe this status fairly, we need to investigate the extent to which accommodations can be made without destroying the basic psychometric properties of standardized tests (Vanderwood, et al., 1998).

Purpose of Study

The purpose of this three-year descriptive study (1994-97) was to determine if the CASAS Employability Competency System (ECS) is useful for individuals who have learning disabilities. There were two primary research questions: (1) Does ECS result in levels of functioning in employability-

related basic reading and math skills useful for the targeted population? (2) Can functional levels in reading and math be used in establishing goals related to employability for individual and transition planning? There was one secondary question: What effect does the use of test accommodations have on learning gain results? The Americans with Disabilities Act (ADA) of 1990, Title III, Section 36.309, requires that accommodation in testing be provided to allow the learner who has a disability to demonstrate his/her level of understanding or mastery of skills such as reading and math.

Participants

A total of 800 high school individuals in grades 9-12 who had specific learning disabilities were targeted for this study. They represented 14 school districts in the states of Arizona, California, and Idaho. The school districts included urban, suburban and rural geographical areas. Project sites were self-selected based on conferences with state special education/transition coordinators and the local agency's desire to obtain information on employability skills of learners. A site varied from one to ten schools and represented the Tucson and Phoenix areas in Arizona; the southern and northern California areas; and the northern, central and southern areas of Idaho.

Definition of Specific Learning Disability

All three states (Arizona, California and Idaho) used the same basic definition of specific learning disability to identify the learners for the study. The definition is the one referred to in all statutes of the Individuals with Disabilities Education Act (IDEA) Amendments of 1997 (PL 105-17). The definition states the following:

The term "specific learning disability" [SLD] means those children who have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include a learning problem which is primarily the result of visual, hearing, or motor handicaps, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (U.S Office of Education, 1977, p. 65083)

Characteristics of Participants

Demographic information for a total of 1085 learners was collected on gender, age, grade level completed, native language and ethnic background. The majority or 65.8 % of the learners were male and 34.2 % were female. Almost three-fourths or 71.7 % of the learners were between 15 and 17 years of age. There was close to an even distribution of learners who completed ninth (27.9%), tenth (25.3%) and eleventh (24.0%) grades. The majority (85.2%) reported English as their native language and an additional 10.6 % reported Spanish. Most learners indicated Caucasian (41.6%) or Hispanic (35.1%) as their ethnic background. An additional 10.2 % indicated Black for ethnic background.

Methodological Approach

Learners were enrolled in resource support programs and self-contained classes. The CASAS ECS was selected for this study because it had been found useful for participants in programs funded through the Job Training Partnership Act (JTPA) of 1982 (PL 97-300). The U.S. Employment and Training Administration (1991) observed that the percentage of JTPA participants who had a learning disability to be between 50 and 80 percent. The system also assessed employability skills earmarked in the Individuals with Disabilities Education Act (IDEA) Amendments of 1990/1997.

Vocational and special education teachers and administrators who experienced the system reported usefulness for youth who had learning disabilities and requested benchmarks from CASAS for assessment and instruction in school-to-work programs. The transition related competencies could serve as a common language for collaboration among secondary education teachers and transition specialists, post-secondary personnel, rehabilitation service representatives and other adult service staff on the individual planning team.

The employability skills assessed in ECS are selected, prioritized, and updated annually by the CASAS National Consortium of field practitioners to ensure that content related evidence of validity is maintained. Item Response Theory (IRT) has been used by CASAS since its inception in 1980 to construct assessment instruments. IRT differs from classical test theory in that individual test items are used to estimate learner ability rather than overall test scores (CASAS, 1999). In essence, CASAS tests afford users the ability to accurately estimate functional skill levels of individual learners as ability scores and item difficulty are defined using the same metric along the same scale. This characteristic is particularly attractive when working with special needs populations as ability levels and skill sets can be targeted and linked to specific competencies as outlined in the ECS at the lowest levels of functioning.

Procedures for Data Analysis

Analysis of study participants included a demographic comparison, initial appraisal scores in reading and math, scaled score ranges, mean pre- and post-test scores, and mean learning gains for reading and math in an employability context. Information was also collected on the use of frequently used accommodations for test administration. Learning gain results between administration of pre- and

post-tests were analyzed separately according to provision of accommodations. ECS pre-test results were used to determine initial skill levels and to plan instruction. The learning gain results were used to improve special education curriculum and to establish post-secondary goals for individual and transition plans.

The following steps and instruments were used with each learner during the three-year study:

- 1) Assessment of initial skill levels in reading and math at beginning of instruction - *ECS Appraisal in Reading and Math*.
- 2) Pre- and post-assessment of functional reading and math skills needed for employability during instruction - *ECS Survey Achievement Tests*, Levels A (lowest or beginning literacy) through D (highest or high school equivalent).
- 3) Determination of appropriate curricular resources and instructional materials for the employment related competencies needed for each learner – *Test Content by Item - Individual Profile, Class Profile* for Test Form, and *CASAS Instructional Materials Guide*.
- 4) Recording of assessment results in reading and math on Individual Education Plan (IEP) and use of information to assist in establishing post-secondary goals and outcomes - *ECS Answer Sheets* and *Test Content by Item - Individual Profile*.
- 5) Evaluation of student outcomes in functional reading and math for each class, program, school, site and state including documentation of student gains between pre- and post-assessment to demonstrate program improvement – *Program Reports, Program Evaluation Questionnaire*, and *Focus Groups*.

Other instruments used by participating sites included a *Workplace Analysis* and *Pre-Employment and Work Maturity Checklists*. The outcomes and description of program improvement initiatives as a result of using these instruments are not reported as part of study results.

Results

The results of this study are reported for the two primary and one secondary research questions stated at the beginning of this report.

Does ECS result in levels of functioning in employability-related basic reading and math skills useful for the targeted population? Results from the *Program Evaluation Questionnaire*, which was further clarified by evaluation *Focus Groups* and sample formal telephone interviews, indicated that use of the ECS resulted in reading and math skill levels useful for individuals who had specific learning disabilities, as well as their parents, teachers/coordinators, and administrators. The basic procedures for assessment and use of assessment results for instructional planning did not have to be modified for the target population. The system was inclusive of learners at the lowest literacy level (A) to learners at a high school level (D) as shown in Table 1. Initial appraisal scaled score ranges in reading and math were available for 1100 learners. Matched pre- and post-test scores were available for 331 learners in reading and 357 in math.

The mean pre-test scaled score in reading was 214.2 and the mean post-test scaled score was 217.7, resulting in a mean learning gain of 3.5 points (see Table 2). The mean post-test scaled score of 217.7 in reading is at the CASAS Intermediate Basic Skills Level (Table 1), demonstrating ability of learners to perform functions such as following basic written directions, interpreting a basic payroll stub, and completing basic job applications. This learning gain in reading can be compared to other CASAS populations the same year (CASAS, 1997) such as Adult Basic Education at 5.5 points (n=943) and Adult Special Education (serves learners who have developmental disabilities) at 2.5 points (n=1,139).

Progress in math related to employability is shown in Table 3. The mean pre-test scaled score for 357 learners who had specific learning disabilities was 208.6 and the mean post-test scaled score was 210.8 in math resulting in a mean learning gain of 2.2. As can be seen in Table 1, most learners scored at the high end of the Beginning Basic Skills Level in math, demonstrating ability to make simple change but having difficulty performing simple mathematical operations.

Can functional levels in reading and math be used in establishing goals related to employability for individual and transition planning? Documentation from Individual Education Plans (IEP) and results from formal interviews indicated functional levels in reading and math were useful in establishing more appropriate high school curriculum plans and employment goals for individual and transition plans. Study sites used a chart prepared by CASAS, relating CASAS scaled score levels to Dictionary of Occupational Titles/General Educational Development Levels (CASAS, 1998). The

CASAS Intermediate Basic Skills Level in reading was reported to be the minimum level needed in preparation for most entry-level jobs used for work experience in the community. Therefore, this CASAS level was selected as the benchmark needed in order for learners to be employable. *Program Reports* for individual classes, school special education programs, and regional areas, enabled district personnel to determine possible links of program content to opportunities for employment.

What effect does the use of test accommodations have on learning gain results? The most frequent test accommodation reported for reading was extra time (40.7%) while the most frequent test accommodation reported for math was the calculator (57.4%) as can be seen in Table 4. The mean pre-test scaled score, mean post-test scaled score, and mean learning gain for reading and math, were analyzed separately for groups using and not using accommodations during test administration. Accommodations were used for testing only when the same stipulation was indicated on the learner's Individual Education Plan (IEP).

The observed differences in learning gains between learners using the accommodations of extra time and/or a calculator, and students not using the accommodations, were not found to be statistically significant as can be seen in Tables 5a and 5b for reading and 6a and 6b for math. The use of an accommodation resulted in a consistently higher learning gain in reading only at the Pre-Literacy Level (Level A in Table 1). This finding is consistent with other CASAS learning gain results, especially for learners in English as a Second Language classes, who show greater learning gains at the lower level without use of accommodations (CASAS, 1999).

Limitations

The sample size of matched pre- and post-test scores is limited to 331 learners for reading and 357 learners for math. As is the case for limited comparisons when standardized tests are administered to learners who have disabilities (Gronna, et al., 1998), the results of this study and the impact of use of accommodations, may not be generalized to the entire population. However, the results provide additional information about how learners who have specific learning disabilities perform on a standardized test when basic skills in an employability context are measured. Information is also

provided on test results when accommodations are used and when they are not used during the assessment procedure.

The stipulation that accommodations be used for testing only when indicated on the IEP and when used for instruction was an understanding with study participants and was not formally observed. Also, district IEP teams varied on their purposes for using the assessment, including the provision of specific accommodations, and for using the information to make district decisions. For example, some school districts considered use of the calculator as an accommodation for the math test as inappropriate because documentation was used to establish need for additional resources in order to teach math skills. Other districts viewed the use of the calculator as vital for application of assessment in a real-life context.

The number of hours of instruction was reported for only 168 learners and may have had an effect on learning gains. Learning gains of 4.7 for 90 to 139 hours of instruction (usually a semester) were reported for 51 learners, while gains of 2.5 for 40 to 89 hours of instruction (usually a 9-week unit) were reported for 117 learners. Another limitation of the study is the degree to which limited language proficiency may have had an effect on the results. This interaction with learning disability was not considered as a purpose of this study.

Conclusion

The major conclusion of this study is that the Employability Competency System (ECS) is an appropriate and useful system to use for assistance in determining the reading and math skill levels in an employability context and selecting needed instructional materials and curriculum for learners who have specific learning disabilities. The system was found inclusive of learners who had the lowest literacy levels (Level A) to learners who were within a high school level (Level D) and were preparing to transition from high school into advanced training.

The major problem encountered in implementation of the assessment component at the schools was introducing another assessment in addition to standardized academic basic skill assessment already required by the school district and/or state for accountability purposes. Even though basic skill assessment in an employability context was considered a higher priority for determining transition

services, according to evaluation *Focus Groups*, precedence was given to the state assessment system, which was more academic in nature in its current form and not necessarily considered useful for special education learners.

Implications for Practice

The results of this study have provided more information for content of state assessment and for the national debate on appropriateness and type of accommodations useful for standardized testing. Formal assessment related to employability and transition services needs to be part of the state assessment program if preparation for work for all learners is a goal of school programs. Further research is needed on use of accommodations for standardized assessment, including research on the validity and reliability of using accommodations for specific disabilities. Further research is also needed on the impact of contextual assessment and learning, which are basic aspects of effective school-to-work strategies (U.S. Department of Education, 1996).

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For Additional Information

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Table 1
CASAS Level Descriptors for ECS

Scaled Scores	CASAS Level	Description
246 +	E	Advanced Adult Secondary Interpret technical information, material safety data sheets (MSDS) and apprenticeship manuals.
236 - 245	D	Adult Secondary Read and follow multi-step directions, interpret common legal forms, calculate discounts, create and use tables and graphs, evaluate/organize information.
221 - 235	C	Advanced Basic Skills Interpret routine charts/graphs/labels, interpret simple handbook for employees, perform calculations for order form, maintain a family budget, and begin GED preparation (230+).
211 - 220	B	Intermediate Basic Skills Interpret a basic payroll stub, follow basic written directions, complete simple order form and do calculations, fill out basic medical information forms and job applications.
201 - 210	B	Beginning Basic Skills Fill out simple forms requiring basic personal information, write simple list or telephone messages, make simple change, interpret simple directions/ signs/ maps/menus.
181 - 200	A	Pre-Literacy Very limited ability to read or write, can provide very basic personal identification information.

Table 2
Test Score Means for ECS Reading

Score Range at Pre-Test	Mean Pre-Test Score	Mean Post-Test Score	Mean Learning Gains	n	%
ECS All	214.2	217.7	3.5	331	100.0
181 - 190	185.7	194.2	8.5	6	1.8
191 - 200	196.8	203.7	6.9	32	9.7
201 - 210	206.2	210.3	4.1	69	20.8
211 - 220	213.3	218.5	5.2	131	39.6
221 - 229	224.1	226.5	2.4	76	23.0
230 & above	236.1	237.1	1.0	17	5.1

Table 3
Test Score Means for ECS Math

Score Range at Pre-Test	Mean Pre-Test Score	Mean Post-Test Score	Mean Learning Gains	n	%
ECS All	208.6	210.8	2.2	357	100.0
180 & below	178.0	186.7	8.7	3	.8
181 - 190	186.8	196.7	9.9	14	3.9
191 - 200	197.0	201.3	4.3	78	21.8
201 - 210	205.7	207.6	1.9	130	36.5
211 - 220	215.2	216.3	1.1	63	17.6
221 - 229	224.5	224.1	-.4	52	14.6
230 & above	234.6	234.5	-.1	17	4.8

Table 4
Special Test Accommodations*

Accommodation	n	Percent (%)
Extra Time	341	40.7
Alternate Test Environment	10	1.2
Frequent Breaks	4	.5
Use of Calculator (Math)	480	57.4
Other	2	.2
TOTAL	837	100.0

* Respondents may have selected multiple accommodations.

Table 5a
Pre/Post-Test Score Means for ECS Reading - Extra Time

Score Range at Pre-Test	Mean Pre-Test Score	Mean Post-Test Score	Mean Learning Gains	Total (n) %
TAC/OTR All	215.5	219.3	3.8	(137) 100.0
Arizona	216.2	219.8	3.6	(111) 81.0
California	214.8	219.0	4.2	(17) 12.4
Idaho	208.1	213.7	5.6	(9) 6.6

Table 5b
Pre/Post-Test Score Means for ECS Reading – No Extra Time

Score Range at Pre-Test	Mean Pre-Test Score	Mean Post-Test Score	Mean Learning Gains	Total (n) %
TAC/OTR All	213.2	216.5	3.3	(194) 100.0
Arizona	211.7	213.7	2.0	(51) 26.3
California	213.7	217.6	3.9	(110) 56.7
Idaho	214.0	217.8	3.8	(33) 17.0

Table 6a
Pre/Post-Test Score Means for ECS Math - Calculator Used

Score Range at Pre-Test	Mean Pre-Test Score	Mean Post-Test Score	Mean Learning Gains	Total (n) %
TAC/OTR All	210.0	211.8	1.8	(218) 100.0
Arizona	209.6	211.3	1.7	(143) 65.6
California	214.8	215.0	.2	(39) 17.9
Idaho	206.2	210.2	4.0	(36) 16.5

Table 6b
Pre/Post-Test Score Means for ECS Math - Calculator Not Used

Score Range at Pre-Test	Mean Pre-Test Score	Mean Post-Test Score	Mean Learning Gains	Total (n) %
TAC/OTR All	206.5	209.4	2.9	(139) 100.0
Arizona	208.9	210.1	1.2	(35) 25.2
California	205.2	208.4	3.2	(91) 65.5
Idaho	209.1	214.7	5.6	(13) 9.3