



The effectiveness of istation in a school: East Baton Rouge Parish School System

Alan C. Bugbee, Ph.D.
November 2011

The effectiveness of iStation in a school:
East Baton Rouge Parish School System

Alan C. Bugbee, Ph.D.

November 2011

The East Baton Rouge Parish in Louisiana was greatly affected by the influx of students after Hurricane Katrina devastated New Orleans in 2005. Their work in helping the new students, plus improving their own students, is well known (“Riverside Success Story,” EduSoft Assessment Management System, Riverside Publishing). In May 2011, iStation received an inquiry from Liz Frischhertz, Chief Officer for Accountability and Assessment at East Baton Rouge Parish School System. One of the principals within her school district –Sheridan H. Harris of Wedgewood Elementary School– adopted the iStation program for Pre-Kindergarten through Fifth Grade, the grades within Wedgewood. Ms. Frischhertz asked if iStation could help examine the effectiveness of its program at Wedgewood.

Wedgewood Elementary School was ranked as the 442 of 642 Louisiana public schools (School Digger, 2011). The East Baton Rouge School District is ranked 60th among the 88 Louisiana school districts. In the 2009-2010 school year, Wedgewood had 648 students. Of these students, 564 (87%) are eligible for discounted and/or free lunch. The student body is 81.2% African American, 13.7% White, 2.2% Hispanic, 2.8% Asian/Pacific Islander, and 0.2% American Indian. Wedgewood has 50 fulltime teachers, for a student/teacher ratio of 12.9. It seems to have been effected by “white flight” in the 1990’s, the largest changes in student population beginning in 1999 (Bankston & Caldas, 2002, p. 83; Caldas & Bankston, 2001). The shift from being a school with a majority of white students to a majority of black students appears to have occurred in 2004 (School Digger, 2011). From its background, Wedgewood Elementary School was an excellent candidate to study the effectiveness of iStation’s Indicators of Progress (ISIP) in Reading.

After the initial professional development training, the teachers began using the assessment and reading intervention program with all students at this school. The reading coach and teachers of Wedgewood used iStation as their RTI program. As early as December 2010, the teachers began seeing great improvement in their students. The Chief Officer for Accountability, Assessment & Evaluation wanted to see how effective the iStation software was for this school. This is when she contacted iStation to help her find a way to examine the effect of the iStation ISIP products with the students in Wedgewood Elementary School. This report is the product of her request.

This study compares students on their beginning and ending scores on the EduSoft *English Language Arts (ELA)* assessment. Wedgewood Elementary uses the EduSoft *ELA*, as do all

schools in East Baton Rouge. Data for each grade level was provided by the office of Assessment and Accountability to analyze the effect of iStation on students in Grade 1 to Grade 5. All of the students used iStation software during the 2010-2011 school year. The outcomes for each grade level, first through fifth, are examined in two ways, **Score Differences** and **Gains**.

Score Differences: This part of the study uses all of the available scores for the students who took the test during the period shown. These data are presented in graphic form in two pie charts. The first chart in each figure shows the results of the EduSoft *ELA* from early Fall 2010 (referred to as pre-test). The second chart shows the spring 2011 EduSoft *ELA* results (post-test). These graphs show the percentage of Wedgewood students for a grade within the respective Louisiana Achievement Levels, as defined in Table 1. Each grade level has a brief narrative accompanying the charts. The Appendix shows the statistics for these graphs. To save space and avoid confusion over multiple tables applying to the same students, the statistical tables are aggregated using both data sets for each grade. In order to provide a meaningful comparison, these graphs contain only the students who took both pre- and post-tests. The graphs reflect the level of the students based on their results.¹

Table 1
Achievement Levels

Achievement Level	Definition
<i>Advanced</i>	A student at this level has demonstrated superior performance beyond the proficiency level of mastery.
<i>Mastery</i>	A student at this level has demonstrated competency over challenging subject matter and is well prepared for the next level of schooling
<i>Basic</i>	A student at this level has demonstrated only the fundamental knowledge and skills needed for the next level of schooling.
<i>Approaching Basic</i>	A student at this level has only partially demonstrated the fundamental knowledge and skills needed for the next level of schooling.
<i>Unsatisfactory</i>	A student at this level has not demonstrated the fundamental knowledge and skills needed for the next level of schooling.

These are the five possible achievement levels for the Louisiana examinations *iLEAP*, the 4th and 8th grade LEAP, and the Graduate Exit Exam.

¹ Color-coding format courtesy of Melissa Craven.

Gains: This part of the study examines only those students for whom both pre- and post-test scores were available. Like the Score Difference section, this section also presents pie charts. However, these charts show more in-depth information about the differences between the pre-test and the post-tests for each grade level. This section looks at the degree of gain (and, in some cases, loss²) between the two tests. Each grade level is addressed with a combined chart with a graph and a statistical table. The charts show the degree of change from pre-test to post-test. Because there are five levels of achievement possible for the EduSoft *ELA* scores in the Louisiana schools (Table 1), the largest possible gain is “Advance 4 levels.” This would only occur (as it does in First Grade) if a student went from “Unsatisfactory” on the pretest to “Advanced” on the post-test. The same could happen, at least theoretically, in reverse, although this did not occur. The other ranges are “Advance three levels,” “Advance two levels,” “Advance one level,” “No Change,” and “Loss.” “Loss” refers to a decline of one level. In all cases except Fourth Grade, this refers to a single student in each grade. In Fourth Grade, four students declined one level and one student declined two levels.

The Gain section also presents information on the percentage of gains, weighted and unweighted. The unweighted gains are the cumulative percentage of students who advanced one or more levels. They are unadjusted for the number of levels of advancement. They are the summation of the number of students who showed gains from pre-test to post-test divided by the total number of students. Their value cannot exceed 100% for each grade.

Weighted gains take the degree of advancement into account. The number of students showing gain at a particular level is multiplied by the number of the levels for which they show gain. For example, if 10 students were shown as gaining two levels, the value for that level would be counted as 20 (10 students*2 levels). The total weighted sum for all groups is divided by the total number of students. This is why the number can exceed 100%, as is the case in First, Second, and Third Grades. This calculation also assigns negative weight to losses. For this reason, it is theoretically possible to have a negative percentage gain. However, there is nothing close to this in these analyses.

Another aspect of the analysis that is included in the section is a closer look at “No Change.” This examines what this category means in this context; to see what “No Change” actually means in this circumstance. Naturally, it is undesirable for a student to start with an “Unsatisfactory” rating and end at the same place. “No Change” under these circumstances is bad. However, what is the case when a student begins the school year with an “Advanced” rating and ends the year with the same rating? Obviously, “No Change” in these two cases has a very different meaning. In order to avoid these two distinctly dissimilar meanings from being lumped together, a more detailed inspection of “No Change” was conducted. This section compares the

² The largest loss was in Fourth Grade where one student went from “Basic” to “Unsatisfactory.”

levels of the students across grades 1 to 5. It pays particular attention to how many of these students were shown to have a rating of Basic or better.

Results

Score Differences

First Grade: At the time of the pre-test, almost 90% of Wedgewood Elementary School's first graders were below Basic in Reading (Figure 1). More first graders had an "Unsatisfactory" rating (42.03%) than any other category. At the time of the post-test, a radical change had taken place. Over 75% (76.4) of the students had a rating of "Basic" or better. Indeed, Basic had become the largest category, followed by "Mastery" and then by "Advanced." While the fact that about 24% of the students were still below "Basic" is undesirable, the much larger positive change is quite notable.

Second Grade: Of all of the grades from Wedgewood Elementary School, Second Grade showed the largest changes (Figure 2). At the time of the pre-test, 65% of the students were "Unsatisfactory" in Reading. An additional 12% were "Approaching Basic." Twenty percent of these students were "Basic" and about 3% were in the "Mastery" category. At the time of the post-test, almost 80% of the students obtained a rating of "Basic" or higher. One third of the Wedgewood second graders had a rating of "Mastery" and about 8% had a rating of "Advanced." About 20% of the students were rated as being below "Basic."

Third Grade: About 58% of the third graders were rated as "Unsatisfactory" on the pre-test, and about 26% were rated as "Approaching Basic" (Figure 3). This is to say that about 83% of the Wedgewood third graders were below "Basic" on the first *ELA* examination. The post-test scores in Reading showed a large gain. Sixty three percent of the third graders received a rating of "Basic" or higher on the post-test. Of these, 35% obtained "Basic" rating, 18% obtained "Mastery," and about 10% obtained the highest rating, "Advanced."

Fourth Grade: This is the only grade where less than half of the students are below "Basic" on the pre-test (Figure 4). Indeed, almost 42% of the students have a "Basic" rating. An additional 13% are classified as "Mastery." The second largest rating is "Approaching Basic." Around 16% of the students are rated as "Unsatisfactory on the pre-test.

Because of these pre-testing ratings, the changes on the post-test, while still large, are not as striking as the other grades. Over 50% of the fourth grade students (53.01%) at Wedgewood have a "Basic" rating. This is the largest percentage with this rating in any of the grade levels, as was also the case in pre-test results. Twenty-five percent have a "Mastery" ranking and about four percent have an "Advanced" rating. Collectively, about 82% of the fourth graders at Wedgewood have a "Basic" or better classification.

Fifth Grade: Sixty percent of the fifth graders were below “Basic” on the pre-test (Figure 5). A relatively large percentage (27.06%) had a rating of “Basic.” An additional 13% had a rating of “Mastery.” This is similar to the fourth grade pre-test levels. The largest percentage of students in fifth grade received a ranking of “Approaching Basic” on the pre-test (38.82%). “Unsatisfactory” was the third highest percentage (21.18%), which is also consistent with the order of rankings in the fourth grade.

Sixty-two percent of the fifth grade students were at or above “Basic” on the post-test, a reversal of the pre-test arrangement. Unfortunately, 38% were below “Basic.” This is the highest percentage among the five grades studied here.

Figure 1: First Grade Pre-Test and Post-Test Scores on *ELA* Reading Test

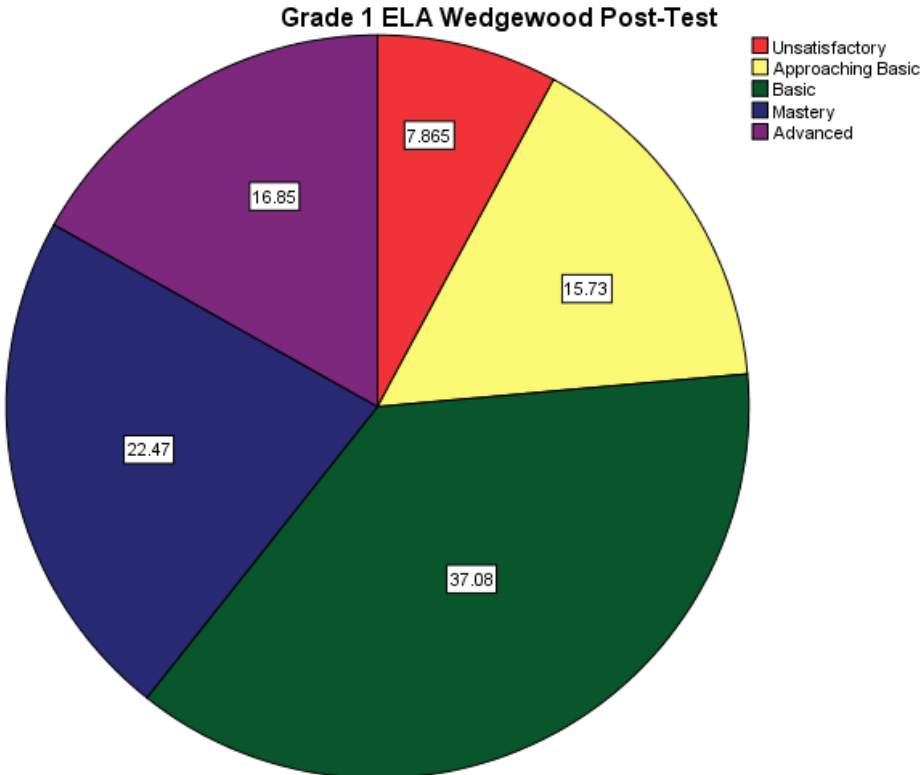
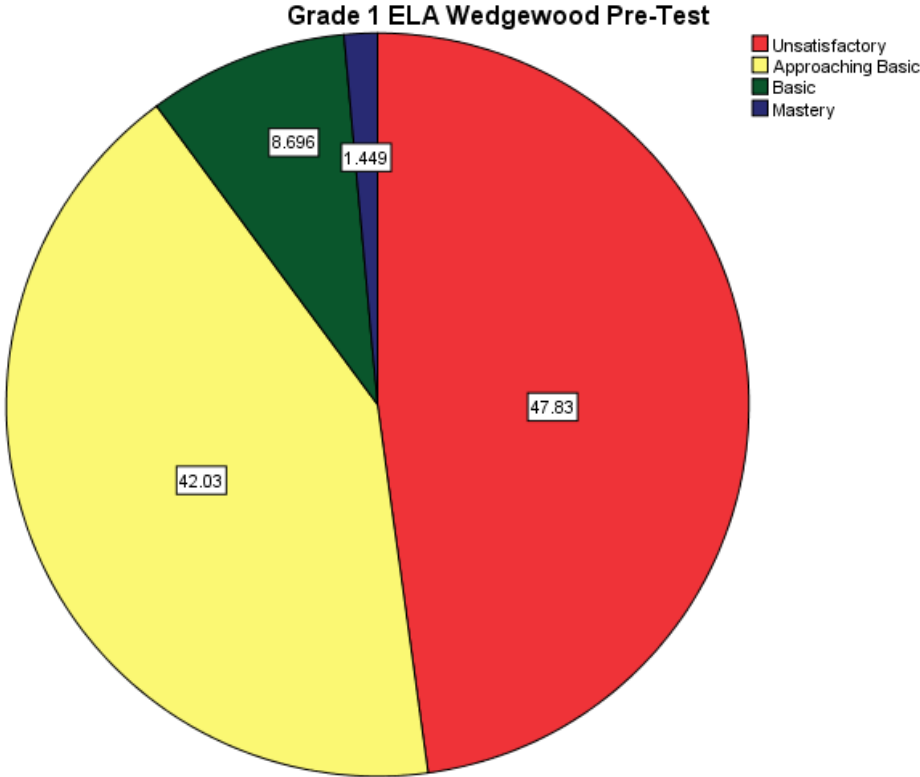


Figure 1: Second Grade Pre-Test and Post-Test Scores on *ELA* Reading Test

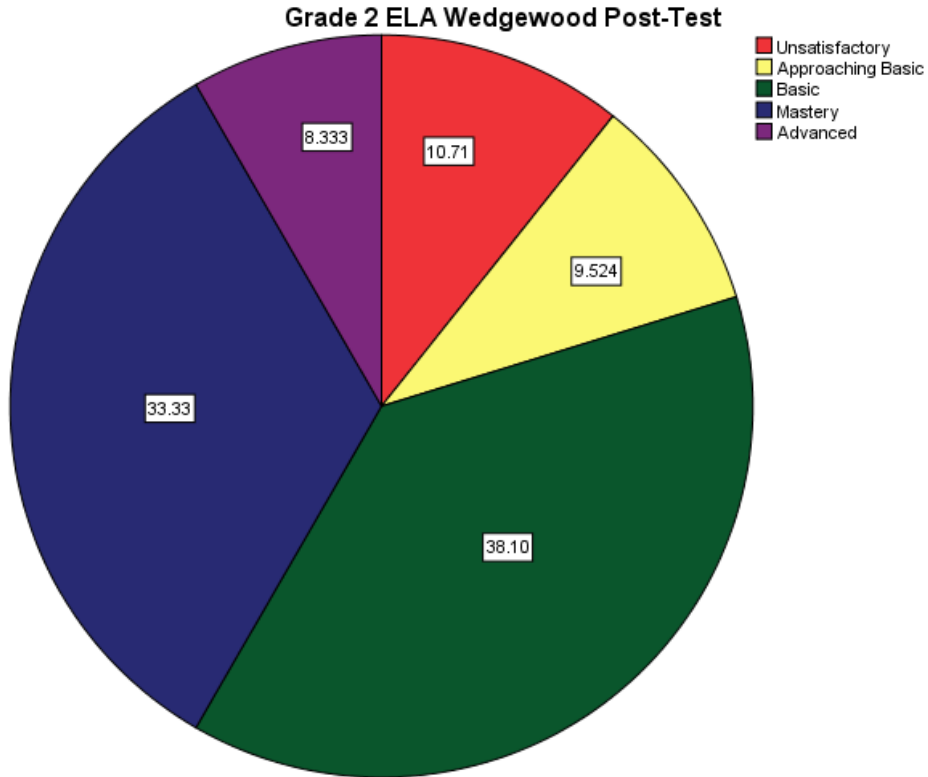
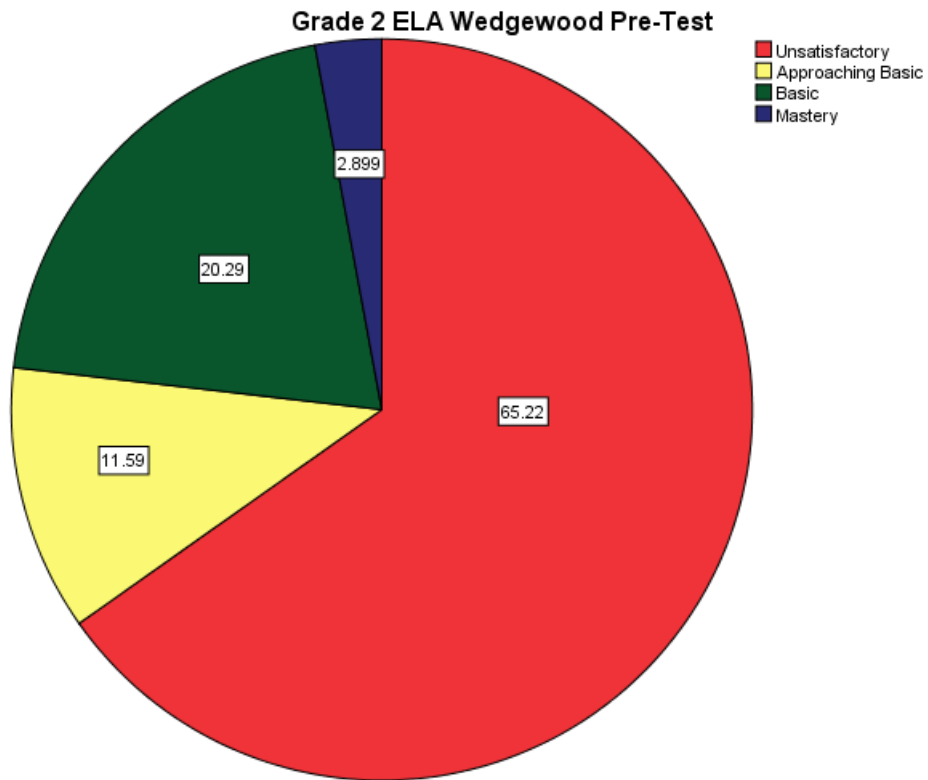


Figure 3: Third Grade Pre-Test and Post-Test Scores on *ELA* Reading Test

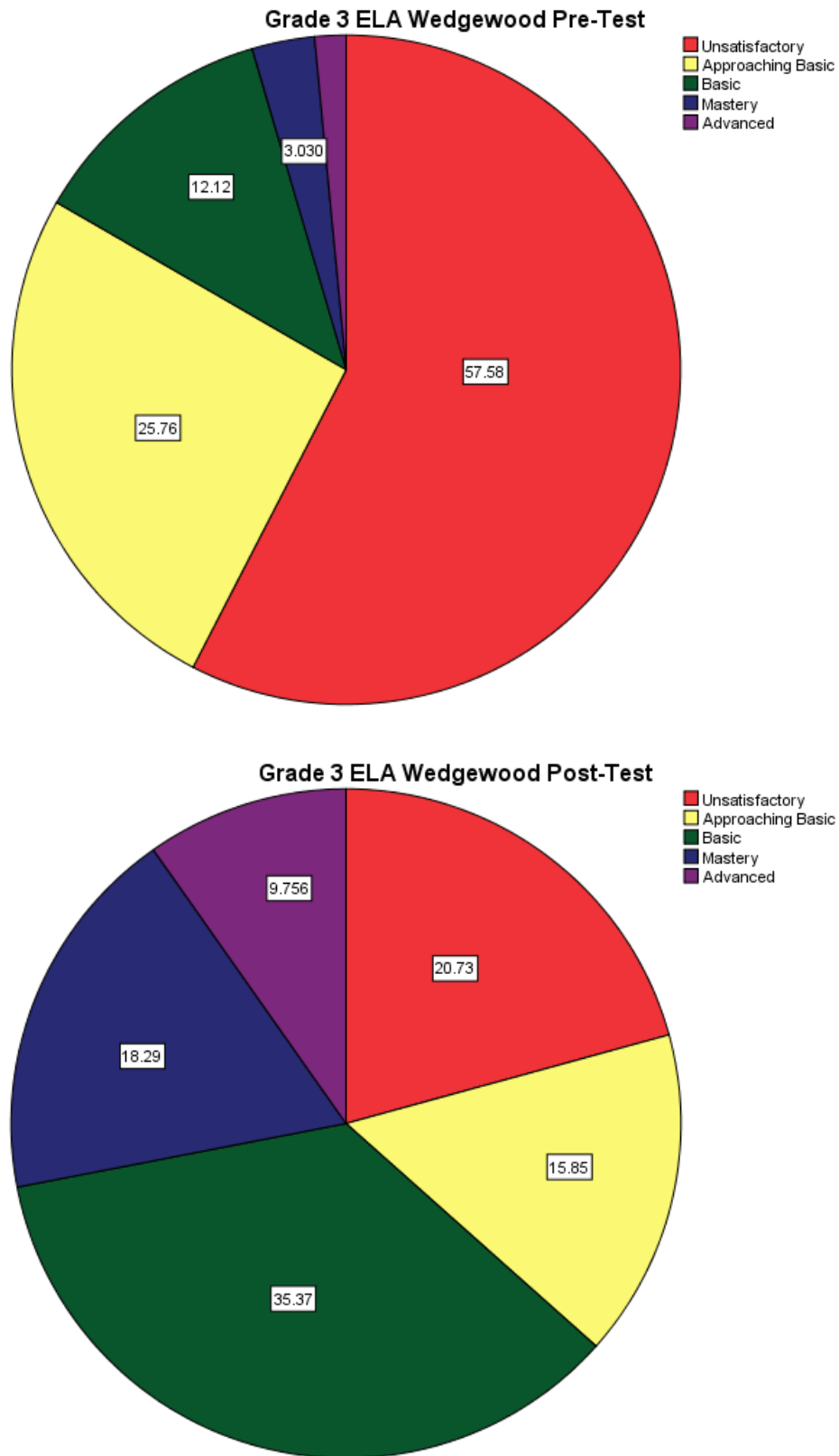


Figure 4: Fourth Grade Pre-Test and Post-Test Scores on *ELA* Reading Test

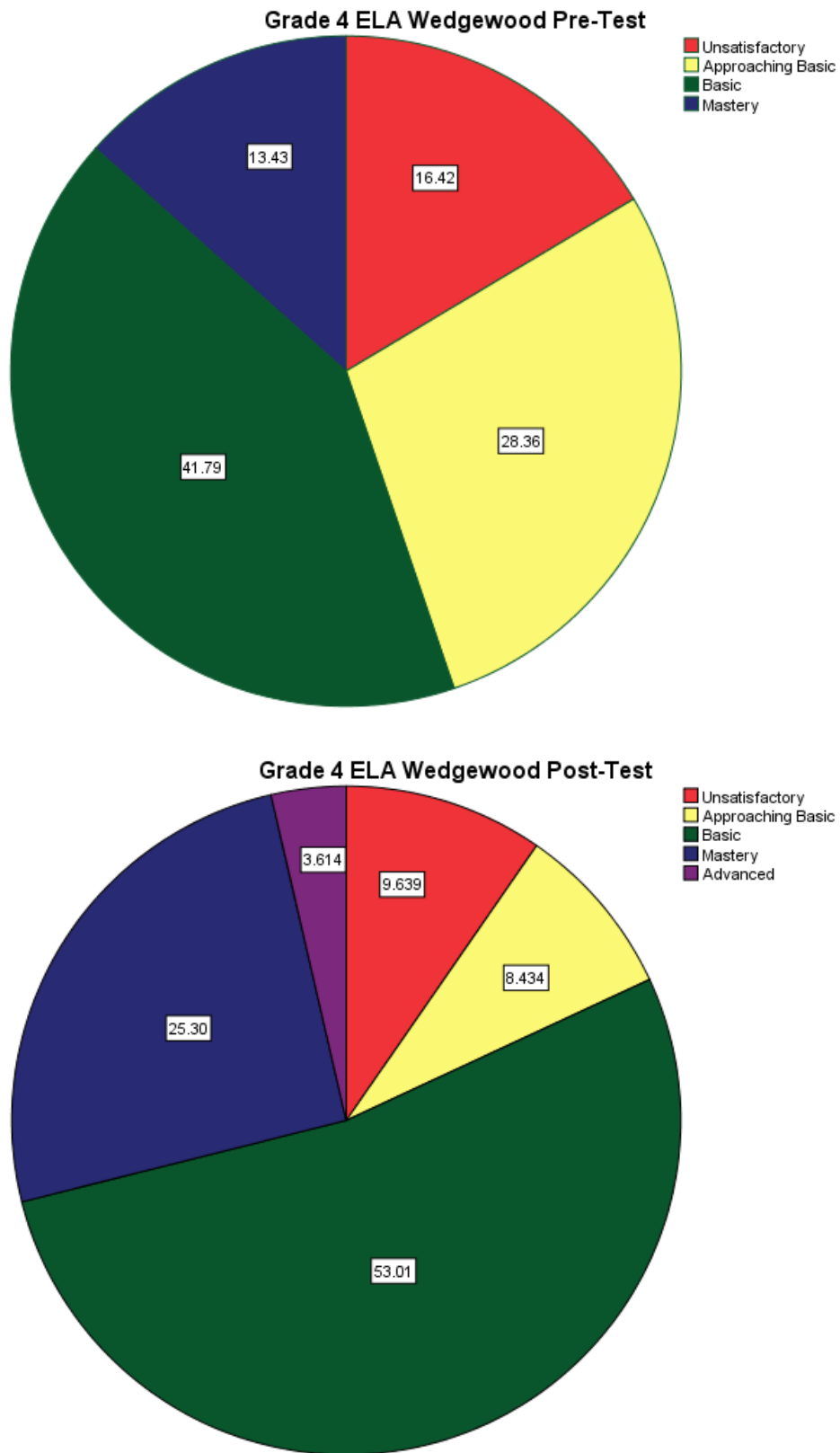
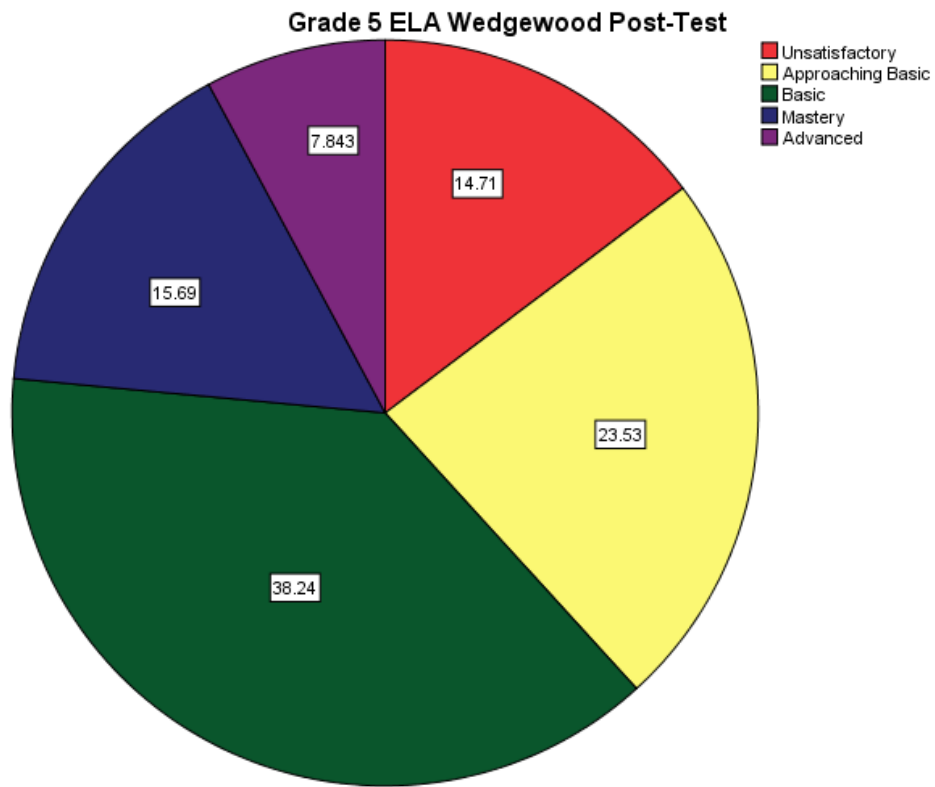
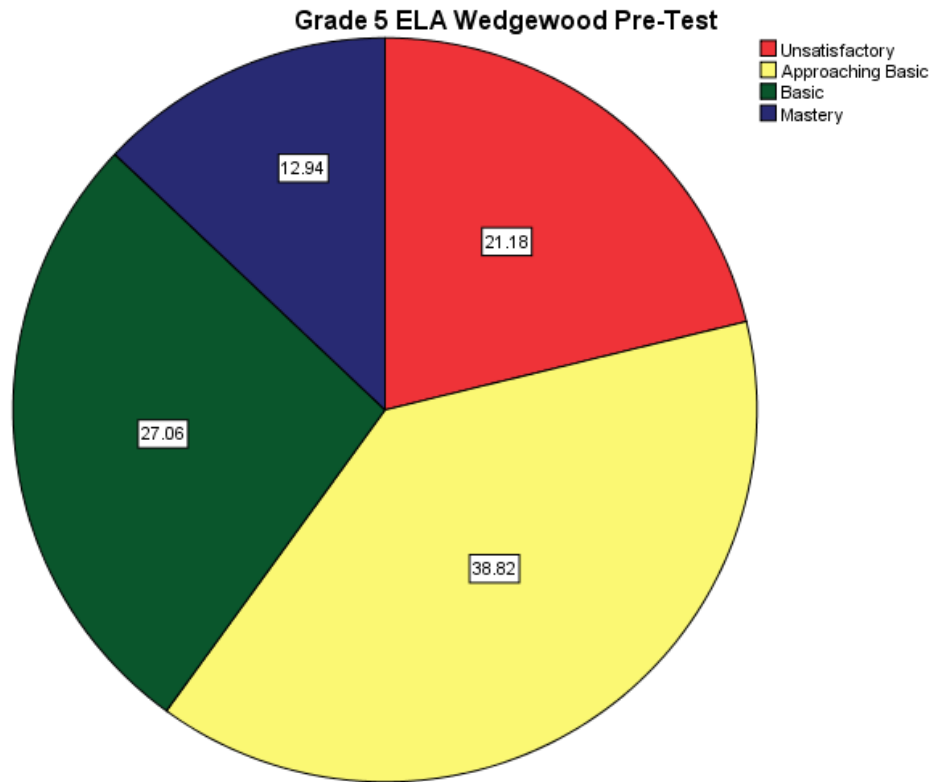


Figure 5: Fifth Grade Pre-Test and Post-Test Scores on *ELA* Reading Test



Gains

First Grade: The further analyses of these changes show that 83.7% of the first graders at Wedgewood gained at least one level. A remarkable 6% gained four levels, which is to say that they went from “Unsatisfactory” to “Advanced.” As the graph shows (Figure 6), positive change is the rule. Unfortunately, one student (1.1%) declined by one level. This student moved from “Basic” to “Approaching Basic” from the pre-test to the post-test. Almost 15% of the first graders showed “No Change” from pre-test to post-test.

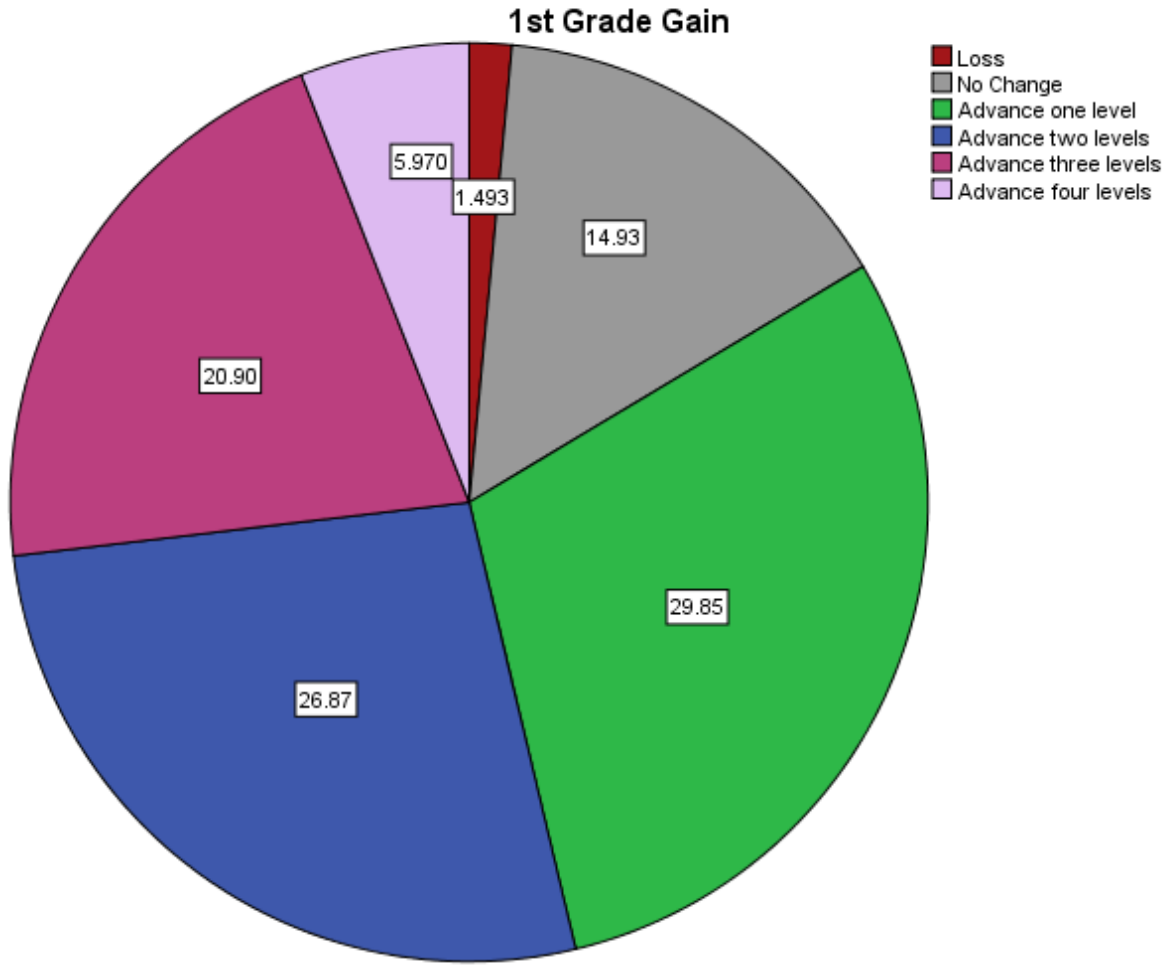
Second Grade: No second grader showed a loss of level during this period (Figure 7). About 15% of the students showed “No Change.” Over 85% showed a gain of at least one level. The largest category of gains (42.03%) was “Advance two levels,” followed by “Advance one level” (31.88%). Almost 12% of the second graders advanced three levels. Around 14% of these students showed “No Change” during this period.

Third Grade: Over three-quarters of the students in this grade (57.7%) showed a gain of at least one level from pre- to post-test, with five students (6.8%) gaining three levels. Approximately 21% of the Third Graders showed “No Change” from pre-test to post-test. Unfortunately, the third grade also showed 2.7% of loss. Two students went from a pre-test rating of “Approaching Basic” to a post-test rating of “Unsatisfactory.”

Fourth Grade: As previously noted, this is the only grade where a student decreased by two levels from pre- to post-test. One student went from “Basic” to “Unsatisfactory.” This is obviously a very bad decline. Four students in the fourth grade declined by one level. Among these students, one went from “Mastery” to “Basic” and one went from “Basic” to “Approaching Basic.” Two students went from “Approaching Basic” to “Unsatisfactory.” On the other hand, about 51 percent of the students in the fourth grade advanced at least one level. The largest advancement of three levels was for two students, both of whom went from “Unsatisfactory” to “Mastery.” About 12% advanced by two levels and about 36% advanced one level.

Fifth Grade: As discussed above, 38% of the Fifth Grade students were below “Basic” on the post-test. Part of the reason for this is that 56.67% of the students in fifth grade showed “No Change.” One student showed a loss of a level. This student went from “Approaching Basic” to “Unsatisfactory” during the time between the pre- and the post-tests. One third of the students showed a one level advance. Three students (5%) showed a two level advance and two students (3.3%) advanced three levels.

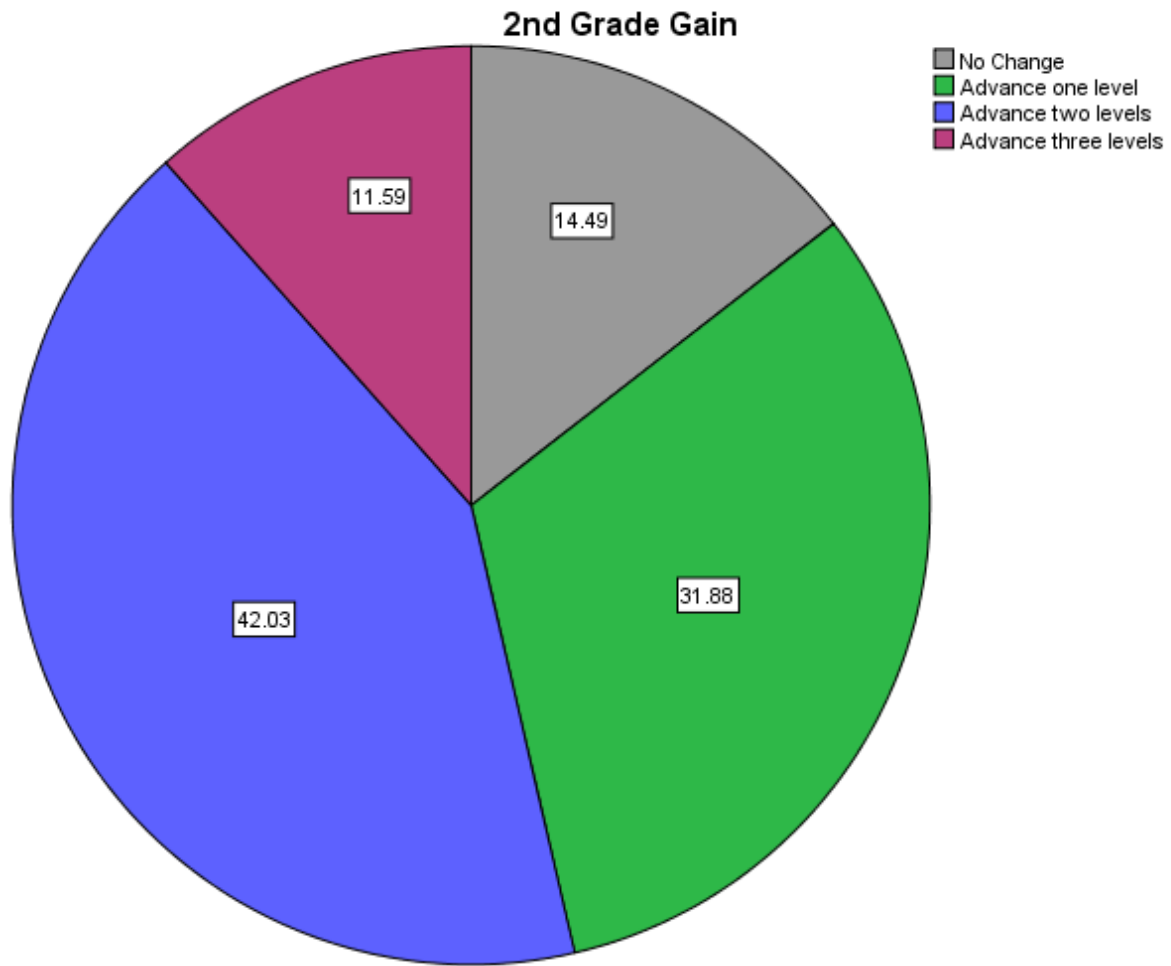
Figure 6: First Grade Gains on the *ELA* Reading Test



1st Grade Gain

	Frequency	Percent	Valid Percent	Cumulative Percent
Loss	1	1.1	1.5	1.5
No Change	10	11.0	14.9	16.4
Advance one level	20	22.0	29.9	46.3
Advance two levels	18	19.8	26.9	73.1
Advance three levels	14	15.4	20.9	94.0
Advance four levels	4	4.4	6.0	100.0
Total	67	73.6	100.0	
Missing	24	26.4		
Total	91	100.0		

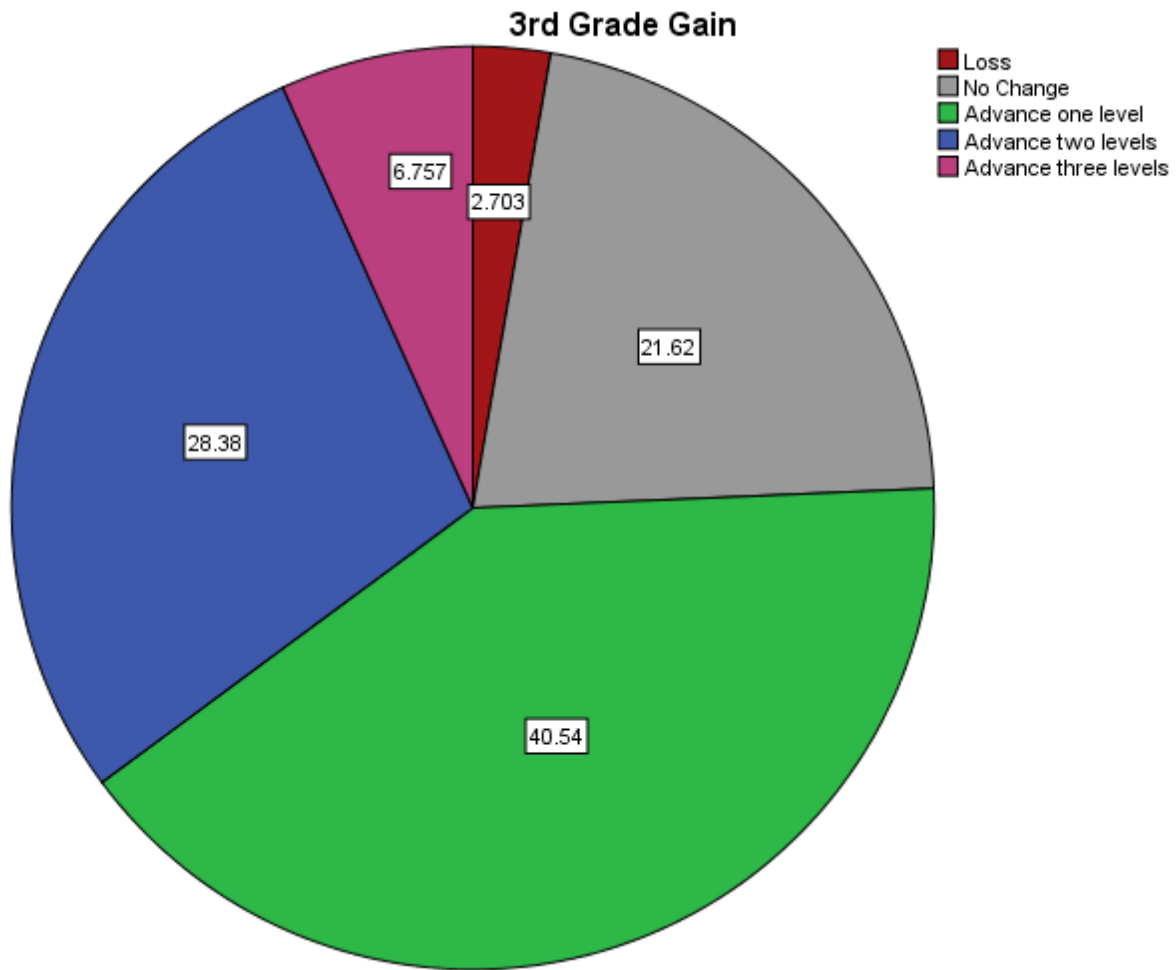
Figure 7: Second Grade Gains on the *ELA* Reading Test



2nd Grade Gain

	Frequency	Percent	Valid Percent	Cumulative Percent
No Change	10	11.9	14.5	14.5
Advance one level	22	26.2	31.9	46.4
Advance two levels	29	34.5	42.0	88.4
Advance three levels	8	9.5	11.6	100.0
Total	69	82.1	100.0	
Missing	15	17.9		
Total	84	100.0		

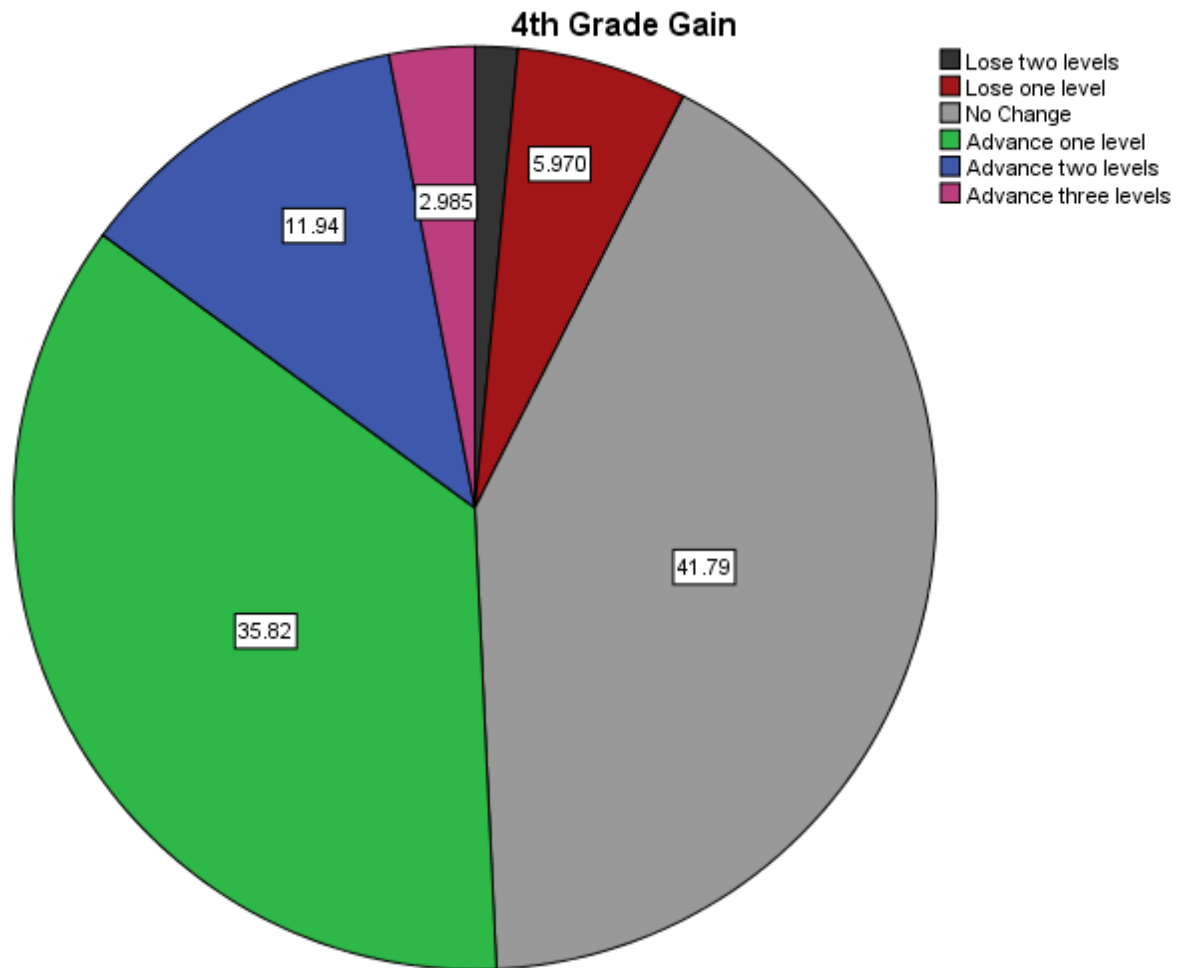
Figure 8: Third Grade Gains on the *ELA* Reading Test



3rd Grade Gain

	Frequency	Percent	Valid Percent	Cumulative Percent
Loss	2	1.9	2.7	2.7
No Change	16	15.5	21.6	24.3
Advance one level	30	29.1	40.5	64.9
Advance two levels	21	20.4	28.4	93.2
Advance three levels	5	4.9	6.8	100.0
Total	74	71.8	100.0	
Missing	29	28.2		
Total	103	100.0		

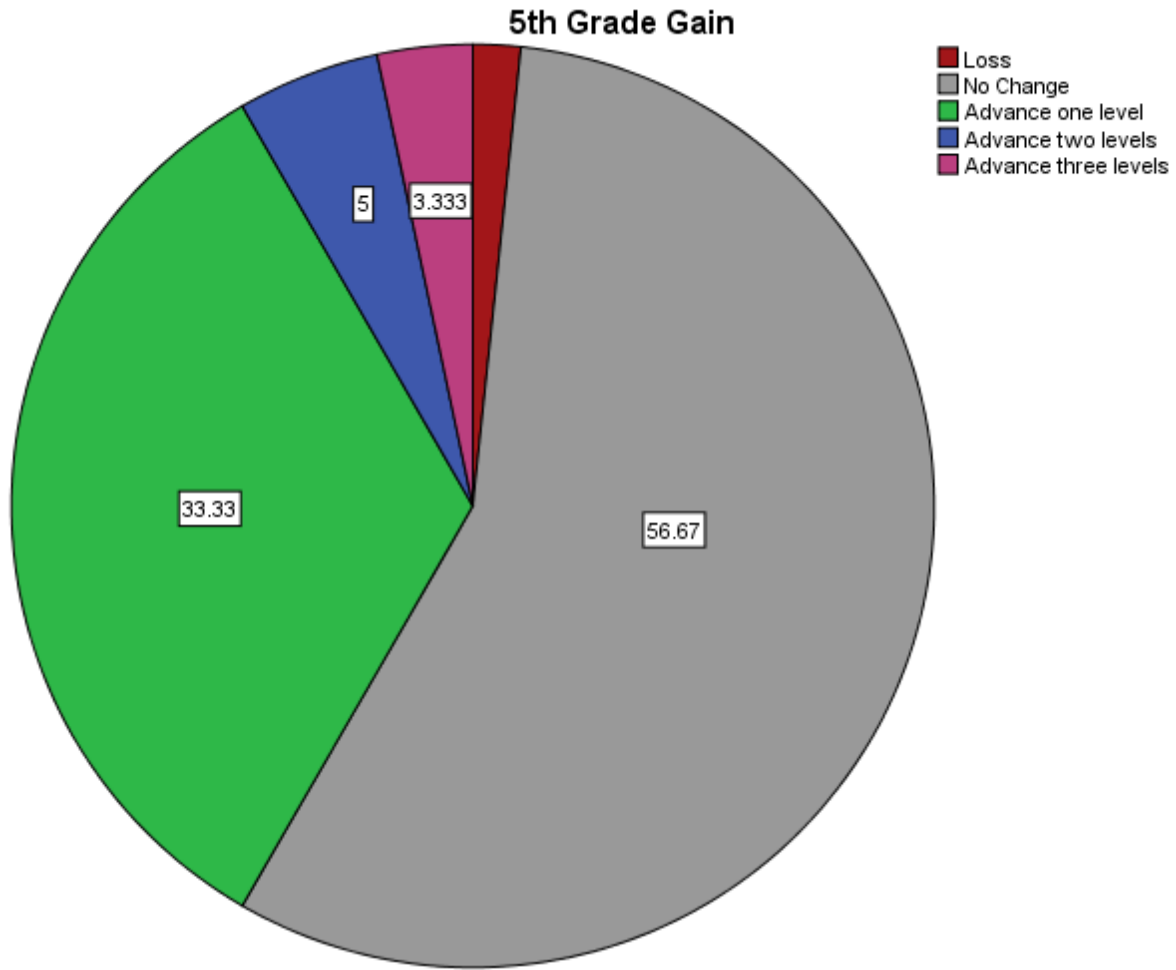
Figure 9: Fourth Grade Gains on the *ELA* Reading Test



4th Grade Gain

	Frequency	Percent	Valid Percent	Cumulative Percent
Lose two levels	1	1.2	1.5	1.5
Lose one level	4	4.8	6.0	7.5
No Change	28	33.7	41.8	49.3
Advance one level	24	28.9	35.8	85.1
Advance two levels	8	9.6	11.9	97.0
Advance three levels	2	2.4	3.0	100.0
Total	67	80.7	100.0	
Missing	16	19.3		
Total	83	100.0		

Figure 10: Fifth Grade Gains on the *ELA* Reading Test



5th Grade Gain

	Frequency	Percent	Valid Percent	Cumulative Percent
Loss	1	1.0	1.7	1.7
No Change	34	33.0	56.7	58.3
Advance one level	20	19.4	33.3	91.7
Advance two levels	3	2.9	5.0	96.7
Advance three levels	2	1.9	3.3	100.0
Total	60	58.3	100.0	
Missing	43	41.7		
Total	103	100.0		

Weighted and Unweighted Gains

Positive changes in Achievement Levels (Table 1) are a good thing. Negative changes in Achievement Levels are a bad thing. However, this alone does not necessarily give a complete picture of the movement between pre- and post-tests. While the graphs of pre-test and post-test ratings and those of Gain show changes from the beginning to the end of the respective grades, they do not show the magnitude of the changes. In order to help show a more total picture of the results, a comparison of the unweighted and weighted gain scores was made (Table 2).

When the extent of the advancement (or decline) is taken into account, a much larger difference is shown between pre- and post-test scores. It is interesting to notice that the weighted gains are related to the grades, in descending order. That is, the weighted gains for grade 1 are 171.6%. The weighted gains for grade 5 are 51.7%. All others are between these two in size, in descending order. This seems consistent with the changes and degree of changes that occur in school as children age. It is also interesting to note that the weighted changes do not exactly match the gradation of the unweighted changes. The highest degree of unweighted change is in Grade 2. The highest degree of weighted change is in Grade 1. This tends to indicate that a weighting of change gives a more accurate account of the effects between pre- and post-tests. The weighting also takes losses into account and gives a more rounded picture of the effects of the i station program on student learning.

Table 2: Level Gains Wedgewood Elementary 2010-2011

Grade	Weighted Gains*	Unweighted Gains**
First	171.6	83.6
Second	150.7	85.5
Third	114.9	75.7
Fourth	59.7	50.7
Fifth	51.7	41.7

*: Weighted Gains take the degree of advancement into account. The number of students showing a gain at a particular level is multiplied by the number of levels. For example, if 10 students were shown as gaining two levels, the value for that level would be counted as 20 (10 students*2 levels). The total weighted sum for all groups is divided by the total number. This is why the percentage of gain can exceed 100%.

** : Unweighted Gains are the sum of the numbers of gains divided by the total number. It may not exceed 100%.

No Change

Up to this point, the concentration of this study has been on the gains, and in some cases, losses, on the *ELA* assessment in Wedgewood Elementary School. As described above, this analysis is done to see what “No Change” means in the context of this study. In First Grade (Table 3), almost 15% of the students showed “No Change” from pre- to post-tests. Among this grade, four students retained the rating of “Unsatisfactory” and four retained “Approaching Basic.” However, two of these students retained the rating of “Satisfactory.” While this does not reduce the concern over students below “Basic” or obviate the need to concentrate on the lower

achievers, it does demonstrate that “No Change” is not necessarily negative. The specifics behind this rating need further examination before jumping to conclusions.

Table 3: No Change Levels

Grade	U	A B	Basic	Mastery	Adv	# No Change	Total #	# ≥ Basic	%No Change at Basic or Better
First	4	4	2	0	0	10	67	2	20
Second	9	0	1	0	0	10	69	1	10
Third	10	2	3	1	1	17	66	5	29.4
Fourth	3	3	16	6	0	28	67	22	78.6
Fifth	7	14	13	7	0	41	84	20	48.8

U: Unsatisfactory; A B: Approaching Basic; Adv: Advanced

Second Grade students, very much like First Grade students, showed “No Change” for about 14%. Here, nine of the students kept an “Unsatisfactory” rating, while one student retained a “Basic” rating. In Third Grade, the number of students showing “No Change” went up to nearly 22%. The largest number (10, 58.8%) of the students in this category stayed at “Unsatisfactory.” Two of the students (11.8%) retained an “Approaching Basic” rating. Three students (17.6%) kept their rating of “Basic.” One student (5.9%) kept a “Mastery” rating and one student (5.9%) kept an “Advanced” rating. Clearly, these two students cannot be viewed as a “failure” or error of the program, class, grade, or school. This is one distinct reason why further examination is sometimes needed before accurate conclusions.

Fourth Grade students are an excellent example of this caveat. More of them (78.6%) showed “No Change,” but were at or above “Basic” than those students who were either “Unsatisfactory” (10.7%) or “Approaching Basic” (10.7%). Clearly, in this case, “No Change” is not a bad thing or something that needs further concentration. The Fifth Grade has a large number of students (56.67%) who showed “No Change” between the pre-test and the post-test. Indeed, this is the largest number and percentage in this category for any of the grades at Wedgewood Elementary. However, a look at the levels of these students shows a somewhat different picture. Among the students showing “No Change,” 21 (51.2%) were in the “Unsatisfactory” or “Approaching Basic” categories. On the other hand, the other 20 students (49.8%) were in the “Basic” or the “Mastery” categories. The details behind the number again give a fuller picture.

Conclusion

This report does not deal in causal modeling or experimental manipulation to determine the effects of different types of treatment on the students in Wedgewood Elementary School. It is a descriptive study. As such, it describes what happened based on the data that was made available on the students within this school system.

The students at Wedgewood Elementary have an average pre-test/post-test growth of 64%, tremendously exceeding the district average of 19.4%. These gains were similarly seen with the LEAP Assessment with Wedgewood's 4th grade class rising 25 points in 2011 compared with 2010. Wedgewood Elementary also surpassed the state and district averages for *ELA* Reading proficiency. With proper implementation, the results of this study should be easy to replicate at other elementary schools in East Baton Rouge Parish. As the analyses have shown here, there is a clear improvement among students among students using iStation reading software in each grade.

References

Bankston, C. L., & Caldas, S. J. (2002). *A troubled dream: The promise and failure of school desegregation in Louisiana*. Nashville, TN: Vanderbilt University Press.

Caldas, S. J., & Bankston, C. L. (2001). Baton Rouge, desegregation, and white flight. *Research in the Schools*, 8(2), 21-32.

EduSoft Assessment Management System (2008), *East Baton Rouge Parish School System, Riverside Success Story*, Retrieved September 29, 2011, from http://www.riversidepublishing.com/products/edusoft/pdf/Baton_Rouge.pdf

School Digger (2011), *Wedgewood Elementary School*, Retrieved October 11, 2011, from <http://www.schooldigger.com/go/LA/schools/0054000440/school.aspx>

Appendix

Statistics

Grade 1 ELA Post-Test * Grade 1 ELA Pre-Test Crosstabulation

Count

		Grade 1 ELA Pre-Test				Total
		Approaching Basic	Basic	Mastery	Unsatisfactory	
Grade 1 ELA Post-Test	Advanced	8	1	1	4	14
	Approaching Basic	4	1	0	8	13
	Basic	9	2	0	11	22
	Mastery	6	2	0	6	14
	Unsatisfactory	0	0	0	4	4
Total		27	6	1	33	67

Gains: 82%*

Grade 2 ELA Post-Test * Grade 2 ELA Pre-Test Crosstabulation

Count

		Grade 2 ELA Pre-Test				Total
		Approaching Basic	Basic	Mastery	Unsatisfactory	
Grade 2 ELA Post-Test	Advanced	1	3	2	0	6
	Approaching Basic	0	0	0	8	8
	Basic	2	1	0	21	24
	Mastery	5	10	0	7	22
	Unsatisfactory	0	0	0	9	9
Total		8	14	2	45	69

Gains: 83%*

Grade 3 ELA Post-Test * Grade 3 ELA Pre-Test Crosstabulation

Count

		Grade 3 ELA Pre-Test					Total
		Advanced	Approaching Basic	Basic	Mastery	Unsatisfactory	
Grade 3 ELA Post-Test	Advanced	1	0	1	1	4	7
	Approaching Basic	0	2	0	0	10	12
	Basic	0	7	3	0	13	23
	Mastery	0	6	4	1	1	12
	Unsatisfactory	0	2	0	0	10	12
Total		1	17	8	2	38	66

Gains: 70%*

Grade 4 ELA Post-Test * Grade 4 ELA Pre-Test Crosstabulation

Count

		Grade 4 ELA Pre-Test				Total
		Approaching Basic	Basic	Mastery	Unsatisfactory	
Grade 4 ELA Post-Test	Advanced	0	1	2	0	3
	Approaching Basic	3	1	0	1	5
	Basic	12	16	1	5	34
	Mastery	2	9	6	2	19
	Unsatisfactory	2	1	0	3	6
Total		19	28	9	11	67

Gains: 48%*

Grade 5 ELA Post-Test * Grade 5 ELA Pre-Test Crosstabulation

Count

		Grade 5 ELA Pre-Test				Total
		Approaching Basic	Basic	Mastery	Unsatisfactory	
Grade 5 ELA Post-Test	Advanced	2	1	4	0	7
	Approaching Basic	14	1	0	6	21
	Basic	11	13	0	3	27
	Mastery	2	5	7	1	15
	Unsatisfactory	4	3	0	7	14
Total		33	23	11	17	84

Gains: 37%*

*: Gains in all of the tables in the Appendix refers to positive movement from at least one level to the next highest one (or more). It does not necessarily mean that the student has obtained *Basic*, as a positive movement can be from *Unsatisfactory* to *Approaching Basic*. Gains refer only to positive movement. The degree of movement is not examined. That is, movement from *Approaching Basic* to *Basic* has the same count (1) as moving from *Unsatisfactory* to *Mastery*. However, as the tables under Statistics indicate, a comparison of the degree of change would probably show much strong Gains.