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## The Relationship between Learning Gains and Attendance

### Introduction

What is the relationship between the number of hours that learners attend in adult English-as-a-Second-Language (ESL) programs and the learning gains they attain on standardized assessments in the areas of basic listening and reading?

The Connecticut State Department of Education's (CSDE) coordinates the statewide adult education and literacy system. Programs are free to Connecticut residents aged 16 and older who are no longer enrolled in a public elementary or secondary school. Instructional services are offered at over 300 sites statewide by a variety of agencies including school districts, community-based organizations, volunteer programs, and correctional institutions.

Each year, about 14,000 learners enroll in ESL classes. This represents approximately 45% of all learners who participate in adult education annually.

### Background

Since the mid-1980s, the CSDE has supported the implementation of a standards-based framework in adult education. This framework was developed by the Comprehensive Adult Student Assessment System (CASAS) and connects curriculum, assessment, and instruction (CASAS, 2005). Connecticut's implementation of the CASAS system which includes the available tests, relevant policies, and professional development is referred to as the Connecticut Competency System (CCS).

The CASAS curriculum standards are based on competencies and content standards that youth and adults need to function effectively in society. CASAS standardized assessments measure an individual's ability to *apply* basic literacy, numeracy, and communication skills to perform the competencies. Item Response Theory (IRT) is used to establish indices of item bank, test, and test score reliability (Hambleton, Swaminathan, and Rogers, 1991). Results from CASAS assessments are reported in scaled scores that clearly define the basic skills along a fixed continuum of difficulty. This scale has been used with more than 3,000,000 youth and adult learners.

To administer these standardized CASAS assessments and ensure their incorporation into instruction, adult education providers maintain Program Facilitators with the

appropriate training and certification. These Facilitators are teacher leaders who play a critical role in maintaining the integrity and quality of the assessment process. They also assist instructors with curriculum issues and help integrate test results into instruction.

### Methodology

The CSDE utilizes an Internet-based management information system, the Connecticut Adult Reporting System (CARS), to collect individual data on learner demographics, entry status, goals, attendance, achievements, and test scores.

For this study, a total of 34,738 student records with matched pre-and-post test scores in listening assessments, and another 16,149 student records with matched test pairs in reading assessments over the five year period between Fiscal Year 2002 and Fiscal Year 2006 were extracted from CARS and analyzed. This study was modeled after a paper published by the California Department of Education in August 2004 (CDE, 2004).

For each of the five years in this study, the test scores were grouped according to the National Reporting System (NRS) Educational Functioning Levels (DAEL, 2006) based on the pre-test scaled score in that skill area. The NRS levels and their corresponding CASAS scaled score ranges are listed below. Complete descriptors of learner abilities at these NRS levels are available included in the CCS Policy Manual that is available on the CSDE Web site at <http://www.ct.gov/sde>.

- <=180 ESL Beginning Literacy
- 181-190 ESL Low Beginning
- 191-200 ESL High Beginning
- 201-210 ESL Intermediate Low
- 211-220 ESL Intermediate High
- 221-235 ESL Advanced

The average difference between the pre-test and the post-test scores represents the mean learning gain in a skill area. For this study, the pretest scores were sorted into the following three ascending categories of hours attended for each year and each NRS level:

- 12 to 60 hours;
- 61 to 100 hours; and
- 101 or more hours.

The mean scaled score gain was computed for both listening and reading for each attendance hour category, at each NRS level, and for each of the five years of the study (see appendix).

## Findings

With respect to listening gains, in 27 out of the 30 data points observed (6 NRS levels, each with 5 years of data), an increasing monotonic relationship was evidenced between each ascending category of hours attended and the size of the mean scaled score gains in listening. Two of the three instances of deviation from this trend occurred at the highest NRS level.

With respect to reading gains, in 25 out of the 30 data points observed (6 NRS levels, each with 5 years of data), an increasing monotonic relationship was evidenced between each ascending category of hours attended and the size of the mean scaled score gains in reading. Deviations from this trend occurred mostly at the lowest NRS level where the number of matched test pairs available for analysis was relatively small.

In general, the gains in listening were greater at the lower NRS levels with very minimal gains being noted at the highest range. The maximum valid scaled score ranges for the life skills and employability listening assessment series extend between 225 and 228. Therefore, it is not surprising that very minimal gains in listening were evidenced at the ESL Advanced level which has a scaled score range of 221 to 235.

On the contrary, the maximum scaled score ranges in the reading assessments extend between 256 and 259 allowing sufficient range for learners to demonstrate their skill in reading. Therefore, gains in reading remained high at the higher levels.

In light of the limitations of the existing listening assessments to measure progress at the upper levels, the CSDE has long recommended that for ESL learners with slightly advanced listening abilities (a scaled score greater than 215), the focus of instruction and assessment should incorporate reading competencies and not focus solely on developing listening competencies.

However, the vast majority of learners at these upper levels continue to be assessed in listening. Over the five year period of this study, 9,066 learners reflected a pre-test scaled score in listening that was greater than 215. Of those, 6,868 (76%) of the learners were administered a listening post test and registered a mean gain of only 1.4 scaled score points. The remaining 2,198 (24%) of learners were assessed through reading pre-post assessments and registered a mean gain of 5.1 scaled score points.

## Conclusion

An overall positive relationship between the number of hours learners attend and the mean gains they achieve was evidenced in the areas of both listening and reading. Therefore, adult education providers should utilize a combination of strategies (class scheduling, instructional intensity, support services, relevant curriculum, etc.) to maximize the possibility that more learners will attend classes for at least 100 hours during the fiscal year.

In addition, a greater emphasis on competency-based reading/writing instruction *and* assessment at the higher levels of ESL might serve the broader needs of the ESL learners, while also documenting the outcomes those learners are achieving in adult education programs.

## References

- California Department of Education (2004). *The Relationship of Adult ESL Reading Performance to Instructional Time*. Sacramento, CA: CDE
- Comprehensive Adult Student Assessment System (2005). *CASAS Technical Manual*. San Diego, CA: CASAS
- Division of Adult Education and Literacy, Office of Vocational and Adult Education, U.S. Department of Education (DAEL). (2006). *Measures and methods for the National Reporting System for adult education: Implementation guidelines*. Washington, DC: U.S. Department of Education.
- Hambleton, R.K., H. Swaminathan, and H.K. Rogers. *Fundamentals of Item Response Theory*. Newbury Park Calif.: Sage Publications, 1991.

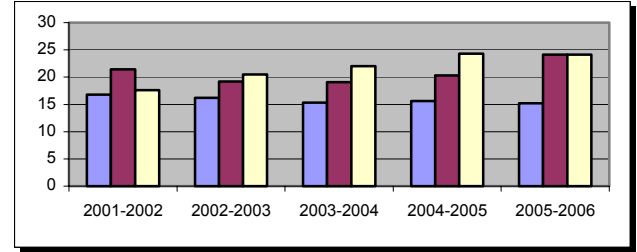
## Appendix

## Listening: Mean Scaled Score Gains

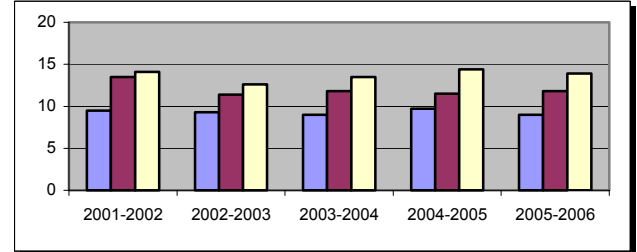
Pre-Test Scaled Score Ranges	Hours Attended					
	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
<= 180 ESL Beginning Literacy	N	Mean	N	Mean	N	Mean
Fiscal Year						
2001-2002	269	16.8	99	21.4	102	17.6
2002-2003	222	16.2	65	19.2	68	20.5
2003-2004	271	15.3	111	19.1	86	22.0
2004-2005	300	15.6	103	20.3	91	24.3
2005-2006	457	15.2	126	24.1	69	24.1
181-190 ESL Low Beginning	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	353	9.5	164	13.5	179	14.1
2002-2003	402	9.3	151	11.4	193	12.6
2003-2004	412	9.0	202	11.8	218	13.5
2004-2005	442	9.7	206	11.5	212	14.4
2005-2006	511	9.0	203	11.8	175	13.9
191-200 ESL High Beginning	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	713	6.9	399	8.5	417	9.8
2002-2003	815	6.6	421	9.1	393	10.1
2003-2004	814	6.5	433	9.2	425	9.7
2004-2005	789	5.9	362	8.0	380	10.3
2005-2006	787	5.6	357	8.8	367	9.1
201-210 ESL Low Intermediate	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	918	4.0	506	5.5	532	6.8
2002-2003	985	4.7	511	5.6	515	7.5
2003-2004	1086	4.0	567	5.3	547	6.9
2004-2005	980	4.0	467	5.5	505	7.5
2005-2006	897	3.6	456	5.8	475	7.1
211-220 ESL High Intermediate	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	627	2.1	286	3.1	385	3.9
2002-2003	791	2.0	345	3.0	372	4.5
2003-2004	749	1.6	367	2.9	355	4.4
2004-2005	697	2.0	329	3.1	367	3.8
2005-2006	608	1.3	257	3.5	328	4.0
221-235 ESL Advanced	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	473	0.2	190	0.8	188	1.0
2002-2003	424	0.5	193	1.4	199	0.2
2003-2004	436	0.6	173	0.8	177	1.2
2004-2005	300	0.2	147	1.5	149	1.8
2005-2006	298	1.1	130	1.7	117	2.2

■ 12–60 Hours ■ 61–100 Hours ■ 101 or more Hours

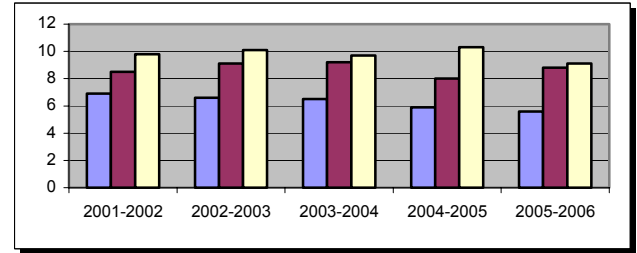
&lt;=180 ESL Beginning Literacy



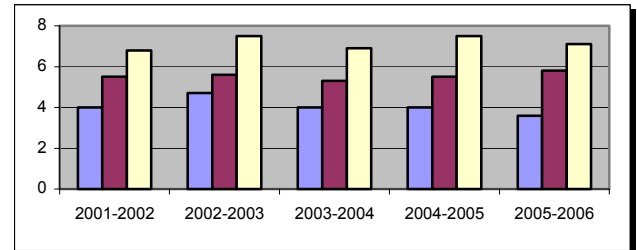
181 – 190 ESL Low Beginning



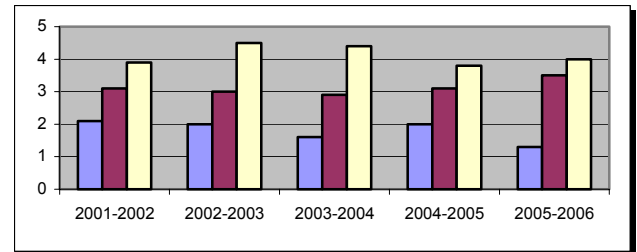
191 – 200 ESL High Beginning



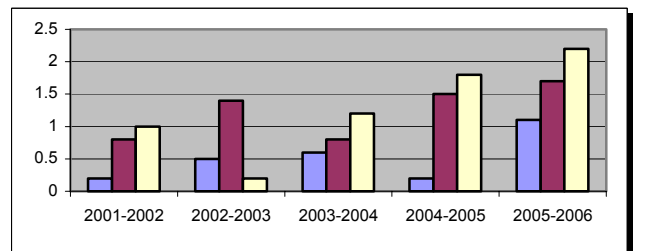
201 – 210 ESL Low Intermediate



211 – 220 ESL High Intermediate



221 – 235 ESL Advanced

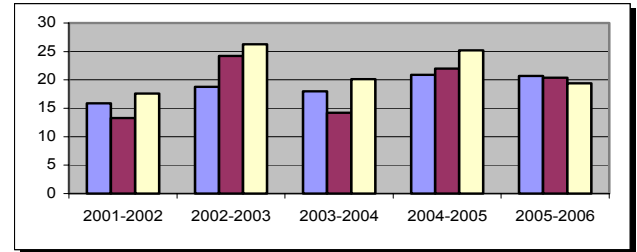


### Reading: Mean Scaled Score Gains

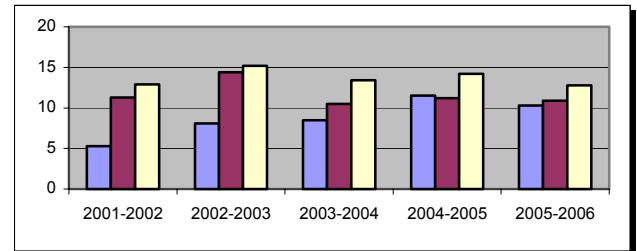
Pre-Test Scaled Score Ranges	Hours Attended					
	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
<= 180 ESL Beginning Literacy	N	Mean	N	Mean	N	Mean
Fiscal Year						
2001-2002	14	15.9	8	13.3	16	17.6
2002-2003	34	18.8	12	24.2	26	26.3
2003-2004	69	18.0	19	14.2	34	20.1
2004-2005	47	20.9	21	22.0	34	25.2
2005-2006	54	20.7	33	20.4	50	19.4
181-190 ESL Low Beginning	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	23	5.3	20	11.3	25	12.9
2002-2003	53	8.1	23	14.4	21	15.2
2003-2004	70	8.5	45	10.5	38	13.4
2004-2005	59	11.5	23	11.2	60	14.2
2005-2006	72	10.3	31	10.9	43	12.8
191-200 ESL High Beginning	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	84	7.8	41	6.6	97	12.5
2002-2003	160	5.4	77	8.6	96	13.0
2003-2004	198	6.3	99	10.3	91	13.7
2004-2005	176	7.0	78	9.8	100	10.1
2005-2006	192	6.0	79	9.8	103	10.0
201-210 ESL Low Intermediate	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	142	4.9	97	8.2	180	10.1
2002-2003	307	5.1	160	7.7	217	10.1
2003-2004	337	4.6	161	8.2	210	10.8
2004-2005	301	5.2	163	7.1	264	7.4
2005-2006	378	5.3	169	6.2	225	6.8
211-220 ESL High Intermediate	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	231	6.0	119	7.6	210	8.9
2002-2003	284	5.1	158	5.9	235	8.3
2003-2004	283	4.5	154	6.0	248	9.6
2004-2005	309	5.2	160	6.3	290	8.0
2005-2006	347	4.1	183	6.3	268	7.9
221-235 ESL Advanced	12 – 60 Hours		61 – 100 Hours		101 or more Hours	
Fiscal Year	N	Mean	N	Mean	N	Mean
2001-2002	294	3.4	218	4.8	270	5.9
2002-2003	433	2.9	247	4.1	331	6.2
2003-2004	434	3.1	292	4.4	323	6.2
2004-2005	437	3.3	223	4.7	287	5.6
2005-2006	402	2.7	234	4.3	287	6.0

12–60 Hours 61–100 Hours 101 or more Hours

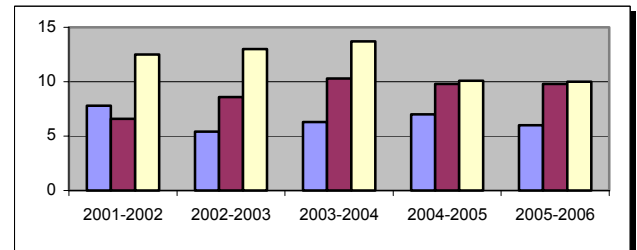
<=180 ESL Beginning Literacy



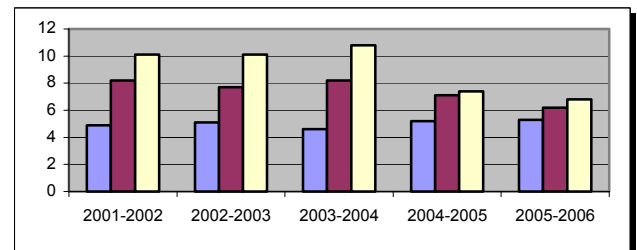
181 – 190 ESL Low Beginning



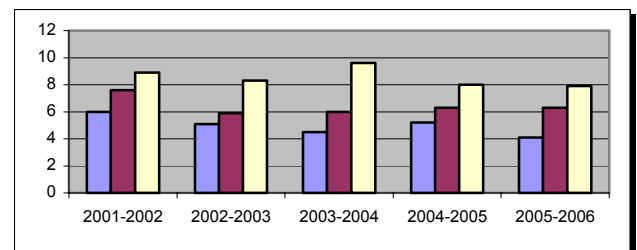
191 – 200 ESL High Beginning



201 – 210 ESL Low Intermediate



211 – 220 ESL High Intermediate



221 – 235 ESL Advanced

