



Fluency Gain Project (Technical Report No. 3)

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Introduction

A new technology program being developed by Voyager Expanded Learning will be incorporating the concept of the repeated reading procedure, originally developed by Samuels (1979), which emerged as a means for developing automatic decoding with unskilled readers (Homan, Klesius, & Hite, 1993) as its core feature. To establish goals for each student who will read a passage in the new technology program, we need to understand how much a student can grow using the specific repeated reading procedure that will be built into the technology product. This report described the Fluency Gain Project conducted in May 2007. The Fluency Gain Project gathered data to determine reasonable fluency gains that could be expected between an initial and final read.

Methods

The purpose of the Fluency Gain Project was to assess the typical gain a student would make between an initial read of an unfamiliar grade-level passage and a final read of the same passage after repeated readings and practice with the passage. Students in first through fifth grade from four elementary schools participated in this one-on-one reading activity. Adults guided the students through the repeated reading process. The steps the students worked through in the 15 minute reading session were as follows:

Step 1: Initial Passage Reading – 1 Minute

Students read the grade-level passage out loud for one minute. An adult kept track of the number of words read and any errors made providing support as needed.

Step 2: Modeling – The adult read the passage aloud, modeling fluent reading for the student.

Step 3: Supported Practice – The adult and the student read the passage together at a slower rate than the fluent read. The adult and student reviewed all difficult words and practiced them. The adult wrote the difficult words identified by the student on the pad of paper to practice pronouncing each one and discuss the word’s meaning.

Step 4: Shared Practice – The student and the adult repeated the read together at a slightly faster rate.

Step 5: Independent Practice – The student independently read the passage aloud two times with guided and informed feedback.

Step 6: Final Passage Reading – 1 Minute

The student read the passage out loud for the last time “doing their best reading.” The adult kept track of the number of words read and any errors made.

Step 7: Specific Praise and Feedback – The adult provided specific praise to the student talking about all of the reading that the student did well and the improvements made.

Participants

Students from four schools in a Texas school district participated in the Fluency Gain Project. The school district is in a large city and serves just over 34 thousand students, including 19% who are English Language Learners (ELL) and 12% who have Individual Education Plans (IEP)¹.

All four schools participating in the Fluency Gain Project are Title 1 Schools, but only three of the schools use Voyager materials for reading intervention during the 2006-2007 school year. School 4 uses the intervention portion of the core reading program for intervention on a regular basis. The following table, Table 1, summarized the demographic makeup of the four participating schools.

Table 1.
School Demographic Details

School Name	Total Students	Enrollment Factors	Enrollment by Race/Ethnicity
School 1	601	Male: 50% Female: 50% Free/Reduced Lunch Eligible: 95%	Amer Ind/Alaskan: 0.16% Asian: 0.83% Black: 9% Hispanic: 89% White: 0.83%
School 2	560	Male: 49% Female: 51% Free/Reduced Lunch Eligible: 81%	Amer Ind/Alaskan: 0.36% Asian: 3% Black: 14% Hispanic: 74% White: 8%
School 3	356	Male: 53% Female: 47% Free/Reduced Lunch Eligible: 73%	Amer Ind/Alaskan: 0% Asian: 9% Black: 21% Hispanic: 54% White: 16%
School 4	531	Male: 48% Female: 52% Free/Reduced Lunch Eligible: 56%	Amer Ind/Alaskan: 0.56% Asian: 25% Black: 46% Hispanic: 11% White: 17%

The selection of the students was coordinated by the Reading Coach from each school. The request was to pick a representative sample of students, from those who read well to those who struggle learning to read.

Results

Overall Results

Over the course of the Fluency Gain Project, 173 students completed the protocol. The table below, Table 2, illustrates the details of the group as a whole. The Overall Cold, or initial passage reading, has a mean of 89.84 words per minute and the Overall Hot read, or final passage reading, is 119.95 with an

¹ District information comes from the National Center for Education Statistics and is for the 2004-2005 school year.

Overall Gain of 30.1 words per minute. The average number of errors on the cold read is 3.69 and on the hot read or the final read is 1.53.

Table 2.

Overall Fluency Gain Project Results

		Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	173	173	173	173	173
	Missing	0	0	0	0	0
Mean		89.84	3.69	119.95	1.53	30.1098
Median		88.00	3.00	118.00	1.00	28.0000
Mode		85	1	82	0	26.00(a)
Std. Deviation		42.496	3.238	48.871	1.996	16.34314
Variance		1805.935	10.483	2388.416	3.983	267.098
Range		178	15	233	11	107.00
Minimum		6	0	11	0	-9.00
Maximum		184	15	244	11	98.00
Percentiles	10	27.80	.00	55.80	.00	11.0000
	25	58.00	1.00	87.00	.00	20.0000
	50	88.00	3.00	118.00	1.00	28.0000
	75	120.50	5.00	153.50	2.00	38.5000
	90	150.00	8.00	187.00	4.00	48.0000

a Multiple modes exist. The smallest value is shown

Results by Grade

Results for the procedure were recorded on sheets that contained the grade-level passages. For each of the one minute timed readings, the adult recorded the number of words read and any errors the child made during reading. This was tallied for both the initial, or cold, read and the final, or hot, read. These scores were compiled onto a spreadsheet and then imported into SPSS for further processing. Only the first name of the student and grade level was recorded in order to protect the identity of the students. The DIBELS (Dynamic Indicators of Basic Early Literacy Skills) Oral Reading Fluency (ORF) scores at Benchmark 3 for each student that participated in the project was also collected. The ORF score was collected during the usual benchmark process in the schools. It was not part of the protocol for the Fluency Gain Project.

The extended descriptive information in the tables below, Tables 3 through 7, describe the results by grade level across all four schools. The ORF score is also included for each grade level as a comparison to the Overall Cold read.

Table 3.
Overall Grade 1 Results

Grade 1		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	31	32	32	32	32	32
	Missing	1	0	0	0	0	0
Mean		40.35	38.66	5.66	61.56	2.72	22.9063
Median		33.00	35.00	4.00	57.50	2.00	21.5000
Mode		17(a)	10(a)	4	11(a)	1	21.00(a)
Std. Deviation		26.897	23.748	3.815	32.625	2.831	13.02939
Variance		723.437	563.975	14.555	1064.383	8.015	169.765
Range		97	77	14	130	11	56.00
Minimum		7	6	1	11	0	2.00
Maximum		104	83	15	141	11	58.00
Percentiles	10	10.20	10.00	2.00	20.80	.00	5.6000
	25	17.00	18.00	3.00	35.75	1.00	16.2500
	50	33.00	35.00	4.00	57.50	2.00	21.5000
	75	62.00	58.50	8.75	84.25	4.00	27.7500
	90	82.40	79.10	12.00	112.10	7.70	43.0000

a Multiple modes exist. The smallest value is shown

Table 4.
Overall Grade 2 Results

Grade 2		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	38	39	39	39	39	39
	Missing	1	0	0	0	0	0
Mean		87.92	85.36	3.05	118.90	1.00	33.5385
Median		78.50	80.00	2.00	110.00	1.00	36.0000
Mode		62(a)	40(a)	0(a)	110	0	8.00(a)
Std. Deviation		38.944	37.106	2.714	45.855	1.214	18.43459
Variance		1516.615	1376.868	7.366	2102.726	1.474	339.834
Range		175	161	10	208	4	90.00
Minimum		20	22	0	34	0	1.00
Maximum		195	183	10	242	4	91.00
Percentiles	10	40.80	40.00	.00	69.00	.00	8.0000
	25	64.25	59.00	1.00	90.00	.00	22.0000
	50	78.50	80.00	2.00	110.00	1.00	36.0000
	75	105.75	112.00	4.00	153.00	1.00	44.0000
	90	151.40	141.00	7.00	184.00	3.00	53.0000

a Multiple modes exist. The smallest value is shown

Table 5.
Overall Grade 3 Results

Grade 3		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	37	37	37	37	37	37
	Missing	0	0	0	0	0	0
Mean		99.38	93.11	3.68	120.32	1.43	27.2162
Median		98.00	92.00	3.00	118.00	1.00	26.0000
Mode		66(a)	88(a)	1	91(a)	0	26.00
Std. Deviation		30.494	28.764	3.266	29.640	1.908	14.05571
Variance		929.908	827.377	10.670	878.559	3.641	197.563
Range		143	131	14	140	9	72.00
Minimum		25	25	0	51	0	-9.00
Maximum		168	156	14	191	9	63.00
Percentiles	10	63.40	50.80	.00	84.40	.00	11.8000
	25	75.50	74.00	1.00	102.50	.00	19.0000
	50	98.00	92.00	3.00	118.00	1.00	26.0000
	75	119.00	110.50	6.00	132.50	2.00	35.0000
	90	146.00	134.60	7.20	170.00	3.00	47.4000

a Multiple modes exist. The smallest value is shown

Table 6.
Overall Grade 4 Results

Grade 4		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	34	34	34	34	34	34
	Missing	0	0	0	0	0	0
Mean		113.38	106.24	3.59	142.21	1.24	35.9706
Median		113.50	108.00	3.00	140.00	.50	35.5000
Mode		116	85(a)	1	95(a)	0	19.00(a)
Std. Deviation		33.745	31.541	3.026	38.911	1.634	17.93504
Variance		1138.728	994.852	9.159	1514.047	2.670	321.666
Range		141	127	11	167	6	92.00
Minimum		38	36	0	77	0	6.00
Maximum		179	163	11	244	6	98.00
Percentiles	10	64.50	55.00	.00	92.50	.00	15.5000
	25	94.50	87.25	1.00	114.00	.00	21.5000
	50	113.50	108.00	3.00	140.00	.50	35.5000
	75	137.25	129.25	6.00	159.75	2.00	46.2500
	90	160.00	149.00	8.50	201.00	4.00	52.5000

a Multiple modes exist. The smallest value is shown

Table 7.
Overall Grade 5 Results

Grade 5		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	29	31	31	31	31	31
	Missing	2	0	0	0	0	0
Mean		120.03	126.45	2.58	156.71	1.42	30.2581
Median		119.00	131.00	2.00	155.00	1.00	27.0000
Mode		119	150	0	155(a)	0	25.00
Std. Deviation		37.412	37.638	2.630	40.186	1.840	14.65143
Variance		1399.677	1416.589	6.918	1614.880	3.385	214.665
Range		138	131	11	156	8	69.00
Minimum		52	53	0	71	0	9.00
Maximum		190	184	11	227	8	78.00
Percentiles	10	59.00	64.40	.00	98.20	.00	12.4000
	25	96.00	102.00	1.00	132.00	.00	20.0000
	50	119.00	131.00	2.00	155.00	1.00	27.0000
	75	149.00	153.00	3.00	187.00	2.00	38.0000
	90	175.00	178.40	7.00	205.80	4.00	47.0000

a Multiple modes exist. The smallest value is shown

Results by School and Grade

The tables below, Tables 8 through 26, describe the extended results by school and grade level.

Table 8.
School 1, Grade 1 Results

School 1, Grade 1		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	9	10	10	10	10	10
	Missing	1	0	0	0	0	0
Mean		34.11	35.20	7.10	54.80	3.00	19.6000
Median		38.00	32.00	5.00	60.00	2.50	21.5000
Mode		10(a)	10	4	19(a)	0	26.00
Std. Deviation		19.101	23.869	4.228	26.220	3.018	8.46168
Variance		364.861	569.733	17.878	687.511	9.111	71.600
Range		56	67	12	84	9	23.00
Minimum		10	10	2	19	0	7.00
Maximum		66	77	14	103	9	30.00
Percentiles	10	10.00	10.00	2.20	19.80	.00	7.2000
	25	16.50	10.75	4.00	28.50	.00	10.5000
	50	38.00	32.00	5.00	60.00	2.50	21.5000
	75	48.50	57.50	11.25	72.50	4.75	26.2500
	90	66.00	75.20	13.80	100.10	8.80	29.7000

a Multiple modes exist. The smallest value is shown

Table 9.
School 1, Grade 2 Results

School 1, Grade 2		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	14	15	15	15	15	15
	Missing	1	0	0	0	0	0
Mean		105.00	104.80	1.60	143.53	.73	38.7333
Median		99.50	112.00	1.00	139.00	.00	37.0000
Mode		51(a)	112	0	94(a)	0	37.00
Std. Deviation		31.860	30.501	1.549	30.081	.884	14.94976
Variance		1015.077	930.314	2.400	904.838	.781	223.495
Range		110	110	4	109	2	61.00
Minimum		51	43	0	94	0	16.00
Maximum		161	153	4	203	2	77.00
Percentiles	10	58.00	58.00	.00	103.60	.00	19.6000
	25	86.50	87.00	.00	120.00	.00	26.0000
	50	99.50	112.00	1.00	139.00	.00	37.0000
	75	134.00	119.00	3.00	166.00	2.00	47.0000
	90	156.00	150.00	4.00	191.60	2.00	62.6000

a Multiple modes exist. The smallest value is shown

Table 10.
School 1, Grade 3 Results

School 1, Grade 3		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	10	10	10	10	10	10
	Missing	0	0	0	0	0	0
Mean		107.80	102.90	4.40	122.20	1.70	19.3000
Median		108.50	109.50	4.00	121.50	1.00	19.5000
Mode		54(a)	47(a)	1(a)	115	0(a)	-9.00(a)
Std. Deviation		22.399	26.706	4.088	21.337	2.111	16.93812
Variance		501.733	713.211	16.711	455.289	4.456	286.900
Range		77	104	14	82	7	56.00
Minimum		54	47	0	74	0	-9.00
Maximum		131	151	14	156	7	47.00
Percentiles	10	58.20	50.80	.10	78.10	.00	-8.0000
	25	99.75	87.25	1.00	115.00	.00	5.5000
	50	108.50	109.50	4.00	121.50	1.00	19.5000
	75	126.50	114.25	6.25	135.25	2.25	32.2500
	90	130.70	147.40	13.30	154.60	6.60	45.9000

a Multiple modes exist. The smallest value is shown

Table 11.
School 1, Grade 4 Results

School 1, Grade 4		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	10	10	10	10	10	10
	Missing	0	0	0	0	0	0
Mean		114.20	104.60	3.40	137.20	1.20	32.6000
Median		107.00	100.50	2.00	135.00	1.00	35.5000
Mode		88(a)	70(a)	0(a)	95(a)	0	6.00(a)
Std. Deviation		24.863	25.786	3.596	30.854	1.398	15.97359
Variance		618.178	664.933	12.933	951.956	1.956	255.156
Range		72	86	11	108	4	45.00
Minimum		88	70	0	95	0	6.00
Maximum		160	156	11	203	4	51.00
Percentiles	10	88.50	71.10	.00	96.30	.00	6.8000
	25	94.50	86.25	.75	114.00	.00	18.5000
	50	107.00	100.50	2.00	135.00	1.00	35.5000
	75	134.75	122.50	6.25	150.00	2.00	47.2500
	90	158.90	153.40	10.60	199.50	3.80	50.7000

a Multiple modes exist. The smallest value is shown

Table 12.
School 2, Grade 1 Results

School 2, Grade 1		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	9	9	9	9	9	9
	Missing	0	0	0	0	0	0
Mean		41.11	41.44	4.22	63.56	2.11	22.1111
Median		33.00	37.00	4.00	55.00	1.00	21.0000
Mode		15(a)	18(a)	4	35(a)	1	8.00(a)
Std. Deviation		24.441	20.495	2.048	26.651	1.833	8.79552
Variance		597.361	420.028	4.194	710.278	3.361	77.361
Range		68	62	7	81	5	28.00
Minimum		15	18	2	35	0	8.00
Maximum		83	80	9	116	5	36.00
Percentiles	10	15.00	18.00	2.00	35.00	.00	8.0000
	25	23.50	25.50	3.00	40.50	1.00	17.0000
	50	33.00	37.00	4.00	55.00	1.00	21.0000
	75	64.50	58.00	4.50	80.50	4.00	29.0000
	90	83.00	80.00	9.00	116.00	5.00	36.0000

a Multiple modes exist. The smallest value is shown

Table 13.
School 2, Grade 2 Results

School 2, Grade 2		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	8	8	8	8	8	8
	Missing	0	0	0	0	0	0
Mean		64.88	65.13	4.38	93.00	1.13	27.8750
Median		67.50	68.50	4.00	93.50	1.00	30.0000
Mode		41(a)	46(a)	2(a)	70(a)	1	24.00(a)
Std. Deviation		11.630	13.378	2.134	13.104	1.246	12.31071
Variance		135.268	178.982	4.554	171.714	1.554	151.554
Range		38	36	5	38	4	33.00
Minimum		41	46	2	70	0	8.00
Maximum		79	82	7	108	4	41.00
Percentiles	10	41.00	46.00	2.00	70.00	.00	8.0000
	25	59.00	50.00	2.25	83.50	.25	16.5000
	50	67.50	68.50	4.00	93.50	1.00	30.0000
	75	72.50	76.50	6.75	105.75	1.00	38.0000
	90	79.00	82.00	7.00	108.00	4.00	41.0000

a Multiple modes exist. The smallest value is shown

Table 14.
School 2, Grade 3 Results

School 2, Grade 3		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	10	10	10	10	10	10
	Missing	0	0	0	0	0	0
Mean		78.30	80.00	4.40	103.60	.80	23.6000
Median		68.00	77.00	5.50	99.00	1.00	26.0000
Mode		66	25(a)	6	91	0(a)	26.00
Std. Deviation		33.160	29.844	2.633	32.267	.789	8.64356
Variance		1099.567	890.667	6.933	1041.156	.622	74.711
Range		121	109	7	123	2	27.00
Minimum		25	25	0	51	0	13.00
Maximum		146	134	7	174	2	40.00
Percentiles	10	28.60	28.10	.00	54.10	.00	13.1000
	25	64.00	62.75	2.25	88.75	.00	14.7500
	50	68.00	77.00	5.50	99.00	1.00	26.0000
	75	103.50	102.75	6.25	120.50	1.25	27.5000
	90	142.50	131.10	7.00	169.40	2.00	39.2000

a Multiple modes exist. The smallest value is shown

Table 15.
School 2, Grade 4 Results

School 2, Grade 4		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	10	10	10	10	10	10
	Missing	0	0	0	0	0	0
Mean		108.30	105.50	2.70	143.50	.80	38.0000
Median		108.00	107.50	2.50	147.50	.00	33.5000
Mode		46(a)	36(a)	1	150	0	19.00(a)
Std. Deviation		36.062	30.468	2.058	43.625	1.874	23.06994
Variance		1300.456	928.278	4.233	1903.167	3.511	532.222
Range		125	110	6	167	6	79.00
Minimum		46	36	0	77	0	19.00
Maximum		171	146	6	244	6	98.00
Percentiles	10	48.40	40.90	.10	79.70	.00	19.0000
	25	85.00	93.25	1.00	119.00	.00	21.2500
	50	108.00	107.50	2.50	147.50	.00	33.5000
	75	129.50	127.50	5.00	156.25	1.00	42.7500
	90	168.50	144.90	5.90	235.30	5.50	93.0000

a Multiple modes exist. The smallest value is shown

Table 16.
School 2, Grade 5 Results

School 2, Grade 5		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	16	16	16	16	16	16
	Missing	0	0	0	0	0	0
Mean		116.00	123.56	3.25	152.69	1.44	29.1250
Median		117.50	131.00	2.50	158.00	1.00	30.0000
Mode		52(a)	150	0(a)	75(a)	0	20.00(a)
Std. Deviation		39.831	39.258	3.066	40.098	1.504	9.70824
Variance		1586.533	1541.196	9.400	1607.829	2.263	94.250
Range		138	127	11	130	4	35.00
Minimum		52	53	0	75	0	12.00
Maximum		190	180	11	205	4	47.00
Percentiles	10	56.90	59.30	.00	89.70	.00	14.8000
	25	90.00	85.00	1.00	116.25	.00	20.5000
	50	117.50	131.00	2.50	158.00	1.00	30.0000
	75	151.50	152.25	5.00	185.75	2.00	36.7500
	90	166.90	172.30	8.20	199.40	4.00	42.8000

a Multiple modes exist. The smallest value is shown

Table 17.
School 3, Grade 1 Results

School 3, Grade 1		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	6	6	6	6	6	6
	Missing	0	0	0	0	0	0
Mean		35.17	32.67	7.50	59.50	4.83	26.8333
Median		24.50	23.50	6.50	59.50	4.00	28.5000
Mode		7(a)	6(a)	2(a)	11	1(a)	2.00(a)
Std. Deviation		31.378	29.514	5.167	47.660	3.971	20.79824
Variance		984.567	871.067	26.700	2271.500	15.767	432.567
Range		77	74	13	115	10	49.00
Minimum		7	6	2	11	1	2.00
Maximum		84	80	15	126	11	51.00
Percentiles	10	7.00	6.00	2.00	11.00	1.00	2.0000
	25	8.50	8.25	2.75	11.00	1.00	4.2500
	50	24.50	23.50	6.50	59.50	4.00	28.5000
	75	67.50	60.50	12.75	99.00	8.75	47.2500
	90	84.00	80.00	15.00	126.00	11.00	51.0000

a Multiple modes exist. The smallest value is shown

Table 18.
School 3, Grade 2 Results

School 3, Grade 2		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	6	6	6	6	6	6
	Missing	0	0	0	0	0	0
Mean		72.50	67.00	4.67	99.33	1.50	32.3333
Median		50.50	45.50	4.00	84.50	1.00	30.5000
Mode		20(a)	22(a)	1	34(a)	0(a)	8.00(a)
Std. Deviation		66.551	60.524	3.882	76.083	1.643	18.45716
Variance		4429.100	3663.200	15.067	5788.667	2.700	340.667
Range		175	161	9	208	4	51.00
Minimum		20	22	1	34	0	8.00
Maximum		195	183	10	242	4	59.00
Percentiles	10	20.00	22.00	1.00	34.00	.00	8.0000
	25	21.50	25.00	1.00	39.25	.00	16.2500
	50	50.50	45.50	4.00	84.50	1.00	30.5000
	75	121.50	105.75	8.50	143.00	3.25	50.0000
	90	195.00	183.00	10.00	242.00	4.00	59.0000

a Multiple modes exist. The smallest value is shown

Table 19.
School 3, Grade 3 Results

School 3, Grade 3		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	6	6	6	6	6	6
	Missing	0	0	0	0	0	0
Mean		97.67	89.50	3.33	119.67	2.00	30.1667
Median		97.00	94.00	3.00	114.50	2.50	28.0000
Mode		64(a)	50(a)	1(a)	112	3	20.00(a)
Std. Deviation		23.645	23.552	3.141	27.804	1.265	11.01665
Variance		559.067	554.700	9.867	773.067	1.600	121.367
Range		70	71	8	85	3	29.00
Minimum		64	50	0	85	0	20.00
Maximum		134	121	8	170	3	49.00
Percentiles	10	64.00	50.00	.00	85.00	.00	20.0000
	25	79.00	72.50	.75	105.25	.75	20.7500
	50	97.00	94.00	3.00	114.50	2.50	28.0000
	75	116.00	103.75	5.75	134.00	3.00	38.5000
	90	134.00	121.00	8.00	170.00	3.00	49.0000

a Multiple modes exist. The smallest value is shown

Table 20.
School 3, Grade 4 Results

School 3, Grade 4		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	6	6	6	6	6	6
	Missing	0	0	0	0	0	0
Mean		104.17	100.33	6.33	130.50	1.83	30.1667
Median		112.00	110.00	6.50	136.00	1.50	30.0000
Mode		38(a)	47(a)	3(a)	83(a)	1(a)	12.00(a)
Std. Deviation		41.806	41.659	2.160	38.991	1.722	13.45239
Variance		1747.767	1735.467	4.667	1520.300	2.967	180.967
Range		122	105	6	100	5	35.00
Minimum		38	47	3	83	0	12.00
Maximum		160	152	9	183	5	47.00
Percentiles	10	38.00	47.00	3.00	83.00	.00	12.0000
	25	68.00	52.25	4.50	88.25	.75	17.2500
	50	112.00	110.00	6.50	136.00	1.50	30.0000
	75	133.75	134.75	8.25	162.00	2.75	44.0000
	90	160.00	152.00	9.00	183.00	5.00	47.0000

a Multiple modes exist. The smallest value is shown

Table 21.
School 3, Grade 5 Results

School 3, Grade 5		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	6	6	6	6	6	6
	Missing	0	0	0	0	0	0
Mean		116.00	122.83	2.17	158.33	1.00	35.5000
Median		119.00	128.00	2.50	165.50	.50	32.5000
Mode		119	62(a)	3	71(a)	0	9.00(a)
Std. Deviation		38.554	40.087	1.472	51.837	1.265	25.85150
Variance		1486.400	1606.967	2.167	2687.067	1.600	668.300
Range		117	122	4	156	3	69.00
Minimum		58	62	0	71	0	9.00
Maximum		175	184	4	227	3	78.00
Percentiles	10	58.00	62.00	.00	71.00	.00	9.0000
	25	86.50	92.00	.75	123.50	.00	12.7500
	50	119.00	128.00	2.50	165.50	.50	32.5000
	75	140.50	145.75	3.25	191.75	2.25	54.7500
	90	175.00	184.00	4.00	227.00	3.00	78.0000

a Multiple modes exist. The smallest value is shown

Table 22.
School 4, Grade 1 Results

School 4, Grade 1		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	7	7	7	7	7	7
	Missing	0	0	0	0	0	0
Mean		51.86	45.14	3.86	70.43	1.29	25.2857
Median		39.00	36.00	3.00	58.00	1.00	22.0000
Mode		80	65	3	25(a)	0	4.00(a)
Std. Deviation		35.681	25.628	2.610	38.078	1.604	16.27590
Variance		1273.143	656.810	6.810	1449.952	2.571	264.905
Range		90	66	8	116	4	54.00
Minimum		14	17	1	25	0	4.00
Maximum		104	83	9	141	4	58.00
Percentiles	10	14.00	17.00	1.00	25.00	.00	4.0000
	25	17.00	21.00	2.00	41.00	.00	20.0000
	50	39.00	36.00	3.00	58.00	1.00	22.0000
	75	80.00	65.00	5.00	86.00	3.00	28.0000
	90	104.00	83.00	9.00	141.00	4.00	58.0000

a Multiple modes exist. The smallest value is shown

Table 23.
School 4, Grade 2 Results

School 4, Grade 2		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	10	10	10	10	10	10
	Missing	0	0	0	0	0	0
Mean		91.70	83.40	3.20	114.40	1.00	31.0000
Median		77.00	80.00	3.00	104.00	.50	28.0000
Mode		54(a)	40(a)	0(a)	68(a)	0	1.00(a)
Std. Deviation		33.207	31.131	2.936	47.284	1.414	26.42810
Variance		1102.678	969.156	8.622	2235.822	2.000	698.444
Range		101	97	10	157	4	90.00
Minimum		54	40	0	68	0	1.00
Maximum		155	137	10	225	4	91.00
Percentiles	10	55.10	41.70	.00	68.10	.00	1.6000
	25	68.00	63.00	.75	78.75	.00	7.7500
	50	77.00	80.00	3.00	104.00	.50	28.0000
	75	113.50	99.50	4.25	137.50	1.50	44.2500
	90	153.40	136.70	9.50	217.90	3.90	86.4000

a Multiple modes exist. The smallest value is shown

Table 24.
School 4, Grade 3 Results

School 4, Grade 3		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	11	11	11	11	11	11
	Missing	0	0	0	0	0	0
Mean		111.82	98.09	2.55	134.18	1.45	36.0909
Median		98.00	92.00	1.00	123.00	1.00	35.0000
Mode		95	51(a)	1	95(a)	0	31.00(a)
Std. Deviation		30.656	30.901	3.110	30.574	2.659	12.54954
Variance		939.764	954.891	9.673	934.764	7.073	157.491
Range		89	105	10	96	9	43.00
Minimum		79	51	0	95	0	20.00
Maximum		168	156	10	191	9	63.00
Percentiles	10	79.80	54.40	.20	97.40	.00	20.6000
	25	86.00	72.00	1.00	111.00	.00	26.0000
	50	98.00	92.00	1.00	123.00	1.00	35.0000
	75	146.00	122.00	3.00	163.00	1.00	44.0000
	90	165.00	152.20	9.40	186.80	7.80	60.4000

a Multiple modes exist. The smallest value is shown

Table 25.
School 4, Grade 4 Results

School 4, Grade 4		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	8	8	8	8	8	8
	Missing	0	0	0	0	0	0
Mean		125.63	113.63	2.88	155.63	1.38	42.0000
Median		125.50	114.50	1.50	162.50	.50	37.5000
Mode		59(a)	56(a)	1	95(a)	0	36.00
Std. Deviation		37.029	36.127	3.091	44.938	1.685	16.80136
Variance		1371.125	1305.125	9.554	2019.411	2.839	282.286
Range		120	107	9	108	4	58.00
Minimum		59	56	0	95	0	17.00
Maximum		179	163	9	203	4	75.00
Percentiles	10	59.00	56.00	.00	95.00	.00	17.0000
	25	104.50	86.50	1.00	111.25	.00	36.0000
	50	125.50	114.50	1.50	162.50	.50	37.5000
	75	154.50	143.75	5.25	197.75	3.00	51.2500
	90	179.00	163.00	9.00	203.00	4.00	75.0000

a Multiple modes exist. The smallest value is shown

Table 26.
School 4, Grade 5 Results

School 4, Grade 5		ORF/RCT Score B3	Overall Cold	Overall Cold Errors	Overall Hot	Overall Hot Errors	Overall Gain
N	Valid	7	9	9	9	9	9
	Missing	2	0	0	0	0	0
Mean		132.71	134.00	1.67	162.78	1.67	28.7778
Median		131.00	134.00	1.00	155.00	.00	25.0000
Mode		79(a)	74(a)	0(a)	109(a)	0	24.00
Std. Deviation		32.857	36.435	2.236	35.860	2.693	13.59943
Variance		1079.571	1327.500	5.000	1285.944	7.250	184.944
Range		97	105	7	104	8	42.00
Minimum		79	74	0	109	0	11.00
Maximum		176	179	7	213	8	53.00
Percentiles	10	79.00	74.00	.00	109.00	.00	11.0000
	25	115.00	105.00	.00	134.50	.00	19.5000
	50	131.00	134.00	1.00	155.00	.00	25.0000
	75	166.00	168.00	2.50	196.50	3.00	40.0000
	90	176.00	179.00	7.00	213.00	8.00	53.0000

a Multiple modes exist. The smallest value is shown

Discussion

The purpose of gathering data from students in grades one through five during the Fluency Reading Project was to determine the average increase in words read between a cold read to a hot read. Both means and medians for the cold read were compared to the overall gain in words between the cold and hot read to come up with the suggested ranges of words per minute (WPM) and the gain, expressed in the percentage of the cold read WPM. The following table, Table 27, illustrates the goals for increase. The 90th percentile based on the 1995 Hasbrouck and Tindal Oral Reading Fluency norms will be used as the level goal for the passages. Level goals are displayed in Table 28.

Table 27.
Passage Goal Increase

Cold Read WPM	% of Increase
0 to 40 WPM	85%
41 to 60 WPM	65%
61 to 80 WPM	40%
81 to 120 WPM	30%
121 to 150 WPM	25%
>150 WPM	20%

Table 28.
Level Goals

Grade Level	WPM Cut Off Winter/Spring
1	81/111 wpm
2	125/142wpm
3	146/162 wpm
4	166/180 wpm
5	182/194 wpm

The information gathered in the Fluency Reading Project is needed to set realistic goals for students using the online fluency product. When students read a passage, a goal for that passage will be established based on the initial or cold read. The student will need to meet or exceed that goal to successfully complete that passage, get the reward for finishing the passage, and move onto the next passage. Establishing realistic passage goals is critical to challenging students, but also allowing students to experience success and keeping them motivated to continue to use the technology product.

References

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